

**The creation, modification, implementation, and assessment of a hydration education pack.
To develop children's and teachers' knowledge and understanding of fluid intake.**

by

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Abstract

Background

Williamson and Howells (2019) found that 46.9% of young children believed they drink <500ml a day. Compounding this, Howells and Coppinger (2020) reported that only 11% of teachers actively encourage children's drinking. Therefore, the APPG on a Fit and Health Childhood (Howells, 2020) supported the hypothesis that a hydration education pack (HEP) could address this gap in knowledge, understanding and support, which this original research investigated.

Methods

Using a three-study-sequential study design to create-modify-implement and assess the HEP, version 1 was created after the literature review. Study 1 interviewed 3 teachers to modify the HEP to create version 2. Study 2 evaluated each version 2 resource to assess efficacy and impact (45 4-5-year-olds/2 teachers), via pre/post/follow-up questionnaires to inform further modification; creating version 3. Study 3 assessed efficacy and impact of the version 3 HEP via pre/post/follow-up questionnaires with 161 children (4-7-year-olds). Children's questionnaires were analysed with AVOVA/MANOVA (SPSS). Teachers' questionnaires were contextually analysed with NVivo.

Results

Study 1 and 2 concluded that the HEP should be implemented via a 'Water Week' and separated into two HEPs (4-5-year-olds/5-7-year-olds). Study 3 reported that videos accompanied by learning activities, a reward system, a drinking tracker, and a parent fluid

fact sheet, were the most effective resources to support learning of fluid intake. Post-water week, statistically significant improvements ($p < 0.05$), included: health understanding of why we need to drink, hydration/dehydration vocabulary, awareness of permitted drinking times, teacher support, parental support, hypothetically actioning a thirst response, and 5-7-year-olds perception of adequate consumption.

Conclusion

This PhD has demonstrated how a HEP can be created and implemented in schools. The HEP water week effectively developed 5-7-year-old children's and teachers' knowledge and understanding of fluid. It supported how much-why-when-what children need to drink and who supports children to drink; influenced by increased teacher/parental support, as well as a perception of fluid intake behaviour change; thus aligning with the hypothesis. The future delivery of the HEP (5-7-year-olds) should be accepted by teachers and the APPG (now Cross-Party-Group).

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Declaration

I declare that:

- The work presented in this thesis is my own and embodies the results of my research during my period of registration.
- I have read and followed the University's Academic Integrity Policy and that the thesis does not breach copyright or other intellectual property rights of a third party. Where necessary I have gained permission to reproduce copyright materials.
- Any material which has been previously presented and accepted for the award of an academic qualification at this University or elsewhere is clearly identified in the thesis.

Signature: *J. Williamson* Date: 24/9/2024

Abbreviations

All-Party Parliamentary Group/Cross-Party Group on a Fit and Healthy Childhood:
APPG/CPG

Autism Spectrum Disorder: **ASD**

British Educational Research Association: **BERA**

Continual Professional Development: **CPD**

Degrees Celsius: **°c**

Department for Education: **DfE**

Early Years Foundation Stage: **EYFS**

Economic and Social Research Council: **ESRC**

English as an Additional Language: **EAL**

General Data Protection Regulation: **GDPR**

Hydration Education Pack: **HEP**

Key Stage 1: **KS1**

Litre: **L**

Millilitre: **ml**

National Curriculum: **NC**

National Health Service: **NHS**

Office for National Statistics: **ONS**

Speech, Language and Communication Need: **SLCN**

Standard Assessment Tests: **SATs**

Sugar Sweetened Beverage: **SSB**

The British Association for Early Childhood Education: **BAECE**

Whiteboard Animation Video: **WAV**

World Health Organisation: **WHO**

Chapter 1 – Introduction

1.0 - The Purpose of the Study and a Hydration Education Pack

This PhD thesis is an evaluation of how a hydration education pack (HEP) can be created, modified, implemented, and assessed for educational impact and efficacy to develop children's and teachers' knowledge and understanding of fluid intake. Jéquier and Constant (2010) support that the awareness of fluid intake requirements is often the forgotten nutrient to encourage the adequate consumption of fluids, which is essential to live a healthy lifestyle, and hence supports the need for further fluid intake educational resources. Howells (2012) highlighted that knowledge and understanding of healthy habits are learnt in the primary classroom, which helps children to establish action of lifelong healthy habits. However, Howells and Coppinger (2020) found that only 11% of teachers self-reportedly actively encourage fluid intake in the classroom, therefore teachers are possibly not providing opportunities for children to develop healthy fluid intake habits, which could be impacting children's adequate consumption and understanding of fluid intake. Therefore, as part of a child's development, schools have a role to play to help children form healthy habits, such as the importance of fluid intake as an essential part of a healthy diet, from an early age.

As Coppinger and Howells (2019) and Williamson and Howells (2019) found that a large proportion of children in primary schools have a poor knowledge and understanding of fluid intake, they proposed that a HEP could help develop knowledge in this field, as it may encourage children to learn how much they need to drink, why they need to drink, when they need to drink, what they need to drink and who supports them to drink. Therefore, there is a need to examine whether the created, modified and implemented HEP holds efficacy and impact to develop these individual

areas of fluid intake in children and teachers. Consequently, Howells and Coppinger (2020) posit that through the creation and implementation of the developed teaching and learning tools in a package of hydration resources, this could not only assist in the development of children's knowledge and understanding of fluid intake, but guide teachers and schools in how they can fulfil their role to effectively support children's fluid intake, which is the topic area of this thesis.

In both the Early Years Foundation Stage Framework (EYFS) (Department for Education (DfE), 2021) and Relationships Education, Relationships and Sex Education and Health Education Curriculum (health education statutory guidance) (DfE, 2019), this supports the need for further teaching and learning guidance to develop children's knowledge and understanding of what constitutes a healthy diet. However, as the teaching and learning directive to deliver the importance of fluid intake appears to be overlooked, even though it is an important component of a healthy diet (Jéquier and Constant, 2010), this supports the creation, modification, and implementation of a HEP (Coppinger and Howells, 2019).

To ensure that schools are teaching children the components of a healthy diet, the health education statutory guidance (DfE, 2019, p.34) states:

“By the end of Primary school pupils should know – the characteristics of a poor diet and risks associated with unhealthy eating (including, for example, obesity and tooth decay) and other behaviours (e.g. the impact of alcohol on diet or health.)”

As the health education statutory guidance (DfE, 2019, p.34) states - *“pupils should know - the characteristics of a poor diet”*, this is a basis to claim that dehydration and adequate fluid intake is a forgotten part of healthy diets within statutory documentation, and therefore fluid intake should be taught as part of a healthy diet to consequently know the characteristics of a poor diet. As such, the teaching and learning of a variety of resources within a HEP could introduce the concept to children that fluid intake is an essential element of a healthy diet, to consequently avoid dehydration, which is characteristic of an unhealthy diet. Furthermore, within the EYFS (DfE, 2021, p.9) it states: -

“Through adult modelling and guidance, they will learn how to look after their bodies, including healthy eating, and manage personal needs independently”.

Again, there is no clear distinction between healthy eating and drinking which further supports the need for a package of resources that teachers can implement in the classroom to support children’s knowledge and understanding of fluid intake. As such, the resources within the developed HEP need to provide a clear distinction for teachers and children to know and understand that fluid intake is an important part of a healthy diet. To enable this, the resources need to ensure they can effectively teach about fluid intake through recognised teaching practices and have an established theoretical grounding. Consequently, Kolb’s (1984) theory of learning processes and learning styles will be used. These learning processes will be explained later in the introduction (1.2).

The World Health Organisation (WHO, 2004) recommend that young children (4-8-years-old) need 1.1-1.3 litres (L) of fluid a day to maintain good health. Whereas the European Food Safety

Authority (EFSA, 2010) advise a slightly higher amount of fluid for young children (4-8-years-old), when compared to WHO (2004), that recommended 1.2-1.3L of fluid a day. Due to the relatively small difference in these recommendations on how much children need to drink, for the benefit of this research, WHO's (2004) guidance will be accepted to measure if children know and understand how much fluid they need to drink. This is justified because of the wider geographical reach of WHO's guidance, as opposed to the smaller continental influence of the EFSA, and hence conclusions of this thesis may be more meaningful for a wider audience. As such, when the researcher refers to "an adequate amount of fluid"; 1.1-1.3L is the volume that young children require for good health.

This research will not only develop children's knowledge and understanding of fluid intake, but also support teachers in their understanding of their own (adult) recommended daily fluid intake. With the idea that if teachers are also knowing, understanding, and drinking the right volume, teachers can subsequently act as role models to the children. As both WHO (2004) and the EFSA (2010) agree on the volumes required for women (2L) and men (2.5L), when referring to adult recommended fluid intake, these volumes will be used in the HEP when trying to develop resources to impact knowledge and understanding for those demographics.

Relating back to the findings by Williamson and Howells (2019), they found that 46.9% of young children (4-5-year-olds) believed they drink 500 millilitres (ml) or under of fluid a day. Compacting this reported rate of under consumption, Howells and Coppinger (2020) subsequently found that a little over one-in-ten teachers, internationally and in the United Kingdom (UK), reported to actively encourage fluid consumption in the classroom, despite children learning 10%

more effectively when hydrated compared to dehydrated children (Edmonds and Burford, 2009), and that many children have a physiological lag of drinking 45 minutes after when they should drink to avoid dehydration (Benelam, 2010), therefore children need support to know and understand when to drink to be hydrated. Moreover, the All-Party Parliamentary Group on a Fit and Health Childhood (APPG) (Howells, 2020), further recommended that a HEP could increase the level of fluid intake knowledge and understanding. Therefore, as a result of the data analysis in this thesis, it will try to provide the foundation for the creation and logistical implementation of a HEP in schools, and assess its efficacy and impact to develop knowledge and understanding of fluid intake, with the expectation that the researcher will be able to report back to the APPG on what level of efficacy and impact the HEP has.

As such, because the EYFS framework (DfE, 2021) and health education statutory guidance (DfE, 2019) do not have fluid intake clearly defined as its own entity for teachers to deliver, there is little statutory guidance on how teachers' can support children's development of knowledge and understanding of fluid intake. Therefore, to clarify the ambiguity in the statutory guidance (DfE, 2019; 2021), where fluid intake should form part of a healthy diet (to know the characteristics of a poor diet). The core aims of this thesis is to evaluate educational efficacy and impact of the created, modified and implemented HEP, and to provide teachers with guidance on how to deliver this omitted ambiguous statutory policy area, so that they are sufficiently equipped with a variety of adaptable resources and pedagogical strategies to effectively support young children to know and understand about fluid intake. Consequently, through a 7-step HEP development process (discussed in this 1.3), this PhD research will answer two core research questions: -

1. How can a HEP be created and logistically implemented in schools? (This will be addressed in steps 1-5, figure 1).
2. What level of educational efficacy does the created HEP hold to impact knowledge and understanding of fluid intake? (This will be addressed in steps 6 and 7, figure 1).

1.1 - Definitions

1.1.1 –Hydration Education Pack and Knowledge and Understanding of Fluid Intake: Definition

The author will provide a series of definitions in relation to the topic of fluid intake to aid in reader comprehension.

As defined by Williamson and Howells (2019, p.5), a HEP is a package of resources that can be used to “*support the understanding of fluid intake to help understanding for families, teachers and children*”. The authors proposed that the HEP could be used to impact knowledge and understanding of the fluid intake topic, similarly to other UK governmental health initiatives, such as the Change4Life scheme (Public Health England, 2019). As the Change4Life’s resources were aimed at influencing health behaviours through supplying a variety of educational materials in the home and school environment (such as practical resources to increase physical activity levels), this provides a basis for a fluid focused health education pack to encourage the development of healthy drinking habits. In reiteration to the recommendations by Williamson and Howells (2019) and the studies by Howells and Coppinger (2019; 2020), children require the support to know and understand:

- 1) How much to drink.
- 2) When to drink and the signs of dehydration.
- 3) Why it is important to drink.
- 4) What to drink.
- 5) Who supports children to drink.

Therefore, a HEP is a collection of learning tools and supporting guidance that can be utilised by educators, children, and other stakeholders to enhance their knowledge and understanding of these five learning outcomes, to ensure adequate consumption habits are formed and actioned consistently.

As such, the literature review will explore why specific fluid intake content needs to be included in any developed HEP, what hydration resources could be developed, why they could be effective from a theoretical learning perspective and how they could be implemented and assessed efficiently to benefit children's and teachers' knowledge and understanding of fluid intake.

1.1.2 - Fluid: Definition

For the purpose of this thesis, the term 'fluid' is a substance that is safe for human consumption. Benelam and Wyness (2010) support that multiple forms of fluid can be consumed and are safe for human consumption, for example: still water; carbonated water; water with flavoured cordial; sodas (otherwise known as a sugar sweetened beverages); sugar-free sodas; tea; coffee and alcoholic beverages.

As ‘still water’ is the fluid that schools are legally required to provide open access to children during the school day (DfE, 2021), whereby many schools do not provide any fluid type other than still water (Hunter et al., 2004), this means that still water is the only fluid that the researcher can be sure is consumed by children in school. Therefore, ‘fluid’, for the purpose of this thesis is ‘still water’.

1.1.3 - Hydration and Dehydration: Definition

As one outcome of the HEP is to develop knowledge and understanding of when to drink to be hydrated and avoid dehydration, the terms ‘hydration’ and ‘dehydration’ must be defined. In an article for the European Journal of Clinical Nutrition, Jéquier and Constant (2010) state that there are three types of dehydration. These are:

1. **Isotonic dehydration** – caused by excessive fluid loss through the gastrointestinal tract, for example, diarrhoea. This is often the most serious type of dehydration due to the large volume of fluid that can be lost.
2. **Hypotonic dehydration** – caused by too much fluid input as opposed to output. This is otherwise known as ‘hypo-hydrated’. Symptoms of hypo-hydration are similar to hypotonic dehydration.
3. **Hypertonic dehydration** - caused by a lack of fluid input when compared to excessive output, such as through sweating due to heightened external heat temperatures or exercise, and urination. Jéquier and Constant (2010) state that ‘hypertonic dehydration’ is often the term meant when people state that they are ‘dehydrated’. Kleiner (1999) previously reported that earlier symptoms of hypertonic dehydration include - flushed skin; headache; dry mouth; lethargy and production of dark urine with a strong smell etc.

As such, for the remainder of this thesis, when the term ‘dehydration’ or ‘dehydrated’ is utilised, ‘hypertonic dehydration’ is implied. Conversely, the terms ‘hydration’ or ‘hydrated’ is the inverse of hypertonic dehydration, meaning that one is not hypertonically dehydrated. Therefore, when the researcher refers to ‘hydration’ or ‘hydrated’, this consequently infers that enough fluid has been consumed, or knowledge and understanding has been developed, to avoid dehydration.

1.1.4 - The Children: Definition and Justification of Age Groups

As there is a level of ambiguity around fluid intake in the statutory guidance given to teachers within England (DfE, 2019; 2021), one core focus of this thesis is therefore to develop a HEP to reduce the level of ambiguity and to increase knowledge and understanding of fluid intake for both children and teachers. And hence, justification of what age groups the HEP will target should be defined.

Coppinger and Howells (2019) reported that the younger ages in the EYFS (4-5-year-olds) and Key Stage 1 (KS1) (5-7-year-olds) possessed a poorer knowledge of fluid intake when compared to older children (9-13 years old) in their study. As such, these findings indicate that the younger cohort(s) of children compared to the older children, would benefit more from a package of hydration educational resources to improve their knowledge and understanding of fluid intake. Therefore, these age groups will be the focus for this thesis. Consideration will be taken in the HEP to be age appropriate and adaptable to meet differing stages of learning development (Sibley and Etnier, 2003), cognitive development (Piaget, 1971), as well as the various processes of learning and learning styles (Kolb, 1984).

1.2 - How Children Learn

To develop a package of teaching and learning resources to effectively develop knowledge and understanding of fluid intake, consideration of how children learn should be applied. There are four core types of learning styles, children can be visual, auditory, read/write, and kinaesthetic learners, or any combination of the four (Kolb, 1984). Kolb (1984) states that visual learners more effectively develop knowledge and understanding through an emphasis on what they see, such as through pictures or teacher demonstration. Other children are auditory learners whereby they develop learning through what they hear. This contrasts with read/write learning through processing words on a page. Finally, kinaesthetic learners are tactile learners, whereby they need to be an active participant in their learning through trial and error. As teachers are mandated to provide teaching and learning that meets the needs of all their pupils (DfE, 2011), the researcher will accommodate these learning styles in the HEP resources to achieve inclusivity. It is often the case that due to younger children only beginning to read and write (DfE, 2021), they do not often learn new information through the reading/writing learning style (that is not directly related to the active learning to read and write) until later in their schooling, when those skills have been sufficiently assimilated. Therefore, this style of learning is not as paramount to accommodate when developing the resources in the HEP.

Kolb's (1984) theory elaborates that learning is underpinned through one or a mixture of the learning styles, in a four-stage learning process: (1) concrete learning, (2) reflective observation, (3) abstract conceptualisation and (4) active experimentation.

1. Concrete learning refers to setting the foundation for knowledge to develop, to facilitate awareness of a topic, such as how much fluid children need to consume for good health and recognising the initial signs of dehydration.
2. Reflective observation enables learners to ‘reflect’ on how the new knowledge can be useful to their lives, such as why knowing how much to drink and the signs of dehydration is important, and whether they need to remember what is being taught.
3. Abstract conceptualisation is how the knowledge of what was learned could be implemented theoretically, such as knowledge of when to drink to consequently drink adequately and avoid the signs of dehydration.
4. Active experimentation is the practical implementation of the concrete learning, reflective observation and abstract conceptualisation. For example, active implementation of drinking enough fluid and avoiding the signs of dehydration.

Consequently, Kolb’s (1984) learning theory has implications for the development of the resources in the HEP because they need to encourage the development of knowledge and understanding of fluid intake through concrete learning, reflective observation, abstract conceptualisation, and active experimentation to assist in the implementation of what is learnt and form healthy drinking habits for lifelong action (Howells, 2012). For example, the HEP resources need to show sufficient evidence that they are able to set the foundation of the general knowledge of fluid intake (concrete learning), explain why it is useful to know (reflective observation), suggest ways to implement this knowledge and understanding theoretically (abstract conceptualisation), and offer practical opportunities to physically implement the knowledge and understanding learnt (active experimentation). In summary, the researcher will justify how the resources in the HEP will

incorporate Kolb's (1984) four-stage learning process that are underpinned by the learning styles (visual, auditory, and kinaesthetic learners).

To apply a level of critical appraisal of Kolb's (1984) learning theory, one consideration that is unarguably a factor, is the age of the theory, and whether it is still relevant today 40 years later. Morris in 2020 conducted a systematic review of the theory, which considered 60 journal articles from a pool of over 1300 papers. Hence, by Morris (2020) simply conducting the review within the same decade as this PhD thesis, this is evidence that Kolb's (1984) theory is likely still relevant for the development of the resources within the HEP and addresses the age consideration. That said, one publication that Morris (2020) considered was that by Bergsteiner, Avery, and Neumann (2010), which reported that one limitation with Kolb's (1984) theory was the question of what physically constitutes 'concrete learning'. For example, Bergsteiner, Avery, and Neumann (2010) suggest that some educators do not believe teacher-led modes of information delivery, such as a presenting a power point to learners as a legitimate concrete learning experience, because learners are often not an active participant in that form of teaching and learning. Whereas other practitioners do believe it is concrete learning, due to the act of disseminating new and novel information, to subsequently build upon that learning. Consequently, to clarify the concrete learning ambiguity limitation of Kolb's (1984) theory, some of the themes that Morris (2020) and Bergsteiner, Avery, and Neumann (2010) identified was that to define a concrete learning experience, learners should be actively involved and are exposed to novel information, as this helps learners to retain what new information is developed; in turn addressing both sides of the concrete learning definition discourse. As such, this has implications for the development and implementation of the HEP, whereby to satiate the criteria for concrete learning, the resources in the hydration education pack

will aim to teach children about the novel concept of fluid intake (fulfilling the novel criteria), whilst ensuring that the mode in which to teach learners the concrete information involves and engages them to aid in fulfilling the active participant criteria (primarily through a video series that is discussed in 2.1.8). Consequently, this is a strong argument that the HEP can satiate the criteria for concrete learning and address one core limitation of Kolb's (1984) learning theory. As such, Kolb's (1984) learning theory should be deemed as sufficient to help inform the creation of the resources in the HEP and aid in meeting research outcomes.

The EYFS (DfE, 2021) and health education statutory guidance (DfE, 2019) have two different approaches to teaching and learning. Within the EYFS framework (DfE, 2021), there is a focus on learning through play (Ephgrave and Bilton, 2012), whereby many practitioners provide an initial teaching input to introduce the core concrete learning of a topic. Thereafter, teachers facilitate a range of activities that allow children to interact with (that are differentiated), often through play and exploration. Ephgrave and Bilton (2012) suggest that this style of teaching and learning allows children to firstly understand novel concepts through specialised teacher input, to further develop children's learning; whereby children select the planned activities to promote ownership of their learning and therefore can make learning more enjoyable no matter what stage of cognitive development they are at (Piaget, 1971). This child-centred style of teaching and learning differs slightly within the health education statutory guidance (DfE, 2019), whereby teachers still provide the initial input, however KS1 learning objectives are often supported by one scaffolding activity, that is differentiated to meet the needs of all learners, which is a requirement for all teachers within the teachers' standards statutory documentation (DfE, 2011).

As such, the HEP will be created, modified, and implemented to cover both KS1 and the EYFS frameworks to meet the ambiguous requirement that children need to know and understand about fluid intake as part of a healthy diet. Therefore, as many teachers' reportedly do not actively encourage fluid intake in the classroom (Coppinger and Howells, 2020), to help teachers to become more proactive in supporting children's consumption of fluids in the classroom, the HEP will contain teacher guidance and prepared initial teaching input material to encourage children to learn the potentially novel concept of fluid intake. For example, a series of videos could achieve that aim, to subsequently provide a variety of supportive learning activities that are both playful and structured to adhere to the EYFS and KS1 methods of teaching and learning.

1.3 - Overview of How the Resources will be Developed

As the purpose of this thesis is to create, modify, implement, and assess a HEP's efficacy and impact to develop knowledge and understanding of fluid intake, it is therefore important to outline how this process will be conducted. As aforementioned, the resources in the HEP will be underpinned by Kolb's learning theory (1984). Additionally, the researcher will examine the guidelines on how to develop and assess educational resources set out by the Irish Development Education Association (Coyle et al., 2014), who developed a systematic framework, for creating and assessing the efficacy and impact of educational resources. They concluded that a six-phase process can be applied to aid resource development. These six phases are:

Phase 1: Needs analysis and planning.

Phase 2: Content, researching world development and educational issues.

Phase 3: Presentation style and technical dimensions.

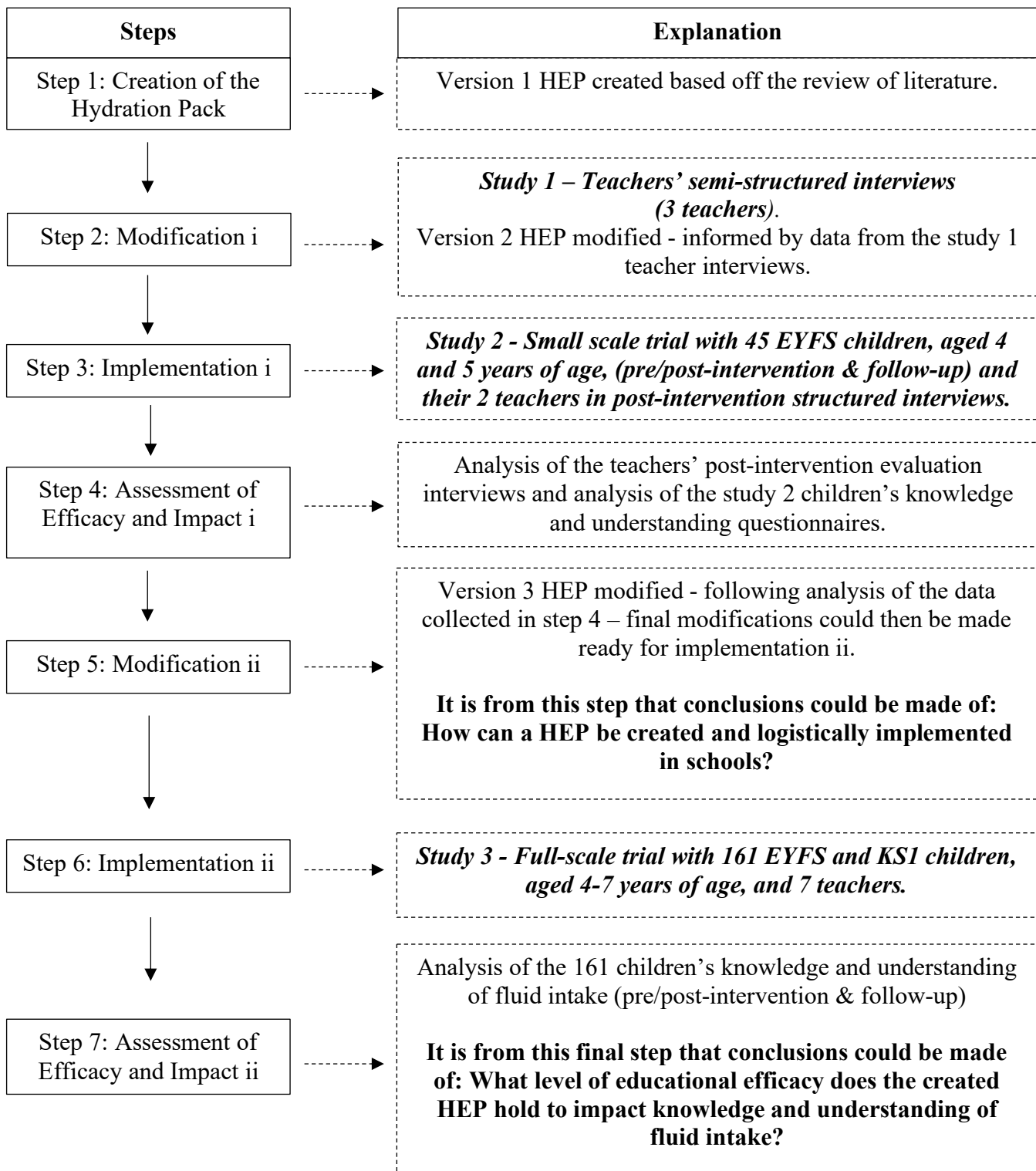
Phase 4: Piloting and revising draft materials.

Phase 5: Printing, marketing and distribution.

Phase 6: The evaluation cycle.

Figure 1 outlines the 7-step HEP development process that have used and adapted the 6 phases of Coyle et al., (2014).

Figure 1: Hydration Education Pack Development Flowchart



1.4 – What is Efficacy and Impact?

It is necessary to define efficacy and impact to enable a rigorous assessment of the HEP. In the field of advising physical activity and health intervention evaluation processes, Pringle et al., (2020) suggests that efficacy and impact hold two different meanings. ‘*Efficacy*’ relates to the evaluation of whether the created resources for the intervention function as intended under controlled conditions, whereas ‘*impact*’ refers to whether a researcher can establish if the effect(s) of the created materials are primarily due to the intervention itself. As such, this thesis will assess both sides of the intervention evaluation spectrum, in the controlled environment of a school classroom(s).

In relation to how the researcher will assess the efficacy and impact of the HEPs ability to develop knowledge and understanding of fluid intake, Coppinger and Howells’ (2019) suggest that children should know, the following five criteria need to be addressed:

- 1) How much children need to drink?
- 2) When children need to drink and the signs of dehydration?
- 3) Why children need to drink?
- 4) What children need to drink?
- 5) Who supports children to drink?

Consequently, Coppinger and Howells (2019) developed a children’s questionnaire to establish and assess current knowledge and understanding of fluid intake. This questionnaire formed the foundation of Williamson and Howells’ (2019) paper which specifically examined fluid intake knowledge and understanding with younger children (4-5-year-olds). As this questionnaire has

been used to gather data in two previous peer-reviewed studies, this justifies utilising a similar questionnaire to assess knowledge and understanding of fluid intake pre-intervention and compare replies to post-intervention/follow-up. Kaufman-Shriqui et al., (2016) produced a series of lessons to develop knowledge and understanding of general health concepts (including fluid intake), where they collected pre-intervention data and compared this against post-intervention data/follow-up intervals. This facilitated a baseline to understand what the children knew before delivery, to compare this with what the children learnt following intervention delivery and after a pre-established time post-intervention, therefore allowing a researcher to assess immediate efficacy and impact of developed resources and if any developed knowledge and understanding has been retained in the medium-term. As such, pre-intervention, post-intervention, and follow-up data will be collected to assess efficacy and impact of the HEP.

Consequently, by conducting the 7-step development process (figure 1), the PhD thesis will answer two core research questions as previously outlined in a previous section (1.0). The structure of the thesis is below:

- Chapter 1: Introduction
- Chapter 2: Literature Review
- Chapter 3: Methodology
- Chapter 4: Results and Discussion
- References
- Appendix

1.5 - Positionality and Suitability to Conduct this Research

The suitability for the author of this thesis to conduct this research, is supported by the researcher's previous work that centred on accumulating knowledge of the current state of young children's understanding fluid intake (Williamson and Howells, 2019; 2021), as well as being a trained teacher himself. According to Hatch (2002), teachers who are involved in and familiar with observing children in school environments tend to encourage more accurate responses from the children. Furthermore, as the researcher has worked with EYFS and KS1 children for 12 years, he has acquired the abilities and knowledge necessary to converse with young children and elicit appropriate responses by utilising language that is appropriate for their age, which Hatch (2002) suggests is useful for effective research practices in schools. Moreover, as the APPG (Howells, 2020) specifically supported the researcher's recommendation to create and assess efficacy and impact of a HEP; this further justifies how he is in a good position to lead the original academic contribution to create, modify, implement and assess the efficacy and impact of the HEP.

1.6 – Hypothesis

For an academic research project to be successful, a selection of hypothesis' should be presented, in which to test and assess if a theory is correct (Cohen, Manion, and Morrison, 2018). Based on previous findings (Coppinger and Howells, 2019; Williamson and Howells, 2019; 2021), the research hypothesis is that the researcher will be able to establish a method in which to create and logically implement the HEP in schools, and that there will be a positive development in children's and teachers' knowledge and understanding of fluid intake through engaging with the created, modified and implemented HEP. As part of this positive development of knowledge and understanding, it is also hypothesised that there will be a positive impact on the children's

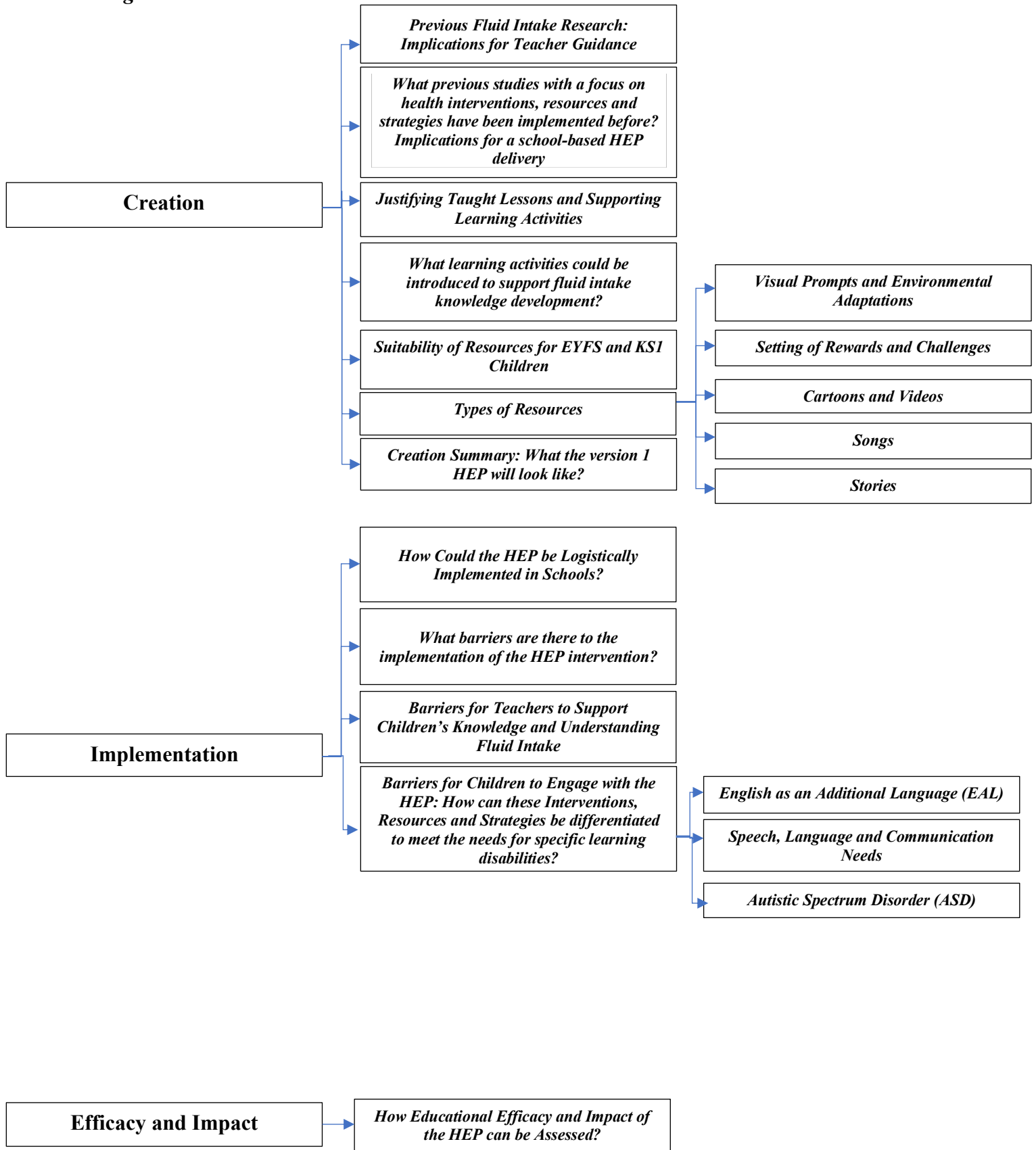
perception of adequate consumption habits and that teacher will be able to support the action of these habits for lifelong implementation.

Chapter 2 - Literature Review

2.0 – Literature Review Chapter Introduction

The author will structure each section of this chapter under the central themes of creation, implementation and assessment of efficacy and impact. The focus of this chapter is to evaluate how the review of the literature can support the creation of the version 1 HEP and direct the research on how to collect data in which to modify, implement and assess the HEP. The chapter will be structured in the following ways (figure 2):

Figure 2: Literature Review Flowchart



2.1 – Creation

This thesis will firstly explore how a HEP can be created and what resources should be included in the version 1 hydration resources. This will provide a basis on which to examine how the HEP can be implemented and assessed in subsequent literature review sections.

2.1.1 - Previous Fluid Intake Research: Implications for Teacher Guidance

To ensure the HEP is able to support teachers to effectively support children's development of knowledge and understanding of fluid intake, the researcher must first explore what children currently know and understand in relation to fluid intake to consequently assess what guidance is required in the HEP for teachers to support their pupils'. A study by Coppinger and Howells (2019), which used self-administered questionnaires, was conducted to establish an international comparison between Irish and English children's perception of fluid intake across the school day. The average age of the primary aged children was eight years and five months. One key finding was that 41% of the 322 primary aged children self-reportedly consumed below WHO (2004) guidelines. Suggesting that a large proportion of children in England and Ireland do not believe they consume enough fluid, even though 65% of children's bodies are made up of fluid (Wells, 2005) and can learn 10% more effectively hydrated (Edmonds and Burford, 2009). Supporting the need for the HEP to be created.

Following Coppinger and Howells' (2019) research, Williamson and Howells (2019) conducted a study with a near-identical fluid intake questionnaire to Coppinger and Howells (2019), which focused on English EYFS aged children (4-5-years-of-age). Although smaller in scale (130 participants), due to the concentrated emphasis on collecting data from a less comprehensively

covered sub-group previously, the findings were regarded as useful to enable a clearer picture of what the current fluid intake knowledge and understanding landscape was. Williamson and Howells (2019) found that 46.9% of the 4-5-year-old participants believed they consumed 500ml or under a day of fluids (under WHO (2004) guidelines). Moreover, if given the option of playing or drinking before play, 33.8% of the children would play without consuming additional fluids. Hence, supporting that many children do not understand how much to drink or when to drink, but most crucially, appear not to be supported to combat these misconceptions with further educational interventions; further substantiating the need for a HEP to have effective teacher guidance to impact this.

Therefore, this research requires further examination as to what is currently being implemented by teachers in relation to upskilling children's knowledge and understanding of fluid intake as part of a healthy diet, what resources need to be implemented in the HEP and to inform what guidance teachers require to sufficiently support fluid intake. Howells and Coppinger (2020) sought to provide a more comprehensive understanding of the teachers own fluid intake, what they knew about their pupils' drinking behaviours, as well as barriers they felt prevented consumption in the school environment, through a self-completed questionnaire. The research comprised of 271 teachers (251 women and 20 men), based across Australia, Belgium, England, Ireland, United Arab Emirates (UAE), and the United States of America (USA). The quality of the sample was justified by mainly including women, due to a similar bias being present in the wider population of primary school teachers, whereby 89% of primary age teachers are female (National Centre for Education Statistics, 2018); enhancing validity of their findings. Howells and Coppinger (2020) found that although teachers had a good awareness of what their pupils were consuming in relation

to previous work (Coppinger and Howells, 2019; Williamson and Howells, 2019; 2021), 91% of teachers consumed less themselves than what is recommended by WHO (2004) (2L for women and 2.5L for men). Hence, this could be limiting modelling drinking opportunities to their pupils, due to not drinking enough themselves. As such, Howells and Coppinger (2020) recommended that teachers should be provided strategies as part of a HEP to encourage a heightened level of personal consumption while in the classroom and be provided with additional teaching strategies/guidance to effectively encourage their pupils to drink adequately. Consequently, guidance within the HEP should encourage teachers to drink alongside their pupils so practitioners and children can be hydrated together. This can be seen in appendix 2a in the teacher's guide. To substantiate this guidance, Howells and Coppinger (2020) were able to list a suite of possible school focused interventions and pedagogic changes that could be considered for future research.

These included:

- (1) Delivering continual professional development sessions (CPD) to boost skills and knowledge for teachers to act as health promoters to actively encourage healthy drinking behaviours and impart that understanding onto their pupils.
- (2) Permitting access to water bottles at all times in the school day.
- (3) Visual prompts and informational posters.
- (4) The setting of rewards and challenges for children.
- (5) The use of charts to track water intake, and other school environmental adaptations.

As such, this thesis will address these recommendations as part of the HEP and teacher guidance.

Previously, Lieberman (2013) expressed that teachers' who are hydrated tend to maintain a higher level of teaching quality due to possessing an improved cognitive capacity. This is similar to a finding of cognitive improvement for children reported by Edmonds and Burford (2009), who conducted cognitive assessments between a control group and additional fluid intake group, which found that children who are hydrated perform 10% more effectively in cognitive tests. Thus, it is in teachers' immediate interest to also sustain an adequate hydration status by drinking adequate fluid in the classroom; whilst also setting an example to children through effectively drinking themselves. However, as Howells and Coppinger (2020) found that most teachers do not drink enough for their own requirements, it appears they are not maintaining an adequate hydration status. Consequently, this substantiates the point that children need to be promoted by their teachers to drink water at school and not be expected to consciously know when to drink, and teachers need further guidance, through the delivery of the HEP, to facilitate this support. Conversely, it could be implied that children do not need reminders to drink, as humans tend to have the ability to listen to in-built thirst responses. This is otherwise known as 'homeostatic consumption' (Severs, 1979). However, Benelam (2010) and Shaw (2010) supports the notion that children tend to not have an adequate thirst response to be able to effectively action the homeostatic consumption of fluids, as this is often not developed until later in life, and hence children should be in receipt of extra tuition and reminders to drink an adequate level of fluid. Further justifying the rationale to focus the target audience of the HEP with younger children.

Furthermore, indicated by the large-sampled research by Bonnet et al., (2012), which comprised of 529 primary aged children in France to assess school-time dehydration levels. Bonnet et al., (2012) claimed that two-thirds of children in the study displayed signs of dehydration when they

arrived at school in the morning, resulting in a need to hydrate when they arrive at school. Following analysis of urine samples, Bonnet et al., (2012) reported that 81% of the two-thirds of children who arrived at school dehydrated, remained dehydrated past midday; indicating that French children also have limited knowledge of when to drink and recognise the signs of dehydration, as they are not autonomously consuming fluids to correct their state of dehydration at the start of the school day. Hence, children internationally seem to be unable to autonomously change their hydration status and therefore rely on prompts from school staff to remind them to drink, which, appears they are not receiving internationally and require support to drink adequately (Howells and Coppinger, 2020). Consequently, advice within the HEP will encourage teachers to support children to drink when they arrive at school and after breaks in the school day to maintain hydration, especially after periods of exercise due to the increased likelihood of sweating/fluid loss (Sawka, 2007) (appendix 2a).

One rationale for the lack of research on the drinking behaviours of teachers in the UK, and internationally, could be partially because of the lack of drinking campaigns in schools, as the last UK fluid intake campaign to encourage adequate drinking of water was the ‘Water is Cool in School’ initiative back in 2007 (Kaushik et al., 2007). Consequently, this potentially means that teachers who enter the profession now, may not cover fluid intake in their health education lessons, as they likely would not have had significant tuition within their own schooling; further supporting why Howells and Coppinger (2020) found such a deficiency of self-reported teacher support of children’s fluid intake internationally and in the UK. Additionally, vindicating the need to create a HEP and to include guidance to support teachers.

That said, Johnston Molloy et al., (2008) imply within their small-sampled qualitative study with Irish teaching practitioners, that some teachers do not perceive that promoting healthy drinking behaviours is their responsibility; assuming that children are learning this important health information at home. However, as children spend at least half of their waking hours at school (Owens et al., 2000), the teaching/role-modelling of effective drinking practices undoubtedly also befalls teachers. Moreover, Edmonds and Jeffes (2009) promote that by providing children with the unrestricted opportunity to access fluids throughout the school day increases their overall happiness, resulting in additive benefits to children's holistic experiences of their schooling by being hydrated. This is supported in the EYFS (DfE, 2021), as a statutory requirement for schools is that children should be provided free access to drinking water. Thereby, perhaps teachers could be more likely to incorporate healthy drinking habits into their pedagogical practices if they perceived consumption at school as also supporting their pupils' holistic welfare and long-term development to live healthy lives. Consequently, the introduction of a created and implemented HEP could alter this attitude. Therefore, a summary of guidance within the HEPs teacher's guide (appendix 2a) will include: -

- Regularly encourage children to drink from their water bottles and at the start of the school day.
- Provide guidance for why drinking should be encouraged during carpet time, child-initiated activities and directly after breaks in the day, such as playtime and lunchtime due to the likelihood of children participating in physical activity.
- Teacher led modelling of drinking behaviours to be hydrated alongside the children.

2.1.2 - What previous studies with a focus on health interventions, resources and strategies have been implemented before? Implications for a school-based HEP delivery.

To inform the creation of the HEP, it is important to consider within the literature review, not just fluid intake educational literature but also general health education literature to examine what has previously been implemented with children and teachers to help with the creation of the HEP resources. Consequently, there is also the need to examine eating, healthy diets and characteristics of unhealthy diets, as Jéquier and Constant, (2010) suggest these are unequivocally linked, which is subsequently a requirement of the health education statutory guidance and EYFS (DfE, 2019; 2021). It is acknowledged that some literature used within this review cites work that some may consider somewhat dated, but due to a relative dearth of fluid intake focused health education intervention studies, it is important to include other health education intervention studies to ensure the creation of the HEP is fully informed. It is also important to note context of the thesis' data collection timeline, whereby this was undertaken prior to the updated version of the EYFS curriculum (DfE, 2023). The development of the HEP was therefore informed by the earlier EYFS curriculum (DfE, 2021), as well as the health education statutory guidance (DfE, 2019). However, the directive for healthy eating (and ambiguity of fluid intake) is still in place within the later EYFS document. Therefore, this thesis and research is important as there is still no new formal guidance given to practitioners about fluid intake.

Muckelbauer et al., (2009) previously investigated as to what effect dedicated fluid intake lessons would have on the water consumption of 2,950 children in 32 elementary schools in Germany; thereby is a similar climate to the UK. Following the completion of a self-reported 24-hour beverage consumption questionnaire and recording the children's body mass index (BMI), Muckelbauer et al., (2009) randomised the 32 German schools into a controlled cluster trial. It was

deemed important to record body measurements as they claimed that this was one effective way to measure overall health empirically. In 17 of the schools', teachers were provided four prepared lessons aimed at promoting water consumption, including why the body needs water. They found that following monthly assessment points in the six months after the intervention, there was an average increased water uptake of 220ml a day. Most interestingly, this was lower than the peak increase in daily consumption after three months (400ml). Indicating possible short and long-term effects in providing additional resources and educational tuition to enable children to drink higher quantities of water. The short-term benefit highlighted that the introduction of teaching a dedicated fluid focused topic has evidence of altering habits, whereas the long-term implications are that the resources need to be continually supported to maintain the altered healthy habits due to the higher reported water intake after three months (400ml) as opposed to six months (220ml). Consequently, a series of school-based lessons is likely to be useful to deliver the content in the created HEP and will be addressed in section 2.1.3.

Moreover, the notion of supplying additional resources for health campaigns is further supported by the work of Foad et al., (2015) in their lifetime evaluation of the UK's Change4Life initiative. This is a long running health awareness promotion where physical activity focused resources and information are distributed to sports clubs, schools, and the home environment to encourage children to form life-long healthy habits. As part of their survey with over 7,500 children and 1000 sports clubs or schools, 82% of the institutions reported that providing equipment had "a lot" of benefit, and that 83% noted that additional professional development training had at least "a little" impact. Fascinatingly, over 60% felt that Change4Life materials that were branded and had a mascot, also had at least "a little" benefit. When this is evaluated alongside the key finding in

which there was a 69% increase of children reporting to be active for at least 60 minutes a day who otherwise were self-reportedly achieving less before the intervention, this suggests that educational health resource pack interventions have a positive impact on children's knowledge and understanding of factors that influence their health. As such, together with a series of lessons provided by the researcher, a campaign logo (Water Week – discussed in 2.2.1) and a brand mascot (Water Wizard) will be created, which can be seen in the version 1 teacher's lesson guide (appendix 2a).

2.1.3 – Justifying Taught Lessons and Supporting Learning Activities

As a series of lessons will be included in the version 1 HEP, the researcher needs to consider what level of impact this form of intervention has previously had to develop knowledge and understanding on health education topics. Sichieri et al., as early as 2009, emphasised the need for teaching and learning activities for children to develop their knowledge and understanding of health topics with 1140 fourth-grade children (8-9-year-olds) in Brazil. They implemented a series of ten one-hour class sessions on an array of health topics. As part of the series of lessons, the importance of drinking water as a substitute for sugar sweetened beverages (SSBs) was heavily emphasised (in addition to other themes such as healthy eating). One of the main messages voiced by Sichieri et al., (2009) was that water needs to be the primary fluid consumed by children to enable hydration, rather than through SSBs, because although SSB's can ensure hydration is met, they also tend to add to one's calorie intake and hence can be one factor of unrequired weight gain. The study by Sichieri et al., (2009) yielded a 23% reduction of SSB consumption, which they claimed was primarily caused by the increase of water intake. That said, although Sichieri et al., (2009) did not explicitly state many of the activities they conducted with the child participants within the taught lessons, the use of dedicated taught sessions is further justified for the HEP

because of this substantial effect of Sichieri et al.'s (2009) intervention groups in decrease of SSBs and increase of water intake.

Later, Kaufman-Shriqui et al., (2016) conducted a health focused study in Israel, that encompassed 258 children aged 4-7, and their mothers and class teachers, who participated in a multi-stage teaching and learning interventional study over a period of ten months. This consequently relates to this thesis due to the sample age range and implementation of teaching and learning resources intended to impact knowledge and understanding of factors that influence health. Kaufman-Shriqui et al., (2016) separated the children (and their parents/teachers) into two groups (intervention and control), the children in the intervention group were delivered a series of ten 45-minute sessions, whereas the control group only received their usual physical activity lessons. Included in Kaufman-Shriqui et al.'s (2016, pp. 12-13) intervention programme were lessons such as: how the body works, how to make healthy food choices (such as what constitutes a healthy meal), and crucially for the purpose of this thesis, understanding the importance of drinking water. As part of Kaufman-Shriqui et al.'s (2016) sessions, the activities consisted of classroom quizzes; games; singing; song creation and drawing competitions, as well as the use of environmental changes. After the intervention and the assessments of knowledge questionnaires, packed lunch reports, and anthropometric measurements were collected, it was found that the intervention group showed a 49% increase of children who consumed more water as opposed to only 25% of children in the control group. Indicating a near two-fold increase of fluid intake knowledge and understanding development for the intervention group; suggesting that the formation of a concrete foundation of health knowledge through specific health lessons has a substantial effect to develop health knowledge and understanding. Therefore, both Kaufman-Shriqui et al.'s (2016) and Sichieri et

al.'s (2009) projects are of significance for this thesis because they both set a precedent on how health education resources can be created and implemented. Both studies incorporated a school/home-based learning approach which is what the APPG (Howells, 2020) supported. Additionally, it could be implied that as the package of tools employed by Kaufman-Shriqui et al., (2016) and Sichieri et al.'s (2009) had such an influence on the reported habitual behaviours of fluid consumption, even though it was not the core purpose of their intended outcomes, only supports the question of what outcomes could be generated from a study that has fluid intake at the heart of its scrutiny. Therefore, providing further justification to create a HEP that is centred around a series of formal school-based lessons, with home-based informal support.

In support of a school lesson-based interventional project, Franks et al., (2017) studied how they could increase water intake in 334 pre-school children (3-6-years-old), who demonstrated signs of unhealthy drinking behaviours in Poland. Therefore, this is a similar aged cohort to the sample age of this thesis and topic area. The children were separated into three groups: control, information (INFO) and information and water affordance (INFO+W). The INFO group received three weeks of web-based coaching that focused on health benefits of water consumption that aimed to modify drinking behaviours, which was assessed by questionnaire answers and water intake diaries. While the INFO+W group received the same as the INFO group, but were provided bottled water in small bottles to ensure the young children could hold them comfortably and reliably. The two intervention groups were separated half-way through the trial, one group belonged to an online discussion-based forum (INFO+W+SOCIAL), whereas the other group did not belong to the discussion-based forum (INFO-SOCIAL). This was primarily to assess what impact social collaboration could offer. The results showed that all approaches demonstrated an increase in daily

water intake when compared to their own baseline daily consumed volumes of water (between +118ml to +222ml daily increase for all groups). The INFO+W+SOCIAL (+216ml) and INFO-SOCIAL (+222ml) saw the largest difference compared to the control (+118ml daily). As it appears the INFO element of the two groups were the common denominator between the INFO+W+SOCIAL and INFO-SOCIAL groups, this implies that the information/teaching provided could have been the catalyst for the reported increased levels of fluid consumption. As such, a lesson-based teaching and learning approach will be utilised when creating and implementing the HEP.

That said, drawing back to primarily basing the resources in school, with informal home support, Franks et al., (2017) reported a high drop-out rate of the information groups; with 24% of the child participants and their parents dropping out before intervention completion. Which was predominantly on account that the questionnaires and water diary entries were incomplete; possibly because they were lengthy and involved a lot of the participant's time and attention. This in turn supports a school-based approach, due to a teacher's professional duty to ensure children understand what constitutes a healthy diet, as it is in the health education statutory guidance and EYFS (DfE, 2019; 2021). That said, the researcher will also ensure that effective assessment of the implementation of the intervention is as concise to reduce drop-out rates. Franks et al., (2017) concluded that home-based health interventions have a great potential to promote improved behaviour change that is sustainable. Kaufman-Shriqui et al., (2016), also found positive effects in relation to children's and teachers' understanding of fluid intake when home and school settings are involved. Therefore, this justifies the creation of a series of taught school lessons and supporting activities in the version 1 HEP (appendix 2a), as well as a resource to scaffold this

learning at home, which will be explored in study 1, as part of the experienced teacher interviews to initially modify the HEP (step 2, figure 1).

2.1.4 - What learning activities at school could be introduced to support fluid intake knowledge and understanding development?

As a series of lessons will be provided in HEP for teachers to deliver, the researcher must consider what type of learning activities could be included in the version 1 HEP. Coppinger and Howells (2019) state that many children have a deficiency of fluid intake knowledge that relates to not knowing how much to drink, why they need to drink, when they need to drink, what they need to drink and who supports them to drink. As such, the series of lessons and resources within the school-based HEP should relate to these learning outcomes:

- Why we need to drink fluids and how much we need to drink? (Bling your bottle)
- The signs of dehydration and when we need to drink? (Recognising signs of thirst activity)
- How can we support each other to drink? (Encourage people to drink poster design)
- Healthy and non-healthy fluids. (Healthy drinks sorting)
- Summary of learning lessons (discussed in 2.1.8)

The researcher based one activity from the bike to school week's bling your bike activity (Bikeability Trust, 2021). This was to assist children to understand how to use a bike by exploring the various parts (such as a saddle, handlebars and peddles etc), to subsequently aid children in the beginning phases of using a bike to travel to school, as they have learnt the various parts of one. Consequently, the researcher created a 'bling your bottle' activity to teach children the volume they require to drink at school, by blinging their water bottle on an A4 piece of paper to know and

understand what the required volume visibly looks like. As shown by table 1, it was hoped the activity would not only help visual learners but also kinaesthetic (Kolb, 1984), as the children will be able to visually see what they need to drink, whilst engaging with a hands-on, practical activity to bring their paper water bottle, which is the minimum level of school consumption. This subsequently could facilitate abstract conceptualisation and active experimentation to children's learning because the activity could add meaning to how they can apply the knowledge of how much they require a day at school into real-life application. The version 1 activity can be seen in appendix 2a and will be evaluated as part of the study 1 teacher interviews in part 1 of the results and discussion chapter.

The activity relating to the signs of dehydration was idealised in a similar vein to BBC Bitesize's (2022) naming of the body parts activity, which allowed children to electronically identify basic parts of the body (arms, legs, feet, hands, and head), to aid in vocabulary development and KS1 /EYFS biology (DfE, 2014; 2021). The researcher conceptualised that if children could draw a circle around the body parts that are affected by dehydration, then they could demonstrate their understanding of the signs of dehydration after learning the concrete information in a video (videos are discussed in 2.1.8). Kleiner (1999) previously stated that the early physiological signs of dehydration materialise in this order: flushed skin; headache; dry mouth and dark urine with a strong smell and lethargy. As can be seen in table 1, this could assimilate the creation of abstract conceptualisation and active experimentation (Kolb, 1984), as the children can recognise where the signs of dehydration materialise on a picture, to subsequently physically drink if they recognise those signs of dehydration happening to their own body. Therefore, a cartoon body map was

produced in the version 1 HEP to present to teachers to critique in the study 1 interviews (appendix 2a).

Additionally, because what kind of fluid children drink is equally as important as how much they consume (Sichieri et al., 2009), a session on the frequency of what types of fluid should be consumed will be supplied within version 1 of the HEP through a cut and stick healthy drinks ordering activity (appendix 2a). Although, the precedent for the activity will be explored in a later section (2.1.6), this supportive learning activity could aid visual, audible and kinaesthetic learning styles (Kolb, 1984), which can be seen in table 1. As it will allow children to visually see and hear what drinks they should be drinking on a regular basis and facilitate opportunities to communicate their understanding and manipulate their hands to complete an activity. Fundamentally, this activity theoretically should be conducive to learning (Kolb, 1984), as it will firstly disseminate concrete information through a video (discussed in 2.1.8), supports reflective observation processes for children to realise why water should be consumed more regularly than sugary sodas, enables opportunities for children to understand when they should be drinking water (i.e. frequently), and fundamentally facilitates an activity to embed this learning to complete the learning cycle through active experimentation of altering habits and behaviour change to drink more water frequently. The cut and stick healthy drinks ordering activity will also be examined as part of the study 1 teacher interviews and can be seen in appendix 2a.

Moreover, in line with the learning criteria to scaffold the children to support their peers and teachers to drink together; an encourage people to drink poster creation activity was designed based on previous literature using posters (Sichieri et al., 2009), plus aiding visual and kinaesthetic

learners (Kolb, 1984) to compartmentalise learning in the abstract conceptualisation and active experimentation stages of learning. As such, this can be seen in appendix 2a in the form of an example poster the children could create to support each other to drink.

In line with Coppinger and Howells (2020) and Kaufman-Shriqui et al., (2016) health educational resources recommendations to further substantiate the lesson content in the HEP that were addressed in this sub-section, the following resources that this literature review will also evaluate are:

- Visual Prompts and Environmental Adaptations (2.1.6)
- Setting of Rewards and Challenges (2.1.7)
- Cartoons and Videos (2.1.8)
- Songs (2.1.9)
- Stories (2.1.10)

Table 1: What version 1 HEP resources meet Kolb's (1984) learning theory.

	Concrete Learning	Reflective Observation	Abstract Conceptualisation	Active Experimentation
Visual Learners	Whiteboard Animation Videos	Whiteboard Animation Videos Healthy Drinks Sorting Story Book	Whiteboard Animation Videos Bling your Bottle Recognising Signs of Thirst Activity Healthy Drinks Sorting Encourage people to Drink Poster Creation Story Book	Bling your Bottle Recognising Signs of Thirst Activity Healthy Drinks Sorting Encourage people to Drink Poster Creation Drinking Tracker Chart Rewards Story Book
Auditory Learners	Whiteboard Animation Videos Water Song	Whiteboard Animation Videos Water Song Healthy Drinks Sorting Story Book	Whiteboard Animation Videos Water Song Healthy Drinks Sorting Story Book	Water Song Healthy Drinks Sorting Reward System Story Book
Kinaesthetic Learners	Whiteboard Animation Videos Water Song	Healthy Drinks Sorting Story Book	Bling your Bottle Encourage people to Drink Poster Creation Recognising Signs of Thirst Activity Healthy Drinks Sorting Story Book	Bling your Bottle Encourage people to Drink Poster Creation Recognising Signs of Thirst Activity Healthy Drinks Sorting Drinking Tracker Chart Story Book Rewards

2.1.5 - Suitability of Resources for EYFS and KS1 Children

This literature review has justified that a series of school-based lessons is required in the HEP for teachers to implement as it can hold a strong level of efficacy and impact to develop knowledge and understanding of health education topics and explored the specific activities that will be included in the version 1 HEP (appendix 2a). However, the researcher needs to ensure the resources are suitable for young children to effectively develop their knowledge and understanding of fluid intake. Within the introduction of this thesis, it explored that different aged children learn differently; supporting the fact that vocabulary used within the HEP needs to be age appropriate. Within the National Health Services' (NHS, 2022) advice for parents and schools on what to include in healthier lunch boxes, the form of information delivery is two-folded. It uses simple vocabulary that is free of complex jargon, as well as pictures to support the advice on what to include in lunch boxes that also supports the active consumption of healthy lunches. Morrison et al., (2019), previously discussed that due to a possible lacking level of health understanding in parents and children, simplistic information delivery is useful to convey potentially complex messages related to one's health. As such, during the creation of the version 1 HEP for EYFS and KS1 children, the researcher will be intentional with the vocabulary he utilises and avoids complex words without explanation. For example, within the whiteboard animation videos which will be used as the core source of concrete learning information delivery (discussed in 2.1.8), the word 'fluid', 'thirst', 'hydration' and 'dehydration' will be explained and defined so all ages of viewers can understand. Additionally, the researcher will support the teaching and guidance within the provided resources with pictures, as this will facilitate learning that is also visual in nature (Kolb, 1984), to further embed one of the learning styles.

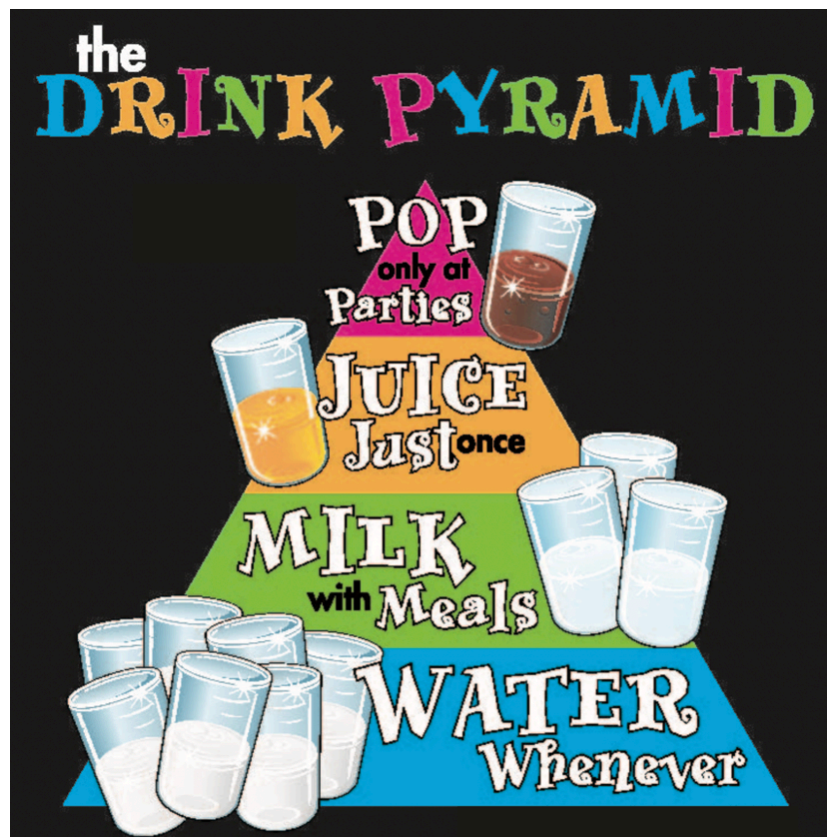
2.1.6 - Visual Prompts and Environmental Adaptations

In addition to the series of lessons in the HEP, there are other types of resources that could be created in the package of hydration resources (Howells and Coppinger, 2020). One of these were visual prompts and environmental adaptations in the classroom. Drawing back to the recommendations for schools and teachers made by Howells and Coppinger (2020) visual prompts and informational posters, the setting of rewards and challenges and the use of charts to track water intake, all allude to school-based environmental adaptations and visual prompts to aid children and teachers in developing knowledge and understanding to consume adequate levels of fluid. In previously supporting these points, Sichieri et al.,'s (2009) project was to explore if the implementation of a new healthy lifestyle educational programme could impact the children's consumption of sugar-sweetened beverages (SSBs). Although, the study was conducted in South America where the climate is usually considerably warmer than the UK and hence a greater level of homeostatic consumption could impact findings (Severs, 1979), even if children often may not have an effective thirst response (Benelam, 2010; Shaw; 2010), due to this difference in weather conditions from the UK, it only reinforces the need for further fluid intervention to be examined. Over a seven-month period, Sichieri et al., (2009) also suspended posters promoting water consumption in educational settings, whereby this contributed to the overall effect of their package of health education resources (23% reduction of SSBs and increase of water intake). Hence, supporting the inclusion of a visual resource within the creation of the version 1 HEP to place within the school environment.

Within Sichieri et al.'s (2009) project, even though they did not publish every resource they implemented, one of the most significant visual prompts used was the "drinks pyramid", which

was a poster with a triangle of four tiers: starting at the bottom with ‘water whenever’, then ‘milk with meals’, followed by ‘juice just once’ and finally ‘pop only at parties’ (figure 3). Whereby, the aim of the resource was to convey the message of what constitutes a healthy beverage and how often the various fluid types should be consumed to promote a healthy lifestyle. This therefore supported the development of more nuanced knowledge and understanding through visual information (Kolb, 1984), that unhealthy choices are fine in moderation, but not ideal for consumption on a regular basis, which was guidance later implemented by the NHS (NHS Choices, 2011). As such, providing advice for the researcher within the “what children need to drink” learning criteria, which will be used in the created lesson to teach children about what they need to drink during the healthy drinks sorting activity (discussed in 2.1.4) (appendix 2a).

Figure 3: Sichert et al.’s (2009) Drinks Pyramid



To explore what visual/environmental resource can be included in the version 1 HEP, Ephgrave and Bilton (2012) discussed in their comprehensive overview of a reception year in action in the UK, that younger children benefit from tactile displays in addition to visual displays as supported by Sichieri et al., (2009). However, as younger children could have under-developed phonetical decoding skills (British Association for Early Childhood Education, (BAECE), 2012), it may be challenging for them to interpret and comprehend a visual poster's text, such as the drinks pyramid by Sichieri et al., (2009), even though they should understand the concept if the information was spoken to them. Ephgrave and Bilton (2012) discuss this in the context of younger children physically moving their name on a visual display board to signify their attendance at school, that is easily accessible to them. Mundiri, Baharun and Hamimah (2022) suggest this is useful to allow children to develop a familiar daily routine which prepares them for learning as it sub-consciously signals the start of the school day. As such, this thesis will apply that advice posited by Ephgrave and Bilton (2012) but in a fluid intake context, as this could not only signal the start of the school day but support fluid consumption at school by creating the 'drinking tracker chart' (appendix 2a).

Williamson and Howells (2019) and Howells and Coppinger (2020), both recommended that children should be able to visually track the volume of fluids they consume while at school to support them to drink an adequate amount of fluid, and to know when they have had enough, and support teachers to know who and who has not consumed an adequate volume of fluid. This could also add an element of audible social communication for the children and teachers to know when each other is drinking enough and for children and teachers to remind each other to consume fluids as they will visually be able to see, supporting Kolb's (1984) learning theory. Furthermore, a

dedicated lesson on how to support each other to drink fluid is required to scaffold this learning through concrete experience and abstract conceptualisation (discussed in 2.1.4) (Kolb, 1984). Therefore, the introduction of a multi-purpose drinking tracker chart will be created in the version 1 HEP. For example, the drinking tracker chart will be in a shape of a water bottle, where children can move their name at the start of the day to signal the start of learning and provide a subtle nudge in prompting healthy drinking behaviours at regular intervals during the day; scaffolding teachers' fluid consumption support guidance (as discussed in 2.1.1). Moreover, this could incorporate a level of competition for children to encourage the uptake of effective drinking practices, which Pyszczynski, Greenberg and Solomon (1997) previously suggested is useful for encouraging the action of habits that influence health. As such, version 1 of the drinking tracker chart is supplied in appendix 2a and will be presented to teachers in the study 1 interviews to inform initial modification (step 2, figure 1).

2.1.7 - Setting of Rewards and Challenges

In addition to the creation of visual prompts and environmental adaptations in the version 1 HEP, the use of rewards could also be a useful commodity to encourage children in consuming enough water at school (Howells and Coppinger, 2020). As mentioned earlier, children spend half their waking hours whilst at school (Owens et al., 2000), this thereby allows the researcher to conclude that children should in theory consume at least half of their daily consumption target at school. As children aged 4-8 years of age need 1.1-1.3L of water a day (WHO, 2004) for the benefit of good health, and as children are expected to drink some of this recommended amount during their lunchbreak, this approximately equates to the recommendation that children need to drink at least one 500ml bottle of water during the school day, in which they could receive a sticker for drinking

at-least this quantity as a reward. This process could be viewed as somewhat counterproductive if the later work by Wilders and Levy (2021) were to be considered where they researched rewarding transition within milestones within a child's education. They found that some children only responded as required due to the reward of a sticker and stopped at the end of the data collection protocol. In a diet teaching and learning context, similar findings were found when incentivising children to eat healthy foods 3-months after the intervention protocol was implemented by Cooke et al., (2011), with 422 English school children aged 4-6-years-old. As such, this could result in a short-term impact of new water intake habits being created, where once the implementation of sticker accumulation is finished then old fluid intake habits could return. That said, as Howells (2012) is an advocate that children should start the creation of healthy habits in the primary school setting, the act of providing a sticker for adequate consumption during the timeframe of the HEPs intervention protocol could therefore result in the formation of healthier fluid intake habits that could be initially scaffolded by the stickers. With the intention to subsequently continue the healthier fluid intake habits autonomously when the stickers are removed, once the children have the adequate knowledge and understanding of the healthy fluid intake habits which the HEP should develop. Moreover, this could aid in establishing an opinion of liking to drink water, which Van Belzen, Postma and Boesveldt (2017) support impacts the adequate consumption of fluids, providing an additive benefit. By providing a sticker to reward adequate consumption at school during the delivery of the HEP, this therefore will meet the final step of Kolb's (1984) learning process, whereby children will actively experiment with the knowledge they will learn about how much they need to drink; to consequently reward the action of that new knowledge and understanding. As such, to trial whether stickers have an impact on adequate consumption levels will be actioned, whereby to analyse whether drinking habits continue without the accrual of

stickers, as part of a follow-up data collection period, will need to be examined. The design of a water bottle sticker is supplied within version 1 of the HEP (appendix 2a).

2.1.8 - Cartoons and Whiteboard Animation Videos

To further substantiate the content of school-based lessons, other resources that could be created in the version 1 HEP included cartoons and videos. Kaufman-Shriqui et al., (2016) promoted the idea that cartoons were useful in consolidating health education that is taught through classroom-based activities, including the importance of drinking water, because they included such resources within their health education intervention, although they do not explicitly say what or why. However, to explore why cartoons could be a useful in the HEP is worthwhile. Eker and Karadeniz (2014) later measured the effects of cartoons on educational practice with 56 fourth grade students in Turkey (8-9-years-old). Within the study's intervention group, they were shown an animated cartoon video clip in a social studies lesson, where they were then asked to draw a picture linked to what they watched. The trial spanned across six weeks, whereby Eker and Karadeniz (2014) measured the cartoon resource using achievement attainment and information retention assessments on a weekly basis. Directly after completing the tasks, the intervention group averaged 68% in the attainment tests opposed to 57% in the control group (who received a traditional approach of teacher directed delivery). Two and a half weeks later following the delivery of the intervention, the intervention group scored 65% on average, opposed to 53% for the control. Indicating not only a higher level of knowledge and understanding retention due to the cartoon, but also a slightly greater level of information retention over the medium term when compared to directly after the intervention protocol (3% loss opposed to 4% loss in the control

group). Concluding that cartoons and videos could be useful to develop and retain knowledge and understanding of fluid intake within the created version 1 HEP.

In an early childhood context, Aziza and Syafei (2018) qualitatively explored the impact on the range of vocabulary development by utilising motion-picture cartoons with the series ‘Shawn the Train’. The series was aimed at children aged 5-9 years of age, thereby encapsulates the age range of the young children in this thesis. Aziza and Syafei’s (2018) believed that due to the prepared nature of the resource it provided teachers with the ability to pause and replay sections of the cartoons, which allowed for an enriched level of learning to occur due to a practitioner’s capacity to observe, question and assess their pupils’ learning, and thereby correct any misconceptions in real-time. However, the main concern expressed by Aziza and Syafei (2018), was the length of children’s attention spans and their ability to physically watch created media and process the information presented without becoming distracted. Therefore, as part of the created videos in the version 1 HEP, it is important to consider how long the created outputs should be to ensure all the young children physically watch the videos to maximise knowledge and understanding development gain. This is be explored below.

Bartan (2020) explored the topic of children’s attention spans with 72 pre-school teachers and 40 pre-school children in Turkey when evaluating what storytelling pedagogic method capsulated their young pupil’s attention the longest. In the first stage of the study, the teachers answered questions to ascertain which was the most used teaching style, to ultimately provide an empirical length of time their pupils objectively interacted with them. The four most frequently employed teaching methods were: (1) reading from a story book, (2) finger puppets, (3) story cards and (4)

storytelling using a computer. Following this, 40 children were subsequently individually monitored after a video recording captured their teacher implementing the four methods whilst the children listened. The time recorded would stop when each child visibly became distracted by diverting their attention away from the teacher, and then mean averaged. The mean results of attention spans from the 40 young children were:

- Story cards (160 seconds / 2 minutes and 40 seconds)
- Finger puppets (174 seconds / 2 minutes and 54 seconds).
- Reading from a story book (186 seconds / 3 minutes and 6 seconds).
- Storytelling using the computer (233 seconds / 3 minutes and 53 seconds).

This indicates that using a computer was nearly 20% more effective than the 2nd most used teaching method (reading from a story book). Supporting a notion that a technological and visual cartoon resource could be a beneficial addition to the HEP. However, the videos must try and be no longer than 3 minutes and 53 seconds of teaching content to ensure the young children in this thesis' study(s) do not become distracted.

This literature review has explored the potential benefits of implementing creative technologies in the HEP. However, this thesis has not considered the efficacy of a visual cartoon-based resource in a health education context, and how the resource could logistically be produced and presented in the HEP. Health educational videos in principle could result in similar yields of knowledge and understanding development than topics such as vocabulary development or storytelling, as both paradigms are attempting to teach children new learning through visual and audible means (Kolb,

1984). Vocabulary (and the correct contextual use of it) is a useful domain to develop when teaching novel concepts to children as this can be viewed as proof that learning has occurred (Joshi, 2005). Consequently, when assessing the efficacy and impact of the videos, it could be useful to evaluate the accumulation of new fluid intake vocabulary, such as use of ‘hydration’ or ‘dehydration’. Supporting this deduction, Powell (2019) fashioned a health preventative video aimed to enhance nutritional understanding for school age children in San Francisco (USA). The study asked over 600 random attendees of a clinic in a health and nutrition multiple-choice questionnaire, before and after watching an informational health education video. Before the video was presented, the whole sample answered 62.6% of the questions correctly. Following the conclusion of video content there was nearly a 22% increase of correct answers (84.4%) in learner knowledge. Suggesting that there is indeed some level of efficacy and impact in using videos relating to health education. As such, because the use of videos within the HEP will not be reliant on individual teachers to personally learn the taught information prior to delivery (and only facilitate the content in the school-based lessons), this will ensure that there is a strong level of consistency of information delivery that the videos will be trying to convey. Therefore, videos are likely be a useful addition to the overall package of hydration resources to spark the beginning learning processes (concrete learning, reflective observation, and abstract conceptualisation (Kolb, 1984)), to subsequently scaffold this learning through secondary learning activities, environmental adaptations and rewards (table 1). As such, videos will be included in the version 1 HEP. As to what type of videos will be included will be explored below.

Although videos will be included in the version 1 HEP, the researcher does not possess technological skills to personally create a cartoon or moving visual creative output to design a

professional video from scratch, meaning the researcher must seek an alternative approach. Previously, Dr Phil Hurst (Switch The Play, 2020), from Canterbury Christ Church University, has already set a precedent for disseminating information to an audience where he utilised a whiteboard animation video (WAV) to feedback the outcomes of his doctoral study. Air, Oakland and Walters (2015, p. 25) suggest, in their advice on how to develop such a resource, that WAVs can be produced on reduced funds and with limited creative skills but with high information delivery development and retention yield. Thus, the inclusion of a WAV series should be explored.

WAVs were popularised by Dr Richard Wiseman (2012) in his comparison of WAVs and talking head videos. He states that WAVs allow the viewer to listen to the narrator whilst watching a digitised pen, draw what is being verbally discussed. Whereas a talking head video eludes to the narrator reading aloud from a script, in a presentation-style method of delivery in front of a camera. In turn, WAVs agree with the learning styles and processes theory this thesis is basing the development of resources (Kolb, 1984), as visual, kinaesthetic and auditory learners can benefit (table 1). Wiseman (2012) produced two videos with the same scripted content on a behavioural-psychological theory he previously authored (Wiseman, 2011), for a study concerning over 2000 adults to compare efficacy and impact of the two video types. Wiseman (2012) subsequently separated the sample into two cohorts, one group was shown the talking head video and the other, the WAV. He found that the WAV group displayed a 15% increase in recall accuracy, and 33% reported the WAVs were more entertaining/informative when compared to the talking head group, after watching of the video. This could be due to the ‘as if’ principle subscribed earlier by Wiseman (2011), where he argues that if the human brain is to decide it wants to learn a particular topic, it will decide on whether the content is useful within the first 59 seconds. Therefore, an animated

whiteboard video, with the increased interactivity that comes with it, could help with this process of the sub-conscious brain in deciding to continue listening and processing taught information within the sessions in the HEP. Additionally, this is supported by Air, Oakland and Walters (2015, p. 23) where they discuss that a WAV stimulates learner anticipation which continually and non-verbally asks the viewer what is being drawn/discussed next. This repetitive flow of whiteboard animations can create surprise and incentives the brain to continue engaging in delivered content. Therefore, due to the creative aptitude and financial parameters this PhD research finds itself in, for the benefit of the proposed HEP, whiteboard animation videos will be utilised to deliver the core information related to fluid intake. A trial video will be created in the version 1 HEP, prior to the study 1 interviews, which can be found with the link at the end of this section.

This section has explored possible efficacy and impact of including WAVs in the HEP, however, what does an educational video contain? Brame (2016) outlined three core paradigms to develop an effective educational video: cognitive load, learner engagement and active learning. De Jong (2009) describe that all videos which are designed to teach any topic, must start with the creator signalling important information to position the subsequent content into the working memory. This in laymen's terminology is where the brain stores all information for filing, which then consequently either transitions into the long-term memory for later recall or is shelved and forgotten about (Gathercole and Alloway, 2006). This is pertinent if Wiseman's (2011) finding is correct, which describes that the human brain decides to concentrate on a new topic within 59 seconds. Brame (2016) continues to suggest the weeding/filtering process (learner engagement) follows this. The filtering process is where the video creator ensures the learner is not saturated with too much new information, so that only relevant core knowledge is conveyed during the video

to ensure learner engagement is retained. If a video contains too much core information, then it is important to consider segmenting the content by facilitating multiple videos. This is particularly important when synthesising the later findings of Bartan (2020), which explored pre-school children's attention spans only lasting 3 minutes and 53 seconds when engaging with computerised learning content. Hence, this study should segment its WAVs into a series. Consequently, the content of each video should align with learning outcomes stated at the beginning of 2.1.4.

Moreover, Guo et al., (2014) state that applying a plenary which includes the core collection of statements and questions that the educational video was trying to teach is beneficial to consolidate learning. Hence, in the development of the version 1 HEPs WAVs, in conjunction with the shorter videos segmented into a series, the inclusion of a plenary should be actioned at the end of each session's video; in addition to supplying an overall plenary to the HEP in the final session (the quiz). As such, one WAV will be developed in version 1 of the HEP, with the remainder of the series' content presented to teachers in the study 1 interviews through the writing of scripts for initial modification (appendix 2a) ([YouTube Link](#)).

2.1.9 – Songs

To further compliment the efficacy and impact of implementing school-based lessons, environmental adaptations, rewards and WAVs; songs are also an integral part of young children's learning Ephgrave and Bilton (2012). Drawing back to Kaufman-Shriqui et al., (2016) work, they also included songs to sing within their package of health educational resources. This was viewed as being wholly additive to their teaching and learning experience for the children and did not hinder accumulation of new health knowledge in their intervention. Furthermore, songs are useful for young children to assimilate the generation of new habits and routines as children can

participate in communal learning together, especially in the formation of new vocabulary (Nasution and Manurung, 2023). Moreover, within an article for the Journal of Childhood Studies, Mullen (2017) would subscribe to this idea, suggesting that teachers' facilitating songs supports the development of gross and fine motor skills as children are able to act out the lyrics of the songs. Moreover, Kolodziejski et al.'s (2015), previously supported how music is a useful part of children's learning development as it is a fundamental part of children's play because it stimulates multiple senses to be able to effectively engage with the music. Hence, by providing a water song in the HEP that sings lyrics relating to fluid intake, the children could mimic the drinking of water and support the development of new healthy habits through this creative medium.

Additionally, the singing and action of the lyrics could aid both auditory and kinaesthetic learners (Kolb, 1984) as children will be able to hear and act out the song. As such, because the development of fluid specific vocabulary (to understand why they need to drink) and gross motor skills to physically drink adequately (to understand how much to drink) are two of the intended outcomes of the delivery of the HEP, songs could be a useful to include within HEP. A dedicated water song has been produced (Wheeler and Mama G, 2021), that is intended to teach children about effective drinking practices, when to drink and why children need to drink; whereby, one of the core lyrics convey the message of "*drink at home and drink it when you play*", therefore supporting guidance within the HEP. To enable a strong research base to formulate the lyrics, Dr Kristy Howells was consulted to ensure that all lyrics are helpful to support children to drink effectively. As such, the permission to use the water song has been requested from the song writers (which was agreed), and included within the version 1 HEP ([Spotify Link](#))

2.1.10 - Stories

As previously discussed in this thesis' justification for using cartoons and videos, storytelling from a book could also be a useful way to further develop knowledge and understanding of fluid intake, therefore the creation of a story should be considered in the version 1 HEP. Bartan (2020) found that reading from a book captivated the young children's attention spans for an average of 186 seconds / 3 minutes and 6 seconds. This was the 2nd highest level of average attention span in their study, justifying the production of a story due to the function for children to listen effectively to their teacher, to aid in the development of knowledge and understanding of fluid intake. A teacher reading from a book inherently utilises both visual and audible senses (Kolb, 1984), as well as facilitating stop and pause points for teachers to assess learning through questioning, which captivates and encourages learner conversations to enhance the learning experience (Vygotsky, 1980). Therefore, the researcher penned an outline for a children's book titled "The Extremely Thirsty Cricketer" (appendix 2a) based off his first children's publication "The Extremely Greedy Cricketer" (Williamson, 2021). The outline of "The Extremely Thirsty Cricketer" book can be found in appendix 2a and will be presented to the study 1 teachers to ascertain their comments before further progression of this resource's development will be actioned.

2.1.11 - Creation Summary: What the version 1 HEP will look like?

This literature review has examined the findings from previous general health education and fluid intake specific education intervention studies that have been conducted in other countries. This was necessary as the last fluid specific fluid intake study in the UK was 17 years ago (Kaushik et al., 2007), and hence possessed little precedent on what fluid intake specific resources to include

in the version 1 HEP. The following section will summarise the content that will be included in the version 1 HEP (appendix 2a).

The HEP will feature a series of taught school lessons delivered by teaching professionals. This method was outlined as an effective approach to develop knowledge and understanding of health education topics and hence is a proactive foundation in which to base the HEP. These lessons should include:

- Why we need to drink fluids and how much we need to drink?
- The signs of dehydration and when we need to drink?
- How can we support each other to drink?
- Healthy and non-healthy fluids.
- Summary of learning lesson.

As videos are useful for viewer engagement (Bartan, 2020) and specifically WAVs; for information recall/enjoyment (Wiseman, 2012), a series of short WAVs will be created and used alongside the taught lessons in schools to lead the taught material. Although only the first video will be created, as part of the version 1 HEP, prior to the completion of the study 1 teacher interviews.

Furthermore, as brand recognition and mascots are useful for increasing activity levels in the UK (Foad et al., 2015), branding the HEP could be a useful tool to provide a greater level of perceived legitimacy for children, teachers, and schools. As such, the creation of a logo (Water Week –

pending discussion within 2.2.1) and a mascot (Water Wizard) will be created in the version 1 HEP and presented to teachers in the study 1 interviews.

Moreover, environmental adaptations can alter children's healthy behaviours Sichieri et al., (2009). Consequently, a drinking tracker chart (in the shape of the water bottle) will be created in the version 1 HEP for the children to physically manipulate at the beginning of the school day to signify that they have a full water bottle, and move down to the bottom once consumed, this will also aid teachers to support consumption of children who are under-consuming. These resources, coupled with providing a sticker reward for drinking this quantity of fluid, and a selection of activities to coincide with each lesson (discussed in 2.1.4), will thereby complete the version 1 HEP resources. The created drinking tracker chart, version 1 activities and sticker, prior to the completion of the study 1 teacher interviews is supplied in appendix 2a.

To ensure teachers are equipped to deliver the HEP sessions, the researcher will provide a staff development session explaining the content of the hydration education resources before they implement the prepared resources with their respective cohorts, as 83% of Change4Life providers felt that was useful to their successful delivery (Foad et al., 2015). As such, in addition to a researcher led CPD session, the HEP should provide pedagogic and behavioural change advice for teachers within a teacher's guide. The advice should include:

- Regularly encourage children to drink from their water bottles.
- Provide guidance for why drinking should be encouraged during carpet time, child-initiated activities and directly after breaks in the day, such as playtime and lunchtime due to the likelihood of children participating in physical activity.

- Teacher led modelling of drinking behaviours to be hydrated alongside the children.

The created version 1 HEP (prior to the study 1 teacher interviews) has been supplied in appendix 2a.

2.2 – Implementation

This thesis has explored why a HEP is required and what should be created in version 1 of the hydration resources. The researcher will now consider how the HEP could be delivered and implemented by teachers, to subsequently facilitate an assessment of efficacy and impact.

2.2.1 – How Could the HEP be Logistically Implemented in Schools?

To help inform the answer to research question 1, this literature review should consider how the HEP could be logistically implemented in schools. As previously mentioned, due to the relative dearth of health education interventions within the UK and internationally, the researcher has been necessitated to use somewhat dated material within his review of literature. Muckelbauer et al., (2009) implied that a shorter implementation period is a logistically simpler method for teachers to deliver due to the succinct nature of the educational content that is delivered to children. Moreover, because the implementation of succinct general health education interventions has been previously used in UK schools (such as the Bike to School Week (DfE, 2010)), this is a reasonable grounding for this thesis to consider a shorter and more condensed HEP delivery.

To devise several community-wide initiatives to encourage children to travel to school without the use of motorised transport, the DfE (2010) worked in collaboration with the Department for

Transport (DOT) to develop programmes such as ‘Walk to School Week, ‘Walk on Wednesdays’ and later, ‘Bike to School Week’ (DfE, 2010). The primary aims for such voluntary programmes were to incentivise children to (1) exercise during their commute to school and (2), reduce emissions from carbon combustion engines. Subsequently, the DfE (2010) reported that there was a significant group of the 139 participating schools in the ‘Walk to School Week’ who reported to have reduced vehicle use (9% increase of children walking to school compared to non-participating schools), suggesting that a week-long HEP implementation period is likely to be useful. Supporting that statement, the one-off ‘Walk to School Week’ initiative was the most utilised scheme (139 schools), with the ‘Walk on Wednesdays’ initiative (78 schools) being the second most used. Implying that a week-long duration of implementation was viewed by schools as more logistically useful to incite behaviour change than a more staggered approach of ‘one day a week’ due to more schools voluntarily selecting a week-long implementation period, as opposed to the one-day-a-week programme. This is supported by the DfE (2010) who reported that there was a 69% adherence to the week-long Walk to School event, compared to 59% rate of full-participation in the staggered one-day-a-week; ‘Walk on Wednesday’ scheme, possibly due to the longer overall time to complete delivery. Therefore, the findings by the DfE (2010) indicates a preference for a one-off week-long health education scheme, because of the 10% difference of adherence between the Walk to School Week and Walk on Wednesday schemes and a greater level of schools voluntarily selecting the shorter implementation period. Consequently, as the HEP will be trialled within UK schools, a one-off week-long delivery of the HEP should be the frequency of delivery proposed in the version 1 HEP, whereby the logo will be created to reflect a ‘Water Week’ in the teacher’s guide (appendix 2a).

From a diet health education intervention perspective, Van Cauwenberghe et al., (2010) rationalised in their systematic review of health interventional studies to increase fruit and vegetable intake, that multicomponent intervention studies yielded a greater impact on fruit and vegetable consumption as opposed to single component educational interventions. Within their analysis of multicomponent interventional studies, two of the studies they evaluated implemented interventions that lasted two-weeks or less. Thus, providing another justification to explore implementation of the HEP in a one-week, short delivery block. One of the studies evaluated by Van Cauwenberghe et al., (2010), was aimed to impact healthy eating behaviours through peer modelling and reward-based intervention (Horne et al., 2004). The study by Horne et al., (2004) was conducted over 16 days and sampled 749 children (aged 5-11 years of age), across English and Welsh primary schools, to assess the children's knowledge and understanding of fruit and vegetable intake, before, after and intermittently after the implementation of the intervention. The participants were presented with a video series designed by the researchers, with characters who enjoyed eating fruit and vegetables (The Food Dudes), to consequently model healthy eating and reward the children who consumed more healthy foods. Prior to the study, 38% of the children reported that only 4% of their diets contained fruit. Following the intervention, the same percentage of children (38%) who previously reported 4% of the diets contained fruit, reported that 68% of their diet included fruit post-intervention. Thereby, the shorter delivery block of lessons was likely to be significantly instrumental in influencing their knowledge and understanding of the importance of eating healthy foods and altering dietary habits. Most notably, in the four-month follow-up data collection period, it was found that the same children who had reported that only 4% of their diets included fruit prior to the intervention, reported that 48% of their diets still contained fruit. Indicating that the intervention, which was initially delivered in

one-block, holds educational value to assist in increasing children's knowledge of healthy eating and altering healthy habits in the medium-term. As such, the delivery of health interventions in one block as implemented in the study by Horne et al., (2004) provides further evidence to implement a similar trial phase to subsequently assess the efficacy and impact of the HEP on the development of knowledge and understanding of fluid intake. This supports the conclusion that not only is a short-delivery schedule historically beneficial in altering healthy habits (Horne et al., 2004), but schools are also possibly more likely to deliver the full breadth of the prepared material if delivered over a shorter timeframe (DfE, 2010). As such, although further data will need to be collected to justify a 'Water Week' within the study 1 teacher interviews, it appears that a one-off 'Water Week' is a logistically and academically beneficial method of delivery and will be the mode of HEP delivery unless further data suggests a longer duration of intervention delivery is more advantageous in the view of the participating study 1 teachers.

2.2.2 - What barriers are there to the implementation of the HEP intervention?

The literature suggests that the HEP should be delivered via a water week, however there is a need to address as to whether there are any barriers to this implementation to consequently inform how they could be overcome, to ensure the HEP is effectively implemented and achieve the aims of the research. This section will investigate what potential difficulties could arise during the implementation of the HEP and offer proactive solutions on how these could be circumnavigated.

2.2.3 - Barriers for Teachers to Support Children's Knowledge and Understanding of Fluid Intake

As teachers need to deliver the content in the HEP, is it therefore essential to explore if they could have any barriers to their implementation of the fluid intake resources. As previously discussed, Howells and Coppinger (2020) have produced the most up to date findings following their far-reaching international sample (including the UK) that captured teachers' perceptions of children's fluid intake. To summarise, only 11% of the sample of 271 teachers self-reported to actively encourage fluid intake during school time, with 45% reporting not to support fluid intake at all. Indicating a probable reluctance from many teachers to permit the consumption of fluids during times when their pupils are supposed to be focused on a practitioner's teaching input during school time. Therefore, teachers themselves may present a barrier to the implementation of the HEP, as this could disrupt the status quo of their current teaching pedagogies.

So why do teachers have an aversion to permitting drinking during lesson time and are likely less than optimal in their school time fluid intake support? This qualitative perception of drinking behaviours in the classroom was previously explored by Johnston Molloy et al., (2008); whereby, they found that teachers (in Ireland) are unwilling to permit pupils regular access to water during teaching time as this might create disruptions in the classroom of:

- Children drinking when the teacher is delivering taught content.
- Filling up their water bottle.
- Leaving the class to go to the toilet due to the increased urination that naturally follows with added fluid consumption (WHO, 2004).

As such, based on Johnston Molloy et al.'s (2008) findings, if some teachers already possess pre-conceived notions in relation to children's fluid intake in the classroom, this could be why there could be a barrier to teachers' possible acceptance to deliver the resources in the HEP.

As explored previously, it is recommended that a researcher can deliver a CPD session to teach practitioners the proposed usefulness of the resources and general content of health educational resources (Howells and Coppinger, 2020), as well as provide a teacher's guide. This strategy could be a beneficial method to contest any pre-conceived ideas in relation to fluid consumption that teaching professionals may possess, as the researcher is able to answer questions and attempt to quash any misconceptions teachers may possess. As such, by teachers learning to deliver the simplified age-appropriate content of the HEP resources, this could enable them to realise the benefits of learning to be hydrated, to consequently consume adequate fluids themselves and effectively deliver the ambiguous curriculum area (DfE, 2019; 2021). Moreover, to overcome any potential barriers linked to the implementation of the HEP, it was previously recommended that the HEP resources should be trialled during a 'Water Week'. This shorter phase may be welcomed by practitioners, as schools will only have to find one week in the timetable to deliver all the prepared content.

Another potential way of reducing barriers for teachers is to promote the HEP as an effective continual professional development (CPD) opportunity for trainee teachers. Research conducted by Speller et al., (2010) comprised of 15 initial teacher training (ITT) providers, which set out to impart health promotion knowledge and understanding. The study recommended that for all teachers to be future effective health promoters, it is vital for them to be educated early in their

initial teacher training to ensure the long-term sustainability of health education in schools. Particularly, as this demographic can incorporate the promotion of healthy habits at the start of their teaching career whilst learning about what pedagogic practices they wish to employ, which will subsequently influence their own style of delivery and professional identity in the future. Furthermore, Speller et al., (2010) insists that developing knowledge and understanding about health education to new teachers during ITT subsequently filters down to their pupils and other established teaching professionals once they have qualified. This theoretical process suggests that children develop and understand healthy habits from an early age when they are surrounded with new knowledge development opportunities. Consequently, according to Speller (2010), the impact of ITT interventions may positively encourage some children after compulsory schooling to progress onto their own higher education/ITT programmes which continues the health education cycle. Nevertheless, enhanced health education interventions for ITT students to educate children about the importance of fluid intake is beyond the scope of this literature review. However, the resources in the HEP could potentially alter some of the perceptions and pre-conceived ideas of established teachers to promote fluid intake in their lessons. Additionally, the health education statutory guidance (DfE, 2019) requires knowledge of healthy diets to be included in children's health education, therefore all teachers will have to implement this into their teaching. As such, due to this potential for professional development on the topic of fluid intake and ambiguous necessity to deliver fluid intake as part of a healthy diet (DfE, 2019), the researcher should ensure he provides a CPD session for teachers (before water week delivery), to disseminate the benefits of children knowing and understanding about fluid intake, the benefits of teachers supporting their pupils in this, as well as how to logistically deliver the resources in the HEP.

2.2.4 - Barriers for Children to Engage with the HEP: How can these Interventions, Resources and Strategies be differentiated to meet the needs for specific learning disabilities?

As children are the target audience for the teachers' implementation of the HEP, it is also important to explore what barriers children may encounter when accessing the teaching and learning of the HEP resources. To enable an inclusive and accessible package of hydration resources, the researcher should consider the requirements of a diverse range of learning needs, as inherently this is one barrier to the children developing knowledge and understanding of fluid intake. As this proposed HEP is planned to be delivered by teachers in state-school settings, all the resources in the HEP must adhere to statutory teaching standards as established by the DfE (2011) in the teacher's standards document. As such, the DfE (2011, p.11) requires teachers' to "*adapt teaching to respond to the strengths and needs of all pupils*". As teachers are assessed against these statutory standards for the entirety of their career, this consequently mandates teachers to modify their pedagogic strategies and lesson activities to meet a diverse range of learning needs, including higher and lower academically attaining children. As such, by the researcher presenting general ideas for teachers to adapt the resources within the HEP through this literature review, this provides an opportunity for the teachers to individually differentiate and modify resources as required to meet the bespoke needs of their learners. Wall (2011) discussed how younger children might display a series of typical characteristics associated with Special Educational Need and Disability (SEND), by the time they reach their first year of schooling and outlined how some of these needs can be met through effective teaching practices. That said, due to the volume of perpetually diverging educational needs nationally (Office for National Statistics (ONS), 2021), it is not feasible for the researcher to provide pedagogical recommendations for every educational need. However, the inclusion of differentiation guidance for the most observed needs could assist

teachers in adapting the resources for their own individual professional circumstances. Thereby, the researcher will refer to a recent report by the ONS (2021) to establish how the HEP can be adapted to meet a range of the more commonly found learning needs. For instance, for younger children who are only beginning to develop phonetic awareness (EYFS and KS1), the ONS (2021) mainly refer to speech and language difficulties and Autism Spectrum Disorder (ASD) being the most common SEND. Furthermore, whilst children are developing a sense of phonetic awareness, it is likely that many children will require reading and writing support when developing resources intended to impact fluid intake knowledge and understanding of the specific vocabulary associated with the topic. Moreover, as the British Dyslexia Association (BDA, 2021) acknowledge that most children are not assessed for dyslexia until the age of seven (which is the upper limit of the study 3 age range), the researcher will therefore follow the advice from the BDA (2021) and ensure the HEP supports all learners with an underdeveloped phonetical awareness. Thereby, the researcher should aim to provide an enriched set of visual and pictorial resources which was outlined in a previous section (2.1.5).

In addition, due to the South-East of England's culturally and ethnically diverse population (Office for National Statistics, 2020), which has a substantial demographic of children whose first spoken language is not English (English as an additional language / EAL); this gives cause to examine how the HEP can be designed to support children's language barriers. Primarily because the HEP will be written and spoken in the English language this may present a possible barrier for children to understand the vocabulary used. Furthermore, because the ONS (2021) identify that only 15.8% of EAL children in the UK who may have a SEND are formally diagnosed with a specific learning need, this is far lower than the 83.9% of children who do have English as their first language.

Consequently, this means that when the researcher considers how he can make suggestions on how to adapt the HEP to meet the needs of children with SEND, it is possible that a large proportion of children who have English as an additional language could ‘fall through the net’ in having their learning needs met. As such, consideration on how to adapt the HEP for children who are EAL will be made.

2.2.5 – Learning Barrier: English as an Additional Language (EAL)

As, 33% of all children in the South-East (location of this thesis’ data collection) are either new to speaking English or are, at best, developing competence; hence are not wholly fluent in their verbal delivery and comprehension of the English language (DfE, 2020), this is one barrier to HEP implementation that the researcher should consider. Currently, there is no formal policy on how to support children who have English as an Additional Language (EAL) (Hutchinson, 2018), although this does not mean that the researcher cannot explore how he can ensure EAL children can access the content of the HEP.

One method of overcoming a language comprehension barrier is inherently to translate the text and dub the audio of the videos into different languages. However, as there is magnitude of varying spoken languages in the UK (ONS, 2020); it is therefore not feasible for the researcher to translate the resources into every spoken language, due to cost and time-limiting factors, therefore other strategies need to be considered. To aid in EAL children’s comprehension of resources in the HEP, there should be considerations included to aid in children’s learning and understanding of fluid specific vocabulary. In support of this, Murphy and Unthiah (2015) conducted a literature review on the topic of how English language development can be supported by teaching practitioners’,

whereby they analysed 29 papers on how to effectively engage EAL children in literacy and language development of topics that are taught in a secondary or tertiary language. Murphy and Unthiah (2015) acknowledge that children learn more effectively when practitioners slow down their speech, use simplified vocabulary, shorter sentences and incorporate non-verbal actions. This is especially important when delivering instructions, as this allows for easier comprehension, due to multiple styles of learning being catered for, such as visual, auditory and kinaesthetic learners (Kolb, 1984). As such, the researcher should provide guidance in the CPD session that reflects Murphy and Unthiah's (2015) findings to enable effective EAL support, which will also be supplied within the WAV series, whereby the narrator will speak slower, in short sentences and include non-verbal actions through electronically drawing of what is being said.

2.2.6 - Learning Barrier: Speech, Language and Communication Needs

As children with speech, language and communication needs (SLCN) can share similar teaching and learning needs to EAL children, this is also a barrier to HEP implementation the researcher should consider. This is supported by Martin (2005, pp. 96–107), who offered guidance for student teachers to help them understand the challenges experienced by EAL children, new to the English language, therefore the advice can be related to children with SLCN. As such, due to the finding that 10% of young children have a SLCN (DfE and Department for Health and Social Care (DHSC), 2020), it is important to acknowledge this paradigm of educational requirement when designing version 1 of the HEP. Martin (2005) highlighted how teaching can be made inclusive for EAL children, who are likely to incur difficulties assimilating new language and learning, in a comparable way to children with delays in speech and language of their first language. Consequently, the guidance within the HEP for teachers to support EAL children can also relate to children with SLCN. In response to this, teachers need to suitably adapt pedagogic strategies to

meet children's individual language levels, including, speaking, listening, writing and reading comprehension, so that they are provided with learning opportunities to access the curriculum. As such, by accepting Martin's (2005) synopsis, that EAL and SLCN children need similar support to access teaching and learning, the researcher reiterates the following differentiation strategies to help teachers achieve inclusivity when delivering the HEP:

- A need for practitioners to slow down their speech when delivering instructions.
- Use of simplified vocabulary, while incorporating non-verbal actions.
- Talking in shorter sentences for easier comprehension.
 - *These will all be achieved through slow and purposeful speech in the whiteboard animation video series, as well as through an electronic hand drawing of what is described by the video narrator. As well as suggested in the CPD session.*

2.2.7 – Learning Barrier: Autistic Spectrum Disorder (ASD)

Autism Spectrum Disorder (ASD) is the only specific disability that has its own act of parliament to support people with the condition (HM Government, The Autism Act, 2009), therefore the researcher must consider ASD as a possible barrier to HEP implementation. The ONS (2023) claim that there are over 4.5 million pupils within UK mainstream state primary schools; whereby, the National Autistic Society (2021) previously estimated that 112,000 of those pupils are also diagnosed with ASD. As such, it is possible that a proportion of these children with ASD could be taught the content within the HEP, which warrants the researcher to examine how the HEP can support these children to access the teaching and learning of the fluid intake resources. The WHO (2021, para.1) define ASD as:

"Autism spectrum disorders (ASD) are a diverse group of conditions. They are characterised by some degree of difficulty with social interaction and communication. Other characteristics are atypical patterns of activities and behaviours, such as difficulty with transition from one activity to another, a focus on details and unusual reactions to sensations."

Therefore, children with ASD tend to display patterns of behaviour that result in a difficulty to transition effectively from one activity to the next, and need a consistency of routine (WHO, 2021). As such, because the HEP will have multiple activities within the various taught lessons, to meet the needs of children with ASD, the researcher will investigate how the HEP can best provide guidance for teachers to assist with the process of transitioning between activities and altering established fluid intake habits.

The DfE and DHSC (2021) provides statutory guidance for local authorities on how it must support people diagnosed with ASD within the National Autism Strategy (DfE and DHSC, 2021). This legal guidance requires all schools to provide environments and resources for supporting ASD children. These primarily include practitioners prompting daily routines and lesson structure within teaching resources, so that children with ASD can expect and prepare for a transition in routine. Therefore, the guidance during the CPD session should provide teachers with strategies to aid in transition of routine. This will be explored below.

In relation to ASD children's learning and development outcomes, Odom et al., (2010) carried out a scoping review of 24 papers that evaluated a series of pedagogical evidence-based practices for learners with ASD. They concluded that practitioner prompting; scaffolding the logistical structure

of learning activities and placing a time delay on tasks (i.e. providing time for children to transition between activities) are the most beneficial to their academic and developmental attainment, as this meets children's psychological learning needs (Maslow, 1954). As such, due to the proposed structure of the HEP that consists of multiple learning activities under the central themes of fluid intake, it is important to recognise that some children may have barriers in accessing the planned teaching and learning due to problems transitioning from one activity to another and altering established fluid intake habits. Therefore, supplementary guidance in the teacher's guide, and in the CPD session, needs to state verbal encouragement of fluid intake to signal any change of healthy habits is necessary, and the teachers need to give notice of a change of task, activity, or prompt to drink in advance.

In summary, from a personal point of view, the author of this research was diagnosed with ASD in 2018, when he was 24 years old, and consequently it is possible that he shares similar challenges to those outlined by WHO (2021). Thus, this possibly also strengthens the guidance for teachers provided within the HEP CPD session and teacher's guide, in relation to ASD. The suggestions are as follows: -

- There needs to be defined segmentation of tasks and activities, so that children with ASD can comprehend when one task ends and another begins, which also needs to be clearly prompted by the teacher in advance of the transition.
- The HEP should have an understanding that some children may find it difficult to adapt to changing a daily ritual in relation to fluid intake, for example, drinking after periods of exercise if they do not ordinarily do this. Hence, it should be recommended that this is not a compulsory action for those children if this causes distress. However, a greater level of support by teachers, who know their children best, is required to gradually introduce

behaviours in altering daily fluid intake habits, especially if they are not drinking adequate levels of fluid.

- Finally, as children with ASD often have difficulties in recognising non-verbal prompts of physical behaviours and non-verbal directives, teachers need to be reminded to also provide verbal description of their own drinking behaviours when modelling effective consumption practices.

2.3 - Efficacy and Impact

The researcher has addressed why a HEP is required, what resources should be included in the version 1 HEP, how it can be implemented and what barriers there are to that implementation. Consequently, it is important to examine how the researcher can assess efficacy and impact of the implemented HEP to inform the progression of the PhD research.

2.3.1 – How educational efficacy and impact of the HEP can be assessed?

As one core component of this research is to evaluate the efficacy and impact of the created, modified and implemented HEP, it is important to consider what ‘efficacy and impact’ is and how one can assess this in relation to developing knowledge and understanding of fluid intake. Drawing back to the definition within the introduction, Coppinger and Howells (2019) suggest that knowledge and understanding of fluid intake relate to:

- 1) How much children need to drink?
- 2) When children need to drink and the signs of dehydration?
- 3) Why children need to drink?
- 4) What children need to drink?
- 5) Who supports children to drink?

To inform how the researcher can conduct the assessment of efficacy and impact of the HEP, Kaufman-Shriqui et al., (2016) conducted pre/post/follow-up-assessments to assess the impact of their health intervention. This enabled them to gather an understanding of what the children knew prior to delivery, what impact this had on knowledge and understanding when compared to pre-delivery, and what level of knowledge was retained in the medium-term to assess short-term retention. Consequently, when assessing efficacy and impact of the implemented HEP in study 2 and study 3, the researcher should conduct pre-water week, post-water week and a follow-up assessment with the children to assess initial impact and what (if any) knowledge and understanding development has been retained. As Coppinger and Howells (2019) and Williamson and Howells (2019; 2021) have already assessed the current state of children's fluid intake understanding utilising a fluid intake questionnaire, the researcher will conduct a similar questionnaire with the children 3 times at each data collection point. The questions to the children need to relate back to the five overarching facets of fluid intake knowledge and understanding previously outlined at the start of this section. This will establish what the children know prior to the delivery of the water week HEP, what (if any) fluid intake knowledge and understanding was developed immediately after, and what (if any) knowledge and understanding was retained to inform short-term sustainability of the HEP.

Furthermore, Howells (2012) states that knowledge of healthy habits can translate into action of healthy habits, where she suggests that habits are best developed within the primary classroom, as it is easier to embed these behaviours, as unhealthy behaviours are not as entrenched as they could be later in life. Moreover, Gardner, Rebar and Lally (2022) produced guidelines for how habits form in the real-world through specific interventions, they discussed that habit formation is defined

as a new behaviour that could conceivably be actioned outside of a controlled research environment, that has been developed by interacting within a controlled research space. Whereby, they state that the benefits of assisting in the formation of new habitual behaviours can free cognitive resources for more complex and challenging tasks, providing an additive benefit of developing a new habit in relation to fluid intake through the delivery of the HEP. Consequently, to form a new habit, Michie, Van Stralen and West (2011) previously explored that at least one criteria must be met to develop a habit. This being facilitating motivation, capability or opportunity to create a new habit, which is repeatedly actioned. In support of this, from a health education viewpoint, to alter healthy behaviours, Bradbury et al., (2019) later evaluated the views from teaching practitioners on how to support the development of children's habits to effectively manage body weight. They discussed that goal setting; action planning and self-monitoring are useful techniques in which to alter a healthy behaviour, as this can develop understanding of what children need to achieve (goal setting), how to achieve it (action planning) and support the physical action of the behaviour(s) (self-monitoring). Bradbury et al., (2019) suggest that in order to ensure goals are met, and sustained in the long term without prompting, goals must be specific and realistic to not deter children in the action of the suggested habit due to a lack of comprehension or difficulty spike. As such, by the resources in the HEP setting a goal of one 500ml bottle a day at school (in addition to lunchtime drinking), this is a specific and realistic goal, which should be easy to understand and attainable for all children to alter healthy drinking behaviours. As such, the key behaviour change theory that will be adopted by the researcher to help inform the development of healthy drinking habits will take advice from both Michie, Van Stralen and West (2011) and Bradbury et al., (2019), whereby the developed resources and pedagogical advice needs to address motivation, understanding and opportunity to create a new habit, whilst setting a goal to drink

adequately that is specific and realistic to persuade repetitive daily action of that goal through offering consumption monitoring resources. Consequently, to support the development of healthy drinking behaviours through the development and implementation of the HEP, the resources need to:

- Motivate children to drink, and encourage teachers to support a target level of fluid consumption of at least one school water bottle a day.
- Ensure that the information provided within the resources is easy to comprehend, as this will help the children and teachers to interact with the resources, and in turn facilitate an action plan in which to meet the set goal.
- Provide ample opportunities for children to drink and teachers to support consumption during the school day to allow repeated action of the new habits, through monitoring consumption, and interacting with resources such as the drinking tracker chart.

Therefore, a further line of assessment of efficacy and impact of the created HEP needs to evaluate if there is a perception of healthy habit change, for example - will the children elect to hypothetically drink before play if they believed they required additional fluids, or is there a change of the children believing they consume enough fluids at school? As such, a perception of behaviour and habit change in relation to drinking fluids is an additional line of how the researcher can assess the educational efficacy and impact of the HEP.

2.4 - Literature Review Summary

This literature review has assessed how the researcher created the version 1 HEP, what resources were included, how it could be implemented in schools (water week), what barriers there are to implementation, and how efficacy and impact of the HEP can be assessed to develop knowledge and understanding of fluid intake. As summarised earlier (2.1.11), the creation of the version 1 resources have been developed through Kolb's (1984) learning processes to initially teach children the core information related to fluid intake, this is otherwise known as concrete learning through whiteboard animation videos and a water song. The researcher will subsequently offer supporting activities, provide rewards and visual/environmental adaptations to scaffold this concrete learning through a range of activities to facilitate the reflective observation, abstract conceptualisation and active experimentation learning processes to occur. In the ultimate hope that this enables fluid intake knowledge and behavioural/habit adaptation understanding to materialise in the classroom and form the foundation of lifelong action of healthy habits (Howells, 2012). Whereby, the range of activities have been designed in a way that it enables multiple learning styles (visual, auditory kinaesthetic) to effectively access the intended learning and complete the learning processes cycle (Kolb, 1984), but one that focuses on fluid intake learning.

In correspondence with the 7-step HEP development process to create, modify, implement, and assess the HEP, following the creation of the version 1 HEP, the explanation of how the resources were modified (step 2 and step 5, figure 1), implemented (step 3 and step 6, figure 1) and assessed in schools (step 4 and step 7, figure 1) will be addressed within the next chapter (methodology). Whereby, the discussion on what resources and pedagogic strategies were modified, implemented,

and assessed for efficacy and impact will be addressed within the part 1 and part 2 of the results and discussion chapter.

The version 1 HEP resources have been provided in appendix 2a.

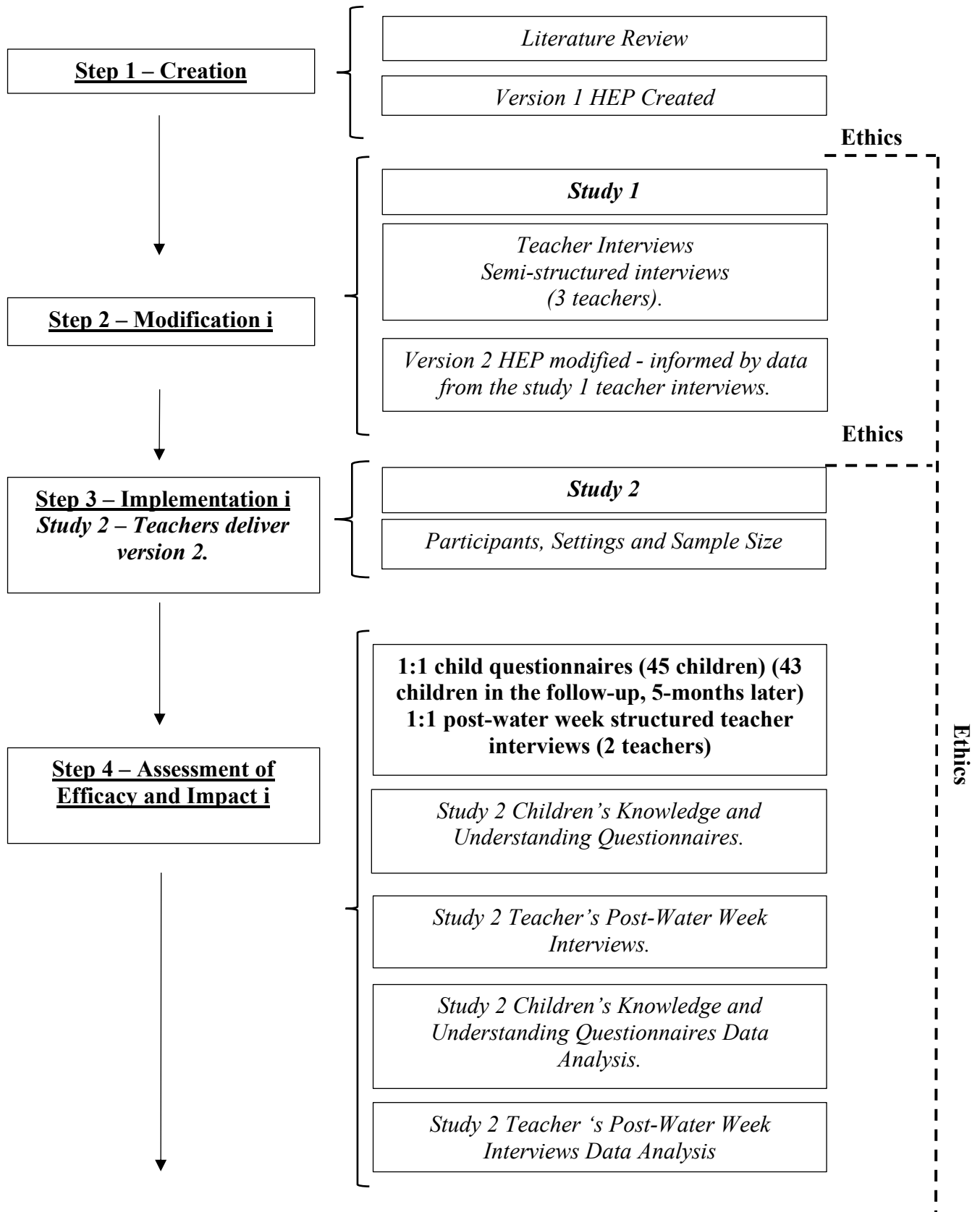
Chapter 3 – Methodology

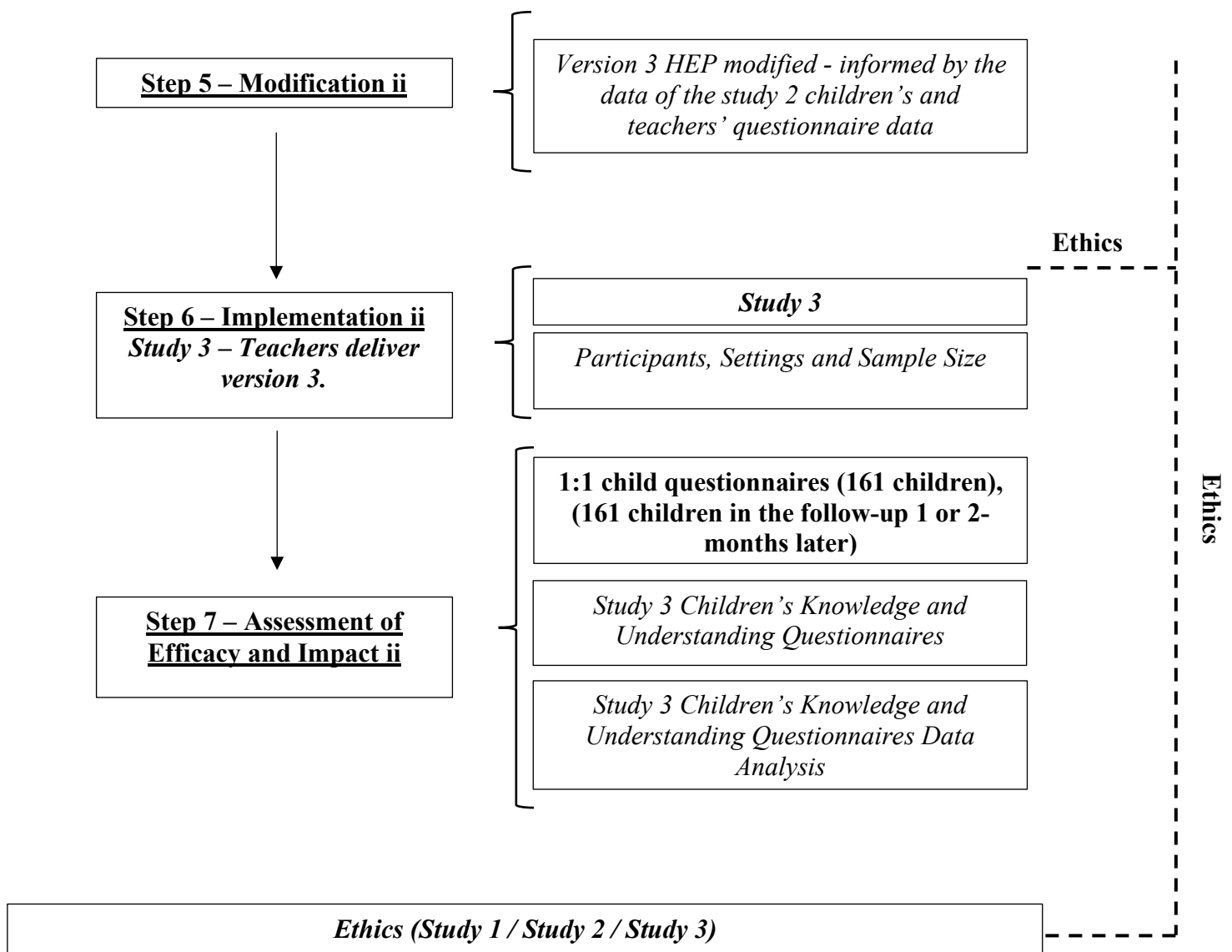
3.1 – Overall Study Design

This thesis has explored the rationale for why a HEP should be created, what should be included in version 1, and how a health education intervention, to impact knowledge and understanding of fluid intake, could be conducted based on previous literature. Due to the nature of what this thesis is trying to achieve; within this methodology chapter, the researcher will explain how the resources in the HEP were created, modified, and implemented, to consequently assess the efficacy and impact to develop knowledge and understanding of fluid intake.

Before explaining the finer intricacies of how this PhD research was conducted, it is firstly important to outline the overall study design. Smith (2010) and Thomas, Nelson and Silverman (2015), published research methodology frameworks that explains how researchers in the field of sport and exercise science can conduct research (including some advice for health educational interventions). They both provide a detailed discourse on how to conduct research in the sphere of sport science, including topics that extend the foundational knowledge of issues that affect our health, such as the focus for this thesis in relation to fluid intake. It is therefore acknowledged that this forthcoming chapter will therefore take significant direction from Smith (2010) and Thomas, Nelson and Silverman (2015) to guide how this research project created, modified, implemented and assessed the HEP. As previously mentioned, when explaining the HEP development steps (figure 1), figure 4 highlights the structure of this methodology chapter: -

Figure 4: Methodology Chapter Flowchart

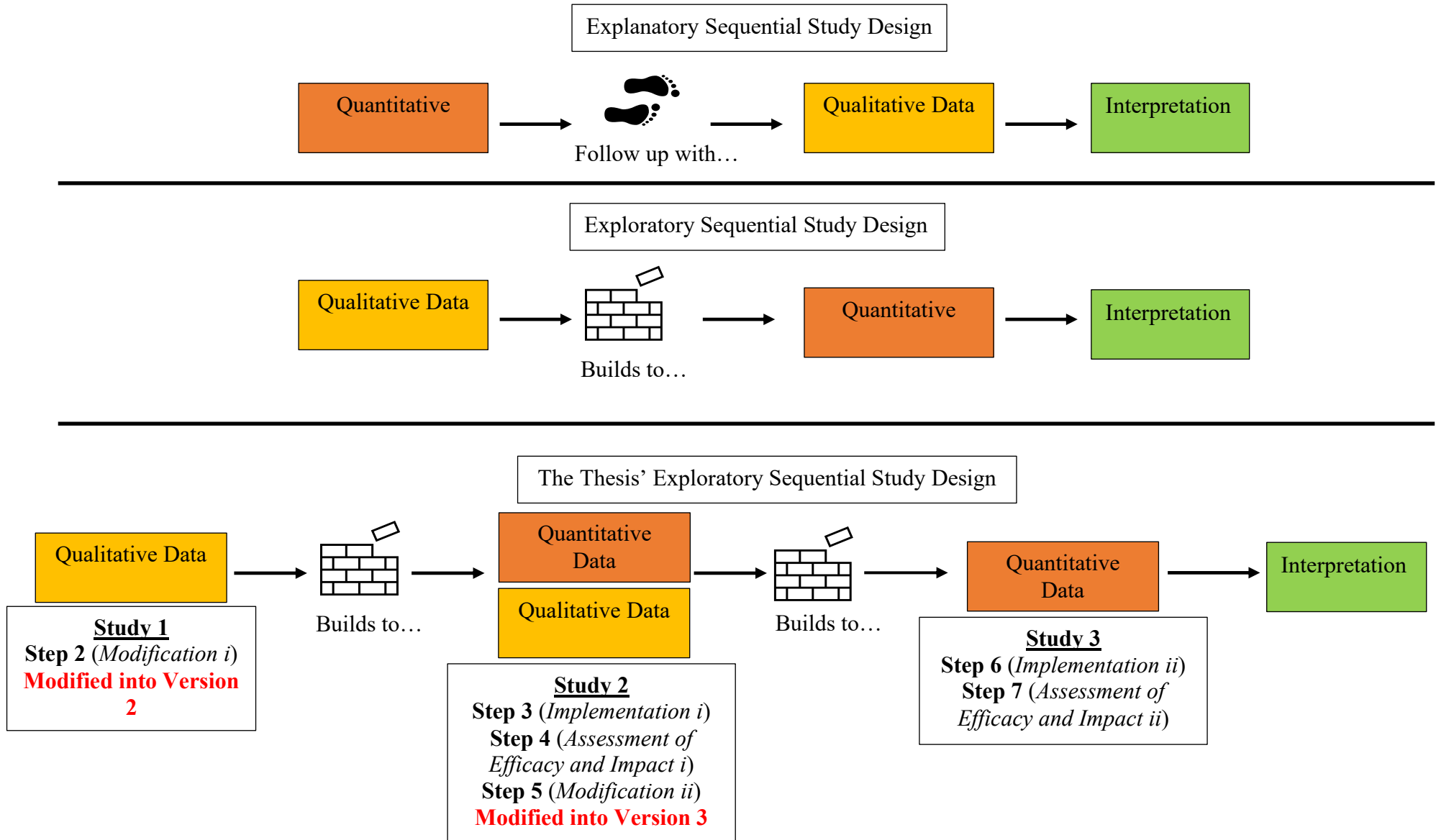




Ultimately, developing and testing educational resources is a complicated process. Consequently, to help develop a rigorously designed HEP, it was vital to involve teachers in study 1 (following version 1 creation) as they are the pedagogical experts, so their opinions were valued to ensure the fluid intake resources would logistically function within a classroom, to subsequently test the resources in a small (study 2) and larger-scale (study 3) trial. As such, the overarching methodology the researcher utilised was a form of exploratory sequential study design (Creswell and Creswell, 2018) to firstly create and modify the HEP, to then evaluate the efficacy of its implementation to impact knowledge and understanding of fluid intake. Creswell and Creswell (2018) state that a sequential study design is a form of research methodology where preceding

individual studies inform how a proceeding study(s) function. In layman's terms, one study must be conducted and analysed before the next can materialise. Furthermore, as outlined by Creswell and Creswell (2018) there are two forms of sequential study design: explanatory and exploratory. Explanatory sequential study design firstly employs a study with quantitative data collection methods to subsequently conduct a secondary (or tertiary) study with qualitative data collection methods to 'explain' why the quantitative findings transpired in the first study. Exploratory sequential study design is the inverse of this, whereby a researcher initially conducts qualitative research, followed by quantitative research to 'explore' if the results, following the first study, held a level of efficacy and impact. Creswell and Creswell (2018) imply that the notion of explanatory sequential study design is often used to assess educational efficacy of established resources due to the nature of 'explaining' their efficacy and effectiveness. Conversely, exploratory sequential study design is appropriate to firstly 'explore' how resources can be created/modified to subsequently assess their efficacy and impact of their implementation. Essentially, exploratory sequential study design is a form of interpretative paradigm (Sprake and Palmer, 2022), whereby qualitative data assisted the researcher to firstly modify the created version 1 HEP in study 1 (to create version 2), to subsequently evaluate the individual resources with qualitative and quantitative data in study 2 to modify the resources again (to create version 3), and further assess the efficacy and impact of the version 3 HEP resources with solely quantitative data in study 3. As such, this methodological process informed how the HEP was created, modified, and implemented and to establish what level of efficacy and impact the HEP had to develop knowledge and understanding of fluid intake. A simplified form of this process is shown below (figure 5), as well as the specific sequential study design that relates to this thesis (figure 5) which will be examined below:

Figure 5: Explanatory and Exploratory Research Designs Overview. (Adapted from Creswell and Creswell (2018)).



As the researcher was required to firstly create the resources within the HEP prior to the modification, implementation and assessment of the resource's efficacy and impact to develop knowledge and understanding of fluid intake. This in turn led to the deduction that the overarching study design for this thesis is that of exploratory sequential study design and not explanatory because it firstly needed to 'explore' how to create/modify the HEP. The purpose of these studies is below:

- **Study 1:** Following the review of literature which informed the creation of the version 1 HEP, study 1 was intended to initially modify the resources within the version 1 HEP with experienced teachers to create version 2 (step 2, figure 1).
- **Study 2:** Intended to assess what resources were ineffective and therefore discarded, what resources were effective and retained, and what resources needed to be modified, and why, based on the teachers' responses (and supported by the children's data) to be retained, to create version 3. Study 2 was also intended to ensure data collection procedures and data analysis were appropriate for study 3 to enable an effective evaluation of the version 3 HEP using a larger sample size (step 3/4/5, figure 1). Following study 2, this answered research question 1 as outlined in the introduction (1.0).
- **Study 3:** Intended to act as the core source of information to assess final conclusions as to what level of teaching and learning efficacy and impact the version 3 HEP had to develop knowledge and understanding of fluid intake (step 6/7, figure 1). Following study 3, this answered research question 2 as outlined in the introduction (1.0).

The guidelines endorsed by Coyle et al., (2014) suggest that in development of educational resources, there is a requirement for a needs analysis. Following the literature review, the researcher collected data with EYFS and KS1 teachers based in multiple settings (study 1) to assess what educational resources could be useful to be implemented in schools to impact knowledge and understanding of fluid intake from a pedagogical point of view. Following Coyle et al.'s (2014) guidelines on developing educational resources, to optimise each resource in the HEP, the researcher conducted a smaller-scale trial (study 2) to ensure all resources were appropriate for a larger-scaled trial (study 3). Therefore, this research translated Creswell and Creswell's (2018) two-phased exploratory sequential study design (as shown by figure 5) into a three-phased study design, which enabled a larger scale evaluation of the HEP. Justifying this, study 3 allowed for a more detailed evaluation of the HEPs effectiveness as the less optimal resources were either modified or discarded after study 2; hence minimising variables in study 3 as the previously ineffective resources were either removed or improved. To summarise, the creation, modification, implementation and assessment of efficacy and impact of the HEP was conducted over the three separate studies but presented in the thesis through the 7-step process (figure 1).

Cohen, Manion and Morrison (2018) state it is also important to acknowledge where research fits into the philosophical spectrum, whereby this thesis primarily fits into the world of epistemological research as it is exploring how a HEP can be created, modified, implemented, and assessed to develop knowledge and understanding of an established topic of fluid intake. There are various types of epistemological research, whereby, this thesis could fit into two categories; interpretative epistemology and post-positivist epistemology (discussed below). Cohen, Manion and Morrison

(2018) suggest that interpretative epistemology is the concept where the researcher acknowledges that they are a fundamental part of the work to enable successful completion of the research. Therefore, if the study was to be replicated by another researcher, they may interpret data differently which could alter conclusions. However, due to the researcher's history of publications in the field of knowledge and understanding of fluid intake (Williamson and Howells, 2019; 2021), the level of interpretation should be regarded as reliable due to a familiarity of data analysis in the sphere of fluid intake. As such, interpretative epistemology was one of two levels of philosophical underpinning used by the researcher, as he needed to interpret the teachers' suggestions for modification (step 2 and 5, figure 1) and children's replies to assess the HEPs efficacy and impact (step 4 and 7, figure 1).

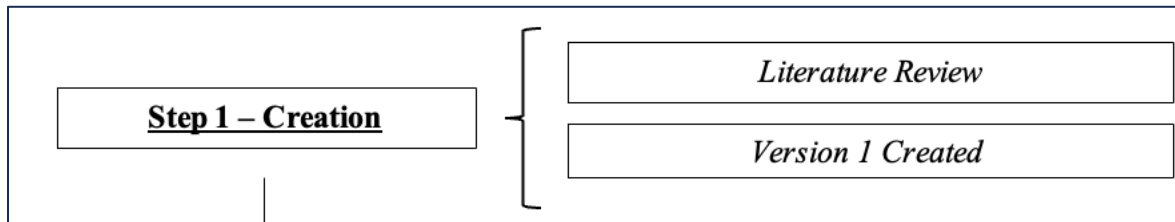
To enable this thesis to explore the other core philosophical foundation on which it based its exploratory sequential study approach (post-positivism), it must first outline the prerequisite of post-positivism. Positivism is defined by O'leary (2004), as conducting quantitative research that is substantiated by the statistical significance of the data alone, regardless of who is conducting the research because the data alone is regarded as sufficient to form conclusions without a significant level of researcher interpretation. As the researcher had first-hand knowledge of what the children, and teachers, reported and could comprehend the nuances of their understanding of fluid intake, there was a level of individual interpretation to form the overall conclusions of what efficacy the HEP had to impact knowledge and understanding of fluid intake and how to modify the resources. For example, when some children replied that "water makes them strong", it could be understood by the researcher that this response demonstrated their understanding that fluid is good for their health (Tatlow-Golden et al, 2013). Consequently, some level of researcher data

interpretation was required, which is where Popper's (1959) theory of research paradigm materialised, post-positivism.

Popper's (1959) post-positivist philosophical theory claimed that researchers aim to establish meaning of the epistemological world by the same quantitative means as a positivist researcher, where they can identify causal relationships between independent variables. Although Popper (1959) accepted that there is some level of subjectivity to data analysis due to human's possessing different perspectives of the world. Hence, it is difficult in Popper's view to create a clinical research environment where the data alone can explain why particular outcomes have resulted when collecting data from human participants. Popper's (1959) post-positivist perspective relates closely with this thesis, as the researcher accepted that each interviewee (children or teacher) potentially held contrasting views relating to fluid intake or how to modify the resources, due to possibly acquiring different knowledge and understanding throughout their lives. Therefore, the data needed to be interpreted by a fluid intake expert. Hence, this justifies as to why a post-positivist/interpretivist approach was chosen to philosophically underpin all three studies in the 7-step development process of HEP development (figure 1).

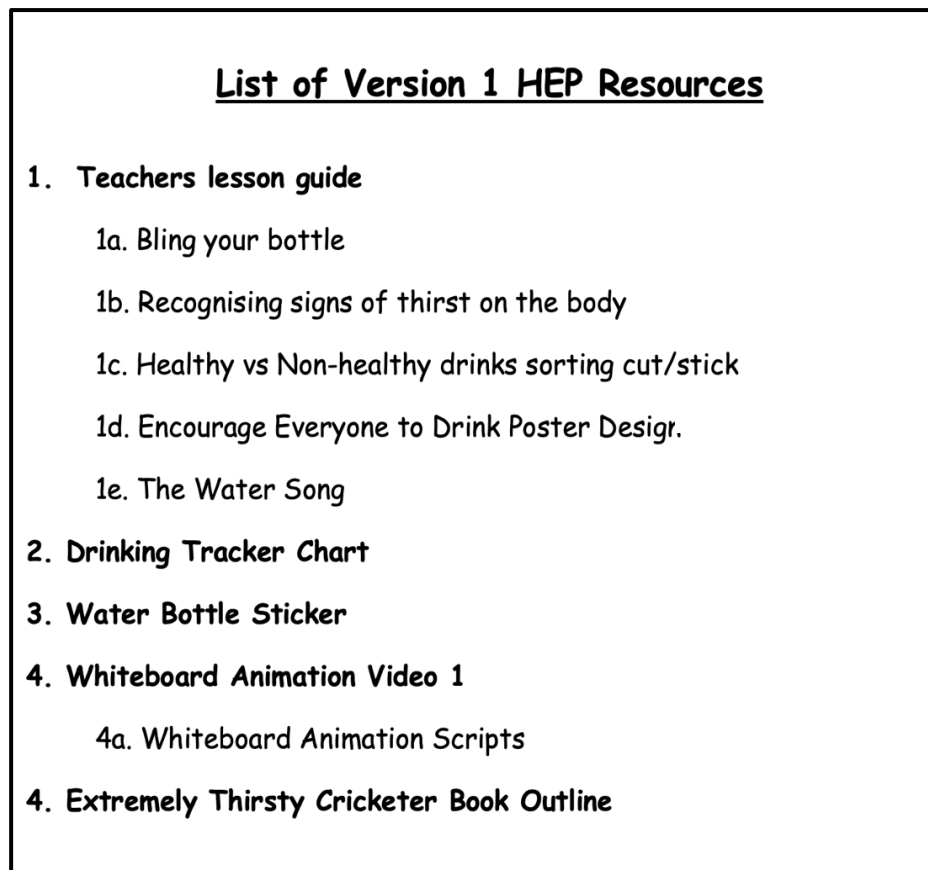
3.2 - Step 1 - Creation

Figure 6 – Step 1: Creation Highlight



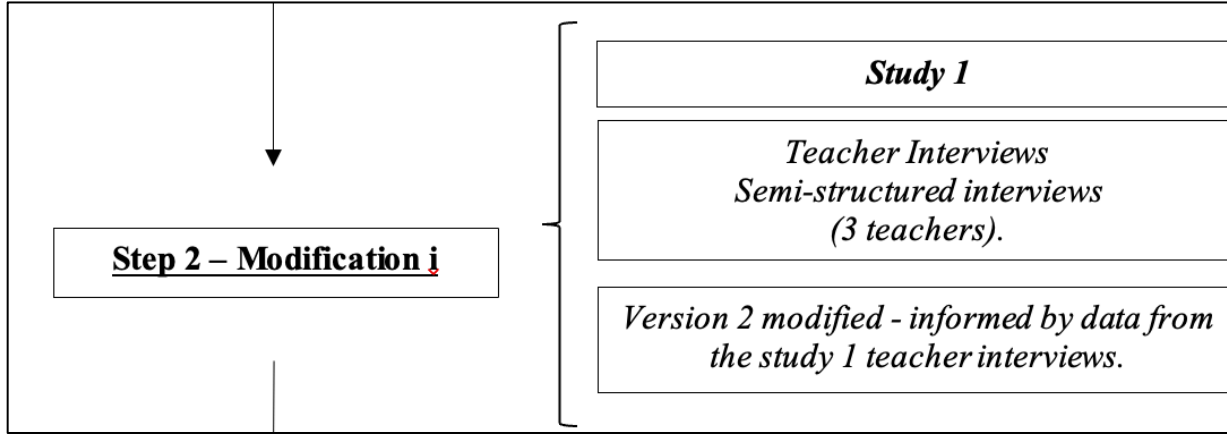
In the 7-step HEP development process, step 1 (figure 1) is ‘creation’. An overview of the version 1 HEP resources that were created, following the completion of the literature review has been supplied below (figure 7). These resources were presented to the study 1 teachers to allow them to provide their expert pedagogical opinions of what should be modified. For the full version 1 HEP, please see appendix 2a.

Figure 7: Version 1 HEP Overview



3.3 - Step 2 - Modification i - Teacher Interviews (Study 1)

Figure 8 – Step 2: Modification i Highlight



3.3.1 - Step 2 – Modification i - Teacher Interviews (Study 1): The Participants and Settings

Following on from the creation of the version 1 HEP, the researcher was necessitated to initially modify the resources to create version 2, by interviewing experienced teachers. The experienced teacher participants were recruited via email (appendix 2). Whereby, 10 teachers were contacted: 4 teachers did not reply, 3 teachers responded and declined to participate, and 3 teachers responded and accepted the invitation to participate in study 1. Thomas, Nelson and Silverman (2015) suggest that for any research to be successful, there must be clear and succinct correspondence from the researcher explaining the purpose of the research and its intended efficacy and impact. Thereby, the e-mail outlined the importance of the research, why the recipient’s involvement was necessary and what their participation would look like if they were interested in taking part over the short, medium and long-term (appendix 2). Thomas, Nelson and Silverman (2015) suggest that communicating the purpose of the research increases the likelihood of impactful research, as it stimulates participant intrigue and cooperation. Included within the e-mail (appendix 2), as advised by Thomas, Nelson and Silverman (2015), is a connotation of subdued flattery, whereby the researcher requested “experienced teacher involvement”. Indicating because they were experts in

their field, their participation was essential and valuable to meet Coyle et al.'s (2014) guidelines of educational resource development. In turn assisting in meeting the requirements of step 2 in the 7-step process in the HEP development (figure 1). Hence, explaining why the experienced teachers were selected by the researcher to take part.

This form of participant recruitment aligns itself with a volunteer cross-sectional survey design yet sampled via a non-probability basis due to its focus on interviewing a particular professional demographic (experienced teachers). Smith (2010) describes cross-sectional research as volunteer participants supplying research projects with their views and opinions in a singular snapshot in time. Moreover, Smith (2010, pp.113-115) also supports that this is the best method to draw opinion from sector professionals, especially when deciding on content for education initiatives, which is exactly what modification i (step 2, figure 1) was trying to achieve. Initial teacher cooperation to modify educational resources is a novel concept, when compared to the previous health education interventional studies (Sichieri et al., 2009; Kaufman-Shriqui et al., 2016; Franks et al., 2017) that appears they did not collaborate with professionals in the creation and modification of their resources. In the view of the author, by not involving teachers throughout the resource modification processes, this could question the post-completion efficacy and impact of any created package of hydration resources, as ultimately teachers will be the professionals implementing them; hence their expert opinions in this thesis were essential.

Smith (2010) does however state that for cross-sectional research to be effective, the researcher must recruit a targeted demographic that specifically relates to the research they wish to conduct. When selecting 'experienced teachers', the following criteria was applied:

1. Teachers must have completed their initial teacher training.
2. Must be teaching within the EYFS or KS1 age phases (as this is the demographic who will be taught the HEP).

The research primarily took place in the teachers' classrooms after the school day once the children had departed, in January and February 2022. This ensured the teachers had time to partake in the research and that the process was not rushed due to other professional priorities from the teacher. The researcher ensured he was positioned at eye-level of the teachers and sat down in the classroom on the children's chairs alongside the teacher. Myers et al., (2009) discuss that research settings that are as casual as possible and situated in familiar settings is a useful tactic to obtaining reliable data, as the participants can be less stressed and tend to feel comfortable to provide responses that reflect their true beliefs. Therefore, it was viewed by the researcher that holding the interviews in the familiar territory of the teachers' classrooms was beneficial to meeting the aims of the study 1 interviews.

3.3.2 - Step 2 – Modification i - Teacher Interviews (Study 1) - Sample Size

Within academic research, sample size must be considered to ensure it holds a sufficient level of data to be reliable (Cohen, Manion and Morrison, 2018). Study 1 was sampled by non-probability means, due to the small sample size and because all participants were selected initially by the volunteer cross-sectional design because of their "experienced teacher status", and hence every teacher's experienced pedagogical opinion was valued to inform modification i (step 2, figure 1). Smith (2010) suggests that taking a random sub-sample of a larger cohort is not necessary if the study does not intend to create conclusions for a broader population. As study 1 was simply

attempting to obtain a collective set of opinions to ascertain what resources in the version 1 HEP needed to be modified to create version 2, the researcher therefore was not aiming to make conclusions that are relevant for the wider populous. As such, this selection process allowed for all interviewees to be included in the analysis of the study 1 data (discussed in 3.3.5).

Semi-structured interviews can hold a greater level of validity than self-reported questionnaires, and hence is a more advantageous method of data collection to inform the modification i step in the HEP development process (figure 1). Thomas, Nelson and Silverman (2015) subscribe to this idea, due to the responses being more appropriate to accurately answer the questions, and hence are generally more reliable as answers are collected first-hand with the researcher present. However, this does bring some disadvantages. The primary disadvantage resulting in an inherently smaller sample size due to the time required to conduct the interviews, however it does allow for a greater ratio of successful interaction with the interview questions due to the more personal and tactile nature of data collection. As study 1 was intended to modify the version 1 HEP to create version 2, which would be trialled and assessed in study 2 (step 3/4, figure 1), it was important for this stage to work backwards by equating what sample it required from the child-aged participants to subsequently interview a proportion of their teachers who will be delivering the HEP at a later stage. As such, the researcher began to estimate his study 1 sample size based on the Williamson and Howells' (2019) paper on young children's understanding of fluid intake, whereby their sample size was 130 young children. As the maximum limit of young children in UK EYFS classrooms is 30 children (DfE, 2021, p. 31), and non-statutory guidance for classes with an elder cohort (KS1 onwards), this meant that 4 teachers ideally needed to take part in the study 1 semi-structured interviews. However, since schools are chaotic places to collect research data (Radford,

2006), there are other pressures within school settings for teachers (such as available time to conduct the interviews due to other professional responsibilities), therefore, a slightly smaller initial sample in study 1 was accepted by the researcher. Consequently, 3 teachers participating in study 1 should be deemed as sufficient to meet the aims of why it was conducted.

3.3.3 - Step 2 – Modification i - Teacher Interviews (Study 1) - Materials and Resources

As the researcher needed to obtain a greater understanding of what resources to include in the HEP (to inform modification i) and how to implement the teaching and learning of the resources, it was therefore important to have a qualitatively and quantitatively enhanced understanding of what experienced teaching professionals believed would be useful for the children they teach, as they are the demographic delivering it. One useful method to collect both quantitative and qualitative data is via interviews (Smith, 2010), as they can provide a holistic picture to help answer research questions. Thereby, questions in interviews can firstly assist the researcher to initially modify the HEP via predominantly qualitative means (with supplementary quantitative means) with experienced teachers, to subsequently conduct additional research (via further studies) that is mainly quantitatively motivated to assess whether the HEP was effective to impact knowledge and understanding of fluid intake in practice, which can also be done via questionnaires and interviews. Hence, the impact of using interviews to modify, implement and assess the HEP will be discussed in greater depth within this methodology chapter.

For interview-style methodologies to be effective, it must address a series of six questions (Smith, 2010):

“1. What will the interview goals be?” (To inform modification i of the HEP (step 2, figure 1))

“2. What interview design will be used?” (Mainly open-ended questions, qualitative evaluation with some level of quantitative data collection)

“3. Who will be selected to take part in the research?” (Experienced teachers who are pedagogical experts)

“4. What data collection method(s) will be used?” (Answers to the questions were recorded and transcribed)

“5. How will the selected instruments be administered?” (Through face-to-face semi-structured interviews)

“6. How will the data be analysed?” (NVivo to establish themes and coding to enable contextual analysis)

The researcher therefore ensured these 6 priorities were accommodated when designing the overall study 1 design.

Study 1 utilised a series of mainly open questions to allow the teacher participants to effectively express opinion to inform modification i of the version 1 HEP and how it should be delivered in version 2/study 2. Smith (2010) suggests that open ended questions can be more effective for qualitative research, as participants can elaborate upon their replies. Using a Likert (1932) scale question allowed for some level of quantitative data to rank the frequency of the teachers’ potential use of the resources; to inform decisions on HEP content and delivery in study 2.

Although questions may be clear and concise from a researcher’s perspective, they may be perceived to be too ambitious or complicated by the participants (Thomas, Nelson and Silverman, 2015). Hence, each question must be carefully thought out to ensure each query is firstly succinct and fits within the chronological structure of the semi-structured interview, and secondly, each

question holds a specific purpose(s). Thomas, Nelson and Silverman (2015) continue to suggest that artificially elongated open questions disengage the participants and lowers the quality and validity of the research because they may rush answers to reach the conclusion of the interview sooner. As a result, these two imperatives were repeatedly considered by the researcher in his creation of the semi-structured study 1 interview questions (appendix 5).

Thomas, Nelson and Silverman (2015) outline that semi-structured interview questions should fit into 1 of 4 broad categories: (1) Hypothetical, (2) Devil's advocate, (3) Ideal position and (4) Interpretive. Hypothetical questions ask participants their beliefs on 'what if' scenarios and how they may react to any given 'hypothetical' situation. Devil's advocate questions align the interviewee in a somewhat controversial mindset and ask the participants to respond to their own position on a topic matter, such as questions relating to modification of the version 1 resources. Ideal position questions require the interviewee to think about a topic in its best scenario, such as what pedagogical strategies or resource the experienced teachers may like to implement in an ideal world in relation to teaching fluid intake. Finally, interpretative questions are queries that allow an interviewee to think with a greater level of criticality about their own experiences in relation to another individual, such as reflecting upon a teacher's own pedagogical fluid intake support practices in comparison to a colleague's. This section will outline how each question in study 1 (appendix 5) fits into these four broader criterions.

- 1. What key messages, teaching strategies and resources do you currently use to encourage knowledge of diet and healthy lifestyles – and more specifically, water consumption in the classroom?**
 - a. **Why? (*if applicable*)**
 - b. **When would you implement those strategies / resources? (*If applicable*)**
 - c. **If you don't currently have any strategies, why do you not have any?**

Question 1 was aimed to be a starting point to subsequently direct the remainder of the semi-structured interview. If, for example a teacher did not currently implement any strategy, then that had a consequence for the next question which explores the notion of adding strategies. Essentially, this question does not fit into Thomas, Nelson and Silverman's (2015) four broad question types, where perhaps an 'exploratory' or 'ground setting' criteria should be included in their theory. Consequently, this question was used to set the tone and purpose of the semi-structured interview.

- 2. If you could add any more strategies and resources to encourage knowledge and engage children in healthy diets and water intake, what would you like? And why? In terms of strategies, what works best for your children?**

Resources the researcher conceived during version 1 creation are:

- 1. Whiteboard Animation Videos (*Do you like the pauses in the video to stop and think? Or leave that up to you?*)**
- 2. Extremely Thirsty Cricketer Book**
- 3. Teacher's Lesson Guide with Activities (*Bling your bottle / Recognising signs of thirst activity / extremely thirsty cricketer book / encourage people to drink poster creation/ ordering drinks activity*)**
- 4. Water Song**
- 5. Whole Class Drinking tracker chart and stickers**
- 6. Any others?**

Question 2 explored what the teachers thought they would like to add to improve their teaching practice in relation to fluid intake. This therefore fits into the 'Ideal position' criterion. The query clearly provides a set of prompts for what was included in the version 1 HEP and gives space for more modification ideas in an ideal world.

- 3. Looking at delivering the resources – What detail of content in your view is better? Would you prefer to see the packs used in the form of a “water week”, possibly during healthy schools' week in June? Where there are links to a breadth of curriculum**

subjects and taught over 5 afternoons, or delivered one afternoon a week for a term? Such as, “Water Wednesday” which essentially comprises of the water intake component?

Question 3 required the participants to think critically about how the HEP should be delivered and implemented to their pupils'. Due to the 'what if' nature of this question, that required the teachers to think critically to evaluate the most logistically accessible method to deliver the HEP, question 3 fits into the 'hypothetical' section of Thomas, Nelson and Silverman's (2015) framework of semi-structured interview questions. Therefore, this question was useful to support (or not) the literature review's conclusion of a water week as opposed to a water Wednesday, due to benefits of habit formation and assist in a school's adherence to the full delivery of the resources.

- 4. In critiquing of the resource ideas stated earlier (version 1) (*present resources currently made*), is there any strategy or resource that significantly stands out which you feel **WOULD** be particularly helpful in delivering this statutory element of the health education statutory guidance and EYFS?**

- 5. In critiquing of the resource ideas, and the selection of version 1 resources produced so far, is there any strategy or resource that significantly stands out which you feel **would NOT** be particularly helpful in delivering this statutory element of the health education statutory guidance and EYFS?**

Questions 4 and 5 are closely interlinked and thus have the same explanation for why they were included in the study 1 semi-structured interview questions, as they explore what would and would not be useful from the teacher's perspective to aid delivery of the HEP to develop knowledge and understanding of fluid intake. It was useful for the researcher to consider the perceptions of both paradigms of usefulness as some of the resources that had been created in version 1 could be discarded if the teachers did not believe they were beneficial to develop knowledge and understanding of fluid intake or could be modified to be beneficial. That said, questions 4 and 5

fit into the Thomas, Nelson and Silverman's (2015) 'interpretive' criterion, due to teachers' 'interpretation' of what they believed each activity or strategy was attempting to achieve, and whether it would be beneficial to the teaching and learning of children in relation to their knowledge and understanding of fluid intake.

- 6. To summarise what we discussed, is there anything you would like to change in the final draft of the educational resource pack / the way that they are implemented / add anything I may have missed?**
- 7. Anything you would like to change in relation to children's knowledge and understanding of the resources?**

Questions 6 and 7 allowed extra time for the experienced teachers to reflect upon their omission of any points of modification they may have missed in the previous questions. The above questions therefore fit into Thomas, Nelson and Silverman's (2015) 'Devil's advocate' criterion, due to the researcher questioning whether the teachers have had an opportunity to consider every detail they wanted to raise; thus, ensuring no points of modification were missed.

- 8. To provide a quantifiable comparison, could you rank each individual resource please? Likert style ranking of:**
 - 1. Never use**
 - 2. Sometimes use**
 - 3. Use all the time**

Finally, question 8 was intended to provide a quantifiable figure to evaluate the version 1 resources and allow the researcher to empirically compare perceptions of usefulness to develop knowledge and understanding of fluid intake. This fits into Thomas, Nelson and Silverman's (2015) 'hypothetical' criterion, due to the teachers' placing themselves into the hypothetical situation of whether they would physically use each resource, or not.

As discussed, this section has provided the full list of each question used in the study 1 semi-structured interviews and how it was useful in relation to critiquing the version 1 HEP to create and modify the resources into version 2. It attempted to fulfil all paradigms of Thomas, Nelson and Silverman's (2015) broader criteria of interview questions due to the exploratory nature of study 1 and therefore was able to ascertain all expert opinion and beliefs from the teachers through answering the 8 questions.

3.3.4 - Step 2 – Modification i - Teacher Interviews (Study 1) - Data Collection Procedures

As aforementioned, the method of study 1's data collection was via face-to-face semi-structured interviews. Smith (2010) suggest that interviews and self-reported questionnaires can both be used to collect the same form of data, but with different methods of collecting the data from the questions posed. The main advantages of conducting a semi-structured interview with participants, over a self-reported questionnaire, pertain to its ad-hoc adaptability and versatility that the researcher can apply, such as the enhanced rate of participant interaction of the questions. Furthermore, as in-person semi-structured interviews yield the ability to use visual aids and prompts, the researcher was able to physically show and explain to the teachers how the version 1 resources should work in theory (according to the literature), so that the teachers were fully equipped with all the information to sufficiently understand the proposed benefits of the resources, to effectively inform modification. Therefore, the researcher decided to select semi-structured interviews over self-reported questionnaires, due to the flexibility that was required for teachers to verbalise in-depth opinions of the educational resources and allow the teachers to control the interview environment. This ensured the experienced teachers felt relaxed and free to express the full extent of their expert opinions in the exploratory sequential design, which as aforementioned,

was essential to ensure all points of modification were addressed (Thomas, Nelson and Silverman, 2015).

However, Thomas, Nelson and Silverman (2015) claim that there are drawbacks, as semi-structured interviews are significantly more time-consuming before collection, during data collection and post-data collection. That said, due to the small sample of teachers required, it was deemed acceptable by the researcher to invest the time to ensure a greater level of detailed data was obtained to inform what modifications of the version 1 HEP resources were necessary to create version 2. Moreover, as the researcher was new to conducting semi-structured interviews with teaching professionals, Thomas, Nelson and Silverman (2015) discusses that researchers with less interview experience improve with practice. Therefore, the interviews held earlier could be more liable to contain less accurate, less useful, and less reliable data, because there is a danger of straying from the questions purpose and going off topic. Resulting in potentially less useful data transpiring or collecting responses that only one participant recorded, due to the conversational nature of the encounter and invertedly asking a bespoke question that the researcher didn't ask the other participants. Hence, Thomas, Nelson and Silverman (2015) state that a researcher needs to eloquently keep the interview on track from unnecessary meander. As the researcher has been diagnosed with ASD, he often struggles with face-to-face human conversation (WHO, 2021). Therefore, the researcher accepted that the use of semi-structured interview questions were only intended to guide the interview in a general direction rather than act as a strict route of dialogue. Furthermore, Thomas, Nelson and Silverman (2015) state that to counter any effect of over elongation of the face-to-face semi-structured interviews, or the interviewer improving after each interview iteration, new interviewers should undertake specific training to ensure they are

sufficiently equipped to lead the collection of data. As such, the researcher sought training advice into interview techniques, and consequently undertook a series of researcher development sessions at Canterbury Christ Church University in preparation to be adequately equipped to lead the semi-structured teacher interviews, to alleviate any methodological or personal limitations.

Moreover, so that the interviewee perceives the interviewer in a professional capacity, Thomas, Nelson and Silverman (2015) discusses the importance of professionalism. Whereby, the interviewer should be dressed suitably and use appropriate language to avoid making the interviewee feel uncomfortable. As such, the researcher ensured he adhered to professional standards in study 1 (and in study 2 and 3).

Thomas, Nelson and Silverman (2015) state that for an interview to be successful and yield useful data, the researcher must have a productive method in recording the responses to the questions. This is especially important for open-ended questions due to the longer replies and potential to omit salient points made by interviewees when processing data, if, for example, the data was collected via written notes. Therefore, the researcher elected to audibly record the semi-structured interviews and extrapolate the data by transcription before formally contextually analysing the data in NVivo (discussed in 3.3.5). Thomas, Nelson and Silverman (2015) state that this is a logistically useful method on account that it is more difficult to overlook the finer intricacies of the participants replies as researchers can re-listen to the recording(s). However, prior to commencement of the interviews the researcher is required to obtain expressed permission from the interviewees before any recording can begin (Economic and Social Research Council (ESRC), 2015). That said, participants may decide to hold back from expressing the full extent of their opinions as

interviewees may provide responses, they perceive the interviewer wants to hear, even if they do not believe it themselves (Goodwin et al., 2017). In turn, the interviewees may believe the responses they provide could be a detriment to them personally and/or professionally, therefore may refrain from sharing the full extent of their experienced opinion, which would be counter-productive to modifying the version 1 HEP resources in study 1. As such, Creswell (2009) suggests that the researcher must give assurance to the teachers that the data collected from their responses to the questions will be anonymous, negating the risk of participants not providing full and accurate responses. Therefore, the researcher audibly recorded the interviews on a biometrically secured recording device as per General Data Protection Regulations (GDPR)(Department for Crime, Justice and Law, 2018).

3.3.5 - Step 2 – Modification i - Teacher Interviews (Study 1) - Data Analysis

Thomas, Nelson and Silverman (2015) subscribe to the idea that a researcher should consider how the data will be analysed following completion of data collection. As such, this was considered prior to commencing the data analysis process. After collecting the semi-structured interview data, the researcher manually transcribed the audio recordings, with the intention to thematically contextually analyse the transcription outputs. Braun and Clarke (2006) suggest that thematic analysis should be viewed as a foundational method of qualitative data analysis, which enables the process of coding distinct themes within open-ended enquires, so that a researcher can form conclusions by exploring the common themes that emerge amongst the participants' replies. As such, the researcher utilised Braun and Clarke's (2006) six-phase framework for thematic analysis data analysis, using NVivo.

1. Familiarising yourself with the data.
2. Generating initial codes.

3. Searching for themes.
4. Reviewing the themes.
5. Defining themes.
6. Producing the report.

Following initial familiarisation of the teachers' transcription data, the researcher generated an initial code to define the resulting themes from the interviewees' responses. For example, in relation to question 3 (appendix 5) which asked the teachers how the HEP should be delivered, a theme was generated to analyse the teachers' opinions, which were coded as either 'Water Wednesday' or 'Water Week'. This allowed the researcher to identify the common theme(s) that emerged within the teachers replies. Furthermore, additional coded themes were required to capture why the teachers held their opinion to justify "Why Water Wednesday" or "Why Water Week". The researcher could subsequently contextually analyse why the teachers held their opinions regarding the mode of HEP delivery to inform study 1 on how the HEP should be delivered. Consequently, the teachers unanimously agreed that the more effective mode of delivering the HEP should be via a water week, due to the practicalities of delivering the resources on-block which the teachers believed should allow the children to develop knowledge and understanding of the various concepts of fluid intake; concurring with the conclusions made in the literature review. The transcriptions have been provided in appendix 6 to enable the researcher to extract the pertinent quotations within part 1 of the results and discussion chapter (chapter 4), to facilitate conclusions within the modification i step (step 2, figure 1).

The remaining questions (1,2,4,5,6,7,8) were analysed in a similar method to this, by theme generation, code separation and contextual analysis within the results and discussion chapter (table 2). For example, 'why WAVs' or 'why drinking tracker chart' was used, to subsequently analyse the teachers replies alongside the conclusions made within the literature review, to inform decisions as to what content should be included, modified or removed in the version 2 HEP. The presentation of this data is supplied within appendix 6, where significant points of interest are signposted within part 1 of the results and discussion chapter. The remainder of the theming and coding process is attached below (table 2).

Table 2: Teachers Replies: Theme and Coding Proforma

Theme	Coding
Current Teaching Practices	DO Teach about fluid intake WHAT Teachers do about teaching fluid intake DON'T Teach about fluid intake
Delivery Preference	Water Wednesday Preference Water Week Preference
Why Delivery Preference	Why Water Wednesday Why Water Week
Qualitative Statements of Resources Benefits	Bling Your Bottle Why/Benefit Story Book Why/Benefit Teacher's Lesson Guide Why/Benefit Water Song Why/Benefit Healthy Drinks Sorting Activity Why/Benefit Drinking Tracker Chart Why/Benefit Whiteboard Animations Why/Benefit Poster Creation Why/Benefit Signs of Dehydration Activity Why/Benefit Stickers Why/Benefit
Resources Critiques	Bling Your Bottle Critique Story Book Critique Teacher's Lesson Guide Critique Water Song Critique Healthy Drinks Sorting Activity Critique Drinking Tracker Chart Critique Whiteboard Animations Critique Poster Creation Critique Signs of Dehydration Activity Critique Stickers Critique
Quantitative Ranking of Version 1 Resources	Bling Your Bottle Ranking Story Book Ranking Teacher's Lesson Guide Ranking Water Song Ranking Healthy Drinks Sorting Activity Ranking Drinking Tracker Chart Ranking Whiteboard Animations Ranking Poster Creation Ranking Signs of Dehydration Activity Ranking Stickers Ranking
New Resource Additions and Benefits for Version 2	Parent Fact Sheet Water Tray Dehydration Activity Song as Theme Tune in the WAVs Hydration Driving Licenses Sticker Chart Drama Activity using the story book

3.4 - Step 2 - Modification i Summary

Following recommendations for modification provided by the teachers in the study 1 interviews, the researcher actioned advice to produce version 2 of the HEP (appendix 7). This section will provide an overview of what modifications were actioned (step 2, figure 1) to implement and initially assess the resources in the study 2/version 2 HEP (step 3 and 4, figure 1).

In regard as to what resources were included, modified or discarded in the version 2 HEP is a matter for part 1 of the results and discussion chapter, however an overview of the resources that were modified in the version 1 HEP, and what resources were included in the version 2 HEP, has been supplied below in figure 9. The core modifications (figure 9) made from version 1 (underlined in red) into version 2 (underlined in green) were:

- Confirmation that the water week should be delivered over a week (water week) and not one day a week for a term (water Wednesday).
- Agreement for the full WAV series to be included – with the water song as a theme tune.
- The introduction of a sticker chart on which to place the previously created sticker which was supplied in version 1.
- Hydration driving licences (essentially a certificate) for all children who complete the water week and drink at least one water bottle a day.
- A parent fact sheet to aid parents to support their children’s fluid intake at home.
- New activities to support the teaching and learning of the WAVs including:
 - A story book drama activity for the extremely thirsty cricketer book.
 - A water tray dehydration activity to replace the body map dehydration activity
 - A physical sorting variant of the healthy drinks sorting activity with large pictures.

**Figure 9: Version 2 HEP Resource List Modifications
(Left: Version 1 HEP) (Right: Version 2 HEP)**

Version 1 HEP

List of Version 1 HEP Resources

1. **Teachers lesson guide**
 - 1a. Bling your bottle
 - 1b. Recognising signs of thirst on the body
 - 1c. Healthy vs Non-healthy drinks sorting cut/stick
 - 1d. Encourage Everyone to Drink Poster Design
 - 1e. The Water Song
2. **Drinking Tracker Chart**
3. **Water Bottle Sticker**
4. **Whiteboard Animation Video 1**
 - 4a. Whiteboard Animation Scripts
4. **Extremely Thirsty Cricketer Book Outline**

Version 2 HEP

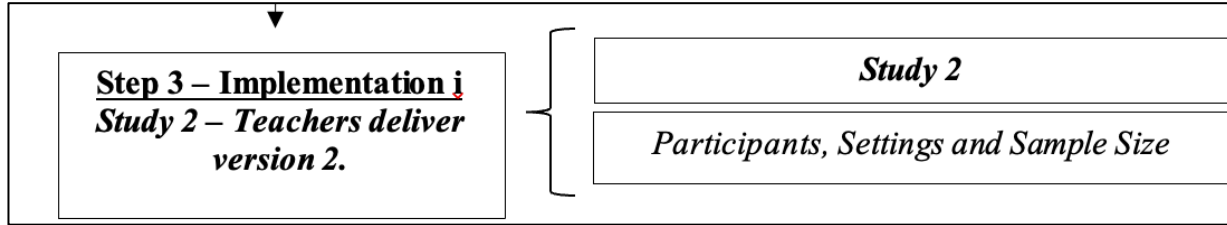


List of Water Week Resources

1. **Teachers Guide Lesson Plan Pack**
 - 1a. Bling your bottle
 - 1b. Water tray dehydration activity
 - 1c. Extremely Thirsty Cricketer Drama / Role-Play / Drawing
 - 1d. Healthy vs Non-healthy drinks sorting (physical and cut/stick)
 - 1e. Poster Design Example
 - 1f. Water Song
2. **Whole Class Drinking Visual Register Tracker**
3. Sticker chart with Water Week stickers
4. Hydration driving licences
5. **5 Whiteboard Animations Series**
6. Teacher / Parents Information Fact Sheet

3.5 - Step 3 - Implementation i (Study 2)

Figure 10 – Step 3: Implementation i Highlight



This section will outline the methods and procedures to explain how the version 2 HEP was implemented in the small-scale trial in study 2. As explained earlier, following the interviews with the teachers in study 1, they supported the implementation protocol of a water week (in one-block), because their expert pedagogical opinions suggested a water week would be more logistically practical to deliver the full-breadth of the prepared content in the HEP, and therefore could impact the development of fluid intake knowledge and understanding to a greater degree in contrast to one-day a week for a term (appendix 6).

3.5.1 - Step 3 - Implementation i (Study 2) - The Participants, Settings and Sample Size

The main data collection period of study 2 was in June 2022, which included 45 EYFS age children, and their 2 EYFS teachers, from one state funded school within the South-East of England who participated in the small-scale trial. All 3 teachers, who participated in study 1, were invited to continue into study 2 so they could see how their expertise had influenced the modification of the resources and continue with their expert pedagogical evaluations of the resources following their delivery of the study 2 HEP water week. Only 2 of the 3 teachers were available which were both situated in the same school (EYFS teachers). The remaining study 1 teacher (KS1) was unavailable for study 2 due to a lack of time in her school timetable. A follow-

up was conducted with the children in November 2022 (5-months after the version 2 HEP delivery), as the focus of study was to assess the efficacy and impact of the pedagogical implementation of the resources and what level of any developed children's knowledge and understanding had been retained. Even though this data was collected longitudinally within a different academic year (with the same children who were delivered the version 2 HEP), this was purposefully timed to consider the efficacy and impact of the water week's ability to retain developed knowledge and understanding of fluid intake. It is important to note there was no change in the teachers who provided post-water week feedback, it is acknowledged that there was a small change in the number of children (n=43) as one child had left the school at the end of the previous academic year and was not available for the follow up, and another was absent on the day(s) the researcher was collecting data.

The children's participation criteria included:

- The children needed to be a member of the EYFS class teacher's cohort and were present on the day(s) the teachers were delivering the water week.
- The children were present when the researcher was collecting data for at least the pre-water week and post-water week data collection points.

As the researcher is also a trained primary school teacher, who has spent 12 years within various primary school settings, both as a trainee teacher, a teaching assistant, a sessional university lecturer and an academic researcher, the author was able to utilise the link to the study 2 research school that has been established over this timeframe to gain initial access to the setting. Familiarity with establishments can enhance the likelihood of initially entering research environments in which to collect data with vulnerable individuals, in this case, children. Hammersley and Atkinson (2007) suggest that this can create more enriched and thorough research because gatekeepers at

the institutions are more likely to trust the legitimacy of the research, due to personally knowing the professional conducting the research. The British Educational Research Association (BERA, 2011) state that a gatekeeper at research settings is the professional that oversees ethical practices are actioned, thereby the gatekeeper in the data collection of this thesis was either the year group leader or headteacher at the school(s). Moreover, teachers trusting the legitimacy of the research and researcher is likely to be vitally important for the implementation steps during the development and assessment of the HEP, as teachers need to be fully committed to the delivery. This is to ensure all children in the various settings receive a comparable amount of tuition; thereby lessening variables to the children's data.

Moreover, building a rapport with participants can assist with the undertaking of data collection. Colonnese et al., (2017) implies that this is because it allows the participants to feel more comfortable, and consequently can yield more accurate results due to this apparent trust. Myers, Valdivieso and Kiss' (2009) previously suggested that participants who are mentally comfortable in an accustomed setting can produce more accurate results as they are less stressed, when compared to research with children in external settings that are unfamiliar, otherwise known as 'laboratory style conditions'. As such, before any data collection was conducted with the children in the setting, the researcher ensured that the teachers' introduced who he was and why he was in their class(es) before he conducted the 1:1 questionnaire with the children that focused on gauging their knowledge and understanding of fluid intake. The researcher positioned himself at a table in a corner within each of the classroom settings, so that he could lower himself down to the children's eye level, to appear less threatening, which is normal positioning of a teacher that the children would be accustomed to. This positioning within the classroom was agreed and directed

by the gatekeeper. This therefore concurred with Colonna et al.'s (2017) finding that children need to be at ease to effectively engage with data collection, where consequently, the measures implemented to reduce participant stress could have allowed the children to feel more relaxed due to the positioning of the researcher and purposeful decision to collect data in the children's own learning settings. That said, Goodwin et al., (2017) suggest that because children are likely to be aware they were being questioned, the potential for the Hawthorne effect could be present (Landsberger, 1958). Whereby, the participants could alter their true responses to please the researcher. However, due to the age of the participants, it could also be argued that the children needed someone familiar to the teachers/school to ensure they answered the questions accurately and appropriately. As a result, it is implied that conducting the research where the researcher was personally known to the teachers/school was important.

Furthermore, at study 2's school, the gatekeeper was the EYFS leader, who could therefore oversee the physical running of the research within the early years setting as it was being conducted. Scotland (2012) suggests in his advice on the role of the gatekeeper, that any researcher who conducts a study where children and vulnerable people are participating, that a researcher must be guided by the requirements of the gatekeeper in the research setting. In the case for study 2, the EYFS leader requested that the researcher obtained verbal assent from the children before conducting research with them. Thus, all requirements of written consent from the gatekeeper (appendix 11) and verbal assent from the children was adhered to. This will be discussed in greater detail in the ethics section (3.10).

Ascertaining an adequate sample size can be a problematic task, although Cohen, Manion and Morrison (2018) propose that the larger the sample size, the more valid the research. They continue to state that a minimum of 30 cases should be collected per variable as this lessens the probability of reporting findings that may or may not be physically present. This is otherwise known as type 1 and type 2 errors. Thus, due to this study having three main variables (month the children were born, sex and older sibling status) (discussed further in 3.6.5), study 2 should have had at least a sample of 90. However, as study 2 was intended to test each of the resources, as well as data collection procedures for a larger-scale trial to assess initial efficacy/impact with the children, whereby the qualitative data collection of feedback from the delivering teachers primarily informed how the HEP would be modified in step 5 (figure 1); 45 children (43 in the follow-up), and their two teachers, was an acceptable sample size to meet the intended outcomes of why study 2 was conducted.

The two teachers who participated in study 2 also previously took part in study 1, and therefore had an input into the initial development and modification of the HEP. Collaborating with sector professionals, in this thesis' case; qualified teachers, can be a useful model to develop effective tools to impart knowledge and understanding as they are the demographic that ultimately would be utilising the resources following the completion of the research (Smith, 2010). The fact that study 2 utilised two of the teachers who previously took part in study 1, could have been useful to meet the overall aims of creating, modifying, implementing and assessing the HEP. This benefit of continuity highlights the clear progression from the researcher's creation of resources prior to study 1, whereby the teachers offered expert opinions to help modify (study 1) and test the efficacy/impact and logistics of pedagogically implementing the prepared HEP (study 2). The

participation criteria for the two teachers were firstly that they were teachers with qualified teacher status. And secondly, they were the practitioners who would lead the delivery of the version 2 HEP to facilitate further comments to enable modification ii (step 5, figure 1). As such, both teachers met these criterions.

To facilitate the assessment of efficacy and impact of the version 2 HEP (step 4, figure 1), it first had to be implemented. Consequently, both the study 2 implementation and assessment of efficacy and impact processes is outlined below and further explained in section 3.6.

Week 1: Children's pre-water week data collection (informs step 4, figure 1).

Week 2: Water week intervention taught by the children's teachers (step 3, figure 1).

Week 3: Children's post-water week data collection and teacher questionnaires (informs step 4).

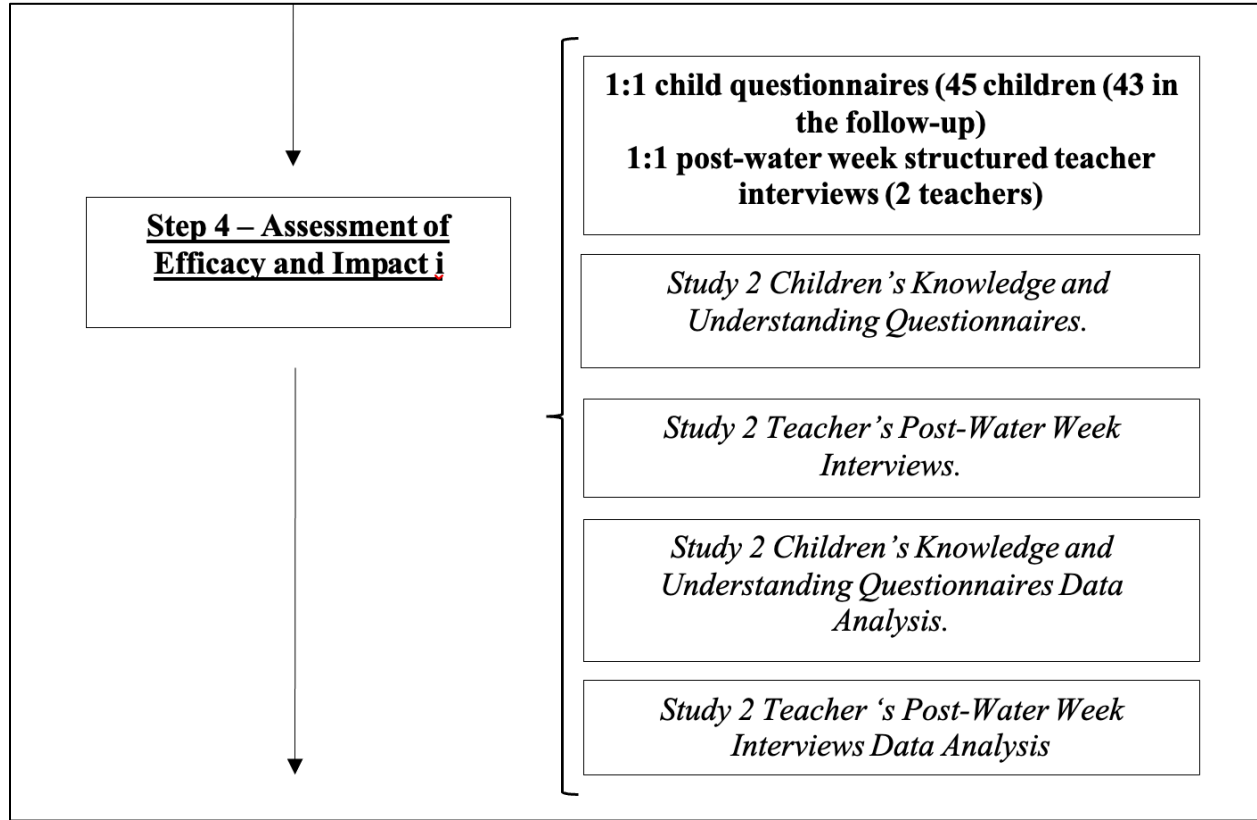
5-Months after Initial Delivery: Follow-up data collection with the children (informs step 4).

Following the collection of the children's pre-water week data in week 1, the researcher provided each teacher with the version 2 HEP and led a CPD session with them on how to deliver the resources. By delivering the CPD session after the completion of the pre-water week data collection, this avoided influencing the teachers from implementing the researcher's pedagogical advice prior to collecting all the children's pre-water week data. This is a similar timing of specific teacher intervention tuition to Kaufman-Shriqui et al., (2016) and hence is justified for use to support the implementation and assessment of the resources in the HEP. However, the final decision on the logistical timings of when to deliver each day's resources was left for the teachers to choose, as this could enable a greater sense of 'real world' usage, as ultimately the hydration resources will be intended to be delivered by trained teachers who hold a high level of professional

autonomy over the workings of their classrooms (DfE, 2011). The researcher also assisted in preparing the classrooms with the drinking tracker chart and sticker chart. During the second week, the researcher remained off-site but stayed in contact with the gatekeeper at the school to answer any queries. This ensured that the physical teaching and learning was undertaken by the teachers (as would happen in future use), while also ensuring that if any issue arose then this could be rectified accordingly. Week 3 and the follow-up relates to assessment of efficacy/impact and hence will be discussed later. However, the researcher returned in week 3 (post-water week) to repeat the children's questionnaire and conduct the teacher post-water week interview, and returned 5-months post-delivery to collect the children's follow-up data to further assess the efficacy and impact of the created, modified and implemented version 2 HEP. Follow-up data was collected due to Kaufman-Shriqui et al.'s (2016) assessment of their health education resources, where they conducted a follow-up 6-months following the intervention delivery. That said, to facilitate a similarly timed follow-up to Kaufman-Shriqui et al. (2016), it would have meant collecting data in the build-up to Christmas in December 2022, which could have been problematic for the researcher due to other school timetable pressures, therefore a 5-month follow-up in November 2022 was acceptable.

3.6 - Step 4 - Assessment of Efficacy and Impact i (Study 2)

Figure 11 – Step 4: Assessment of Efficacy and Impact i Highlight



3.6.1 - Step 4 - Assessment of Efficacy and Impact i (Study 2) - Materials and Resources (Children’s Questionnaire)

Following the implementation of the version 2 HEP (appendix 7), study 2 featured two structured questionnaires to assess the individual resources’ efficacy to develop knowledge and understanding of fluid intake with both children and their teachers’. The teacher’s questionnaire was conducted once, post-water week, to evaluate the resources pedagogical effectiveness, to inform decisions for each resource’s retention/removal/modification (discussed in 3.6.3). The child focused questionnaire was conducted three times: pre-water week, post-water week and 5-months after water week delivery in a follow-up. This was to establish what level of fluid intake

knowledge and understanding the children's possessed before the water week delivery, to ascertain what impact the water week intervention had on the immediate accumulation of new knowledge post-water week and 5-months after delivery, to assess what knowledge and understanding was retained in the medium term to further assess knowledge and understanding. The majority of the questions to assess what knowledge and understanding the children possessed, pre-water week/post-water week/follow-up, were adapted using the questionnaire by Williamson and Howells (2019), as this was successful in capturing the extent of young children's fluid intake knowledge and understanding in a single snapshot in time, to ensure the questions could inform what level of efficacy and impact the HEP had to support the teacher's suggestions for modification ii (step 5, figure 1) . Moreover, Williamson and Howells' 2019 questions were an adaptation of Coppinger and Howells' (2019) questionnaire and thus was the third time the fluid intake questionnaire has had the opportunity to be refined and modified for studies that aimed to investigate the topic of fluid intake. A questionnaire refinement process was part of Heaton et al.'s (2021) methods to analyse adults' sugar-sweetened beverage consumption knowledge in the USA, whereby they reported that refinement of questionnaires was a useful property to obtain the best quality data, as it lessens the opportunity to collect less useful data. Hence, by a further refinement of an already established questionnaire in relation to fluid intake, it could have increased the quality of data this thesis yielded to create, modify, implement, and assess the HEP.

To facilitate the refinement of the children's questions, Biddix's (2018) framework of planning research questions was utilised; like Williamson and Howells (2019). Biddix's (2018) framework denotes that a good research question must meet four criteria: feasible, clear, significant and ethical. For example, in appendix 12, question 12, it asks "Who tells you when to drink?". This

example question was *feasible*, due to the requirement in the EYFS framework (DfE, 2021), that children have an early learning goal to be able to “talk about the lives of the people around them” (DfE, 2021, p.14), and therefore are required to describe the significant people in their lives by the end of the EYFS. It was, *clear* as it contained vocabulary the children could subjectively use themselves and therefore could comprehend the enquiry. It was *significant* as this outlined who the children believed supports their consumption and hence assisted with answering one of the five fluid intake topics set out in the introduction. Finally, question 12 (appendix 12) was *ethical* as the researcher explained that to reply ‘don’t know’ was permitted, to avoid intrusive lines of questioning (ESRC, 2015). All the questions, in the children’s questionnaire, went through this refinement process before their inclusion in the final draft questionnaire. These have been provided below (appendix 12).

Questions 1-5 were included to collect participant demographic data.

Question 6 – Do you like drinking water?

Question 6 was included as likes and knowledge of lifelong healthy habits should be learnt in the primary school setting (Howells, 2012), hence as a like for water can impact adequate consumption (Van Belzen, Postma, and Boesveldt, 2017), an assessment of whether the resources in the HEP can alter a positive opinion of water was important.

Question 6a – Why do you feel like that?

Question 6a was included to enable the children to substantiate their opinion of drinking water; offering the children the first of two opportunities to express knowledge and understanding that fluid is essential for health and why the children need to drink adequate fluids.

Question 7 – Why do you think we should drink water?

Question 7 was included to offer the children a second opportunity to demonstrate knowledge and understanding that they need drink to water due to health imperatives and hence begin to answer the question as to whether the HEP can impact knowledge and understanding of why they need to drink fluids.

Question 8 – During the school day, when do you really feel like you want a drink?

Question 8 was included to allow the children to demonstrate knowledge and understanding that times in and around exercise should be a time they are most thirsty (Sawka, 2007), and hence begin to form healthy fluid intake habits, which Howells (2012) suggests is important to the lifelong action of healthy habits. Therefore, help answer whether the children have developed awareness of when to drink fluids.

Question 8a – Are you allowed to drink at this time?

Question 8a was included to establish if there were any barriers to children's consumption, especially at the time in which they believed they needed to drink. Therefore, help in answering whether the HEP impacted teachers' support of fluids.

Question 8b – Doing what kind of things make you want to have a drink?

Question 8b was an additional opportunity for the children to demonstrate knowledge and understanding that exercise should induce a thirst response (Sawka, 2007; Shaw, 2010). Therefore, it helped to answer whether the HEP impacted development of awareness of when to drink fluids.

Question 9 – If you had to guess, how many of these bottles of water do you think you drink a day?

Question 9 was included to establish how much water the children believed they consumed in the classroom in a similar method to Williamson and Howells (2019), which contributed to children's overall levels of adequate consumption.

Question 10 – If you had to guess, how many of these cups do you think you usually drink at lunchtime?

Question 10 was included to establish the children's perceptions of lunchtime consumption. As explained below, consumption from bottles (question 9) and lunchtime consumption was combined in the data analysis process to determine the children's perception of adequate consumption according to WHO (2004).

Question 11 – From the moment you wake up, when do you have you first drink of the day?

In accordance Bonnet et al., (2012), question 11 was included to establish whether the children believed they were in receipt of hydration before they arrived at school, and hence if they believed they were not, they would need teacher support to consume fluid before the formal start of the school day.

Question 12 – Can you tell me all the people who tell you when to drink?

Due to Howells and Coppinger's (2020) finding of lacking teacher support, question 12 was included to establish if the HEP had an impact on the fluid intake support teachers provided. This was asked as an open question to enable the children to signpost other key fluid intake supporters, to therefore answer if the HEP developed knowledge of who supports the children to drink.

Question 13 – Is there ever a time at school you are not allowed to drink? If so, when?

Question 13 was included due to Johnson Malloy et al.'s (2008) finding that teachers can be unproactive in fluid support due to pedagogical imperatives. Hence, this question was asked to establish if the HEP had an impact on prohibited drinking times, therefore helping to answer whether the children learnt when to drink around those times.

Question 14 – If you really wanted a drink before playing, would you rather play first to get more time, or have a drink?

Question 14a – If you really wanted a drink in the middle of playing, would you carry on playing or stop to have a drink?

Question 14 and 14a were included due to Williamson and Howells' (2019) finding that one-third of young children would choose to play than accept hydration if they believed they needed to drink. Hence, the questions were intended to update the prior findings, and to establish if the HEP delivery impacted the hypothetical understanding that actioning a thirst response is important.

The children's questionnaire utilised various types of questions, such as open questions, closed questions, multiple choice and the Likert scale. Likert (1932) and Cohen, Manion and Morrison (2018) all suggest that 'rating questions' provide a range of options that encourage a quantitative response from participants, which in the case of this thesis allowed the researcher to ascertain how much fluid the children think they consume in a day at school. An example of this is in appendix 12, questions 9 and 10, where it asked the children how much water they think they drink at school (in the classroom) and how much water they think they drink at lunchtime, as the children could rate to how much fluid they believed they consumed at school. The question to ascertain lunchtime

consumption (in addition to classroom consumption) was necessitated by Williamson and Howells' (2019) suggestion within their previous paper, whereby they implied that children drink at other times in the school day than solely from their bottles in the classroom. Hence, lunchtime consumption provided another opportunity for children to access fluids during the school day, due to the strong association between food and drink. Thus, in combining consumption from bottles and lunchtime consumption in the data analysis process, this should give a more accurate depiction of how the children think they drink and hence how much they think they should drink, as knowledge of healthy habits must come first before action of healthy habits (Howells, 2012). Due to the age of the children, question 9 and 10 (appendix 12) was visually presented using familiar objects, such as the same size school water bottles that the researcher has observed children typically drink from in the classroom, and the same size cups they would consume water from at lunch time (appendix 13). Why these visual aids were chosen will be explored in later section (3.6.2).

Furthermore, Cohen, Manion and Morrison (2018) suggest that a selection of open-ended questions allow for a wide-ranging array of replies from research participants which can enrich data sets through qualitative means. For example, appendix 12, question 8b (and 6a, 7, 8, 12 and 13), asked open questions such as - "doing what kind of things make you want to have a drink?". This provided the children a chance to demonstrate their knowledge and understanding that physical activity should produce a thirst response to provide opportunities to autonomously rehydrate due to the loss of bodily fluids (Severs, 1979), even if children tend to have an ineffective thirst response (Benelam, 2010; Shaw, 2010). Or conversely, this question could identify a lack of

knowledge of what activities make children thirsty, and therefore are likely to have the inability to autonomously rehydrate after exercise due to an unawareness that they need to replace lost fluid.

Furthermore, Benelam (2010) and Shaw (2010) previously discussed that young children do not recognise their own thirst responses, and hence this could imply that children might not understand what the word “thirsty” means. As such, the researcher was mindful that some children may not recognise thirst vocabulary and would not be able to respond effectively to some questions. Therefore, the researcher exercised caution by replacing the word “thirsty” with “really want/wanted a drink.” Consequently, as discussed earlier, one aim of the resources in the HEP had the intention of developing fluid intake vocabulary and the correct contextual use of it, which can be an indicator that knowledge and understanding development has occurred (Joshi, 2005), but to ensure all children could understand the questions, the word ‘thirst’ was substituted.

Sutton et al., (2003) suggested that it can be advantageous to design questions via a process of ‘planned possibilities’ to keep questionnaires concise and easy to understand. As such, the questionnaire facilitated questions that enabled the children to understand what was required of them by wording them carefully in an age-appropriate way. Due to this, within the EYFS (DfE, 2021), it suggests that practitioners must ensure they phrase instructions in a way that enables children to understand what is being asked of them. As such, the researcher has taken guidance from this to enable the fundamental understanding in which to conduct and phrase the children’s questionnaires. Consequently, the researcher provided options unseen by the participants, within the question 11 to allow for specific answers to fit into a particular generic field of ‘possibilities’ for children’s comprehension, coding, and data analysis purposes. For example, in appendix 12,

question 11, it asked an open question to allow for breadth of answer in relation to when the children's first drink was every day from the moment they wake up. Whereby, the researcher applied his school teaching and research experience to establish an array of potential replies which included: "before school," "when I get to school," "morning snack," "later than morning snack" and "don't know." By implementing this, it simplified the data analysis coding process, as the children would state a time they have their first drink, whereby the researcher could select one of the grouped ranges of times in the day. For example, if the children stated that their first drink was at breakfast time, the researcher grouped that reply as "before I get to school", as the children's first drink would be before the start of the school day (even if they have their breakfast at school) and hence should be hydrated before the commencement of any formal learning.

In question 14 (also 6 and 14a) (appendix 12), the researcher used closed multiple-choice questions that allowed the children to demonstrate an understanding that drinking is important whereby the researcher asked the hypothetical question of "if you really wanted a drink before playing, would you rather play first to get more time or have a drink and then play?". Cohen, Manion and Morrison (2018) suggest that this type of question can establish a definitive answer, as it provides interviewees with a binary choice and helps researchers form more comprehensive conclusions as less researcher interpretation is required during data analysis. As such, the question example provided allowed the researcher to ascertain what the children would choose to do if they were given independence in their own consumption of fluids. Therefore, allowing the researcher to assess if this knowledge changed in the post-water week questionnaire and/or in the follow-up due to the delivery of the HEP, to consequently assess if a perception of fluid consumption habit change had occurred.

It was concluded that the most beneficial approach for this study was to triangulate the quantitative data supported by the qualitative scope of open questions (and the teachers' post-water week data) in order to empirically assess the children's data to help inform assessment of efficacy and impact i (step 4, figure 1), modification ii (step 5, figure 1) and finally, assessment of efficacy and impact ii (step 7, figure 1).

3.6.2 - Step 4 - Assessment of Efficacy and Impact i (Study 2) - Data Collection Procedures (Children's Questionnaire)

This section will outline the child participants data collection procedures for each week of the study 2 data collection protocol for pre-water week (week 1/June 2022), post-water week (week 3/June 2022) and the 5-month follow-up (November 2022), to assess the efficacy of how the children's knowledge and understanding of fluid intake was impacted by the implementation of the version 2 HEP. This is reiterated below:

Week 1: Children's pre-water week data collection (informs step 4, figure 1).

Week 2: Water week intervention taught by the children's teachers (step 3, figure 1).

Week 3: Children's post-water week data collection and teacher questionnaires (informs step 4).

5-Months after Initial Delivery: Follow-up data collection with the children (informs step 4).

Heat temperatures were recorded for all stages of the study 2 data collection (appendix 13a). This is because differences in external heat temperatures can have an influence on homeostatic consumption of fluid (Severs, 1979), even if children tend to have an under-developed thirst response (Benelam, 2010; Shaw, 2010).

Before the commencement of data collection, the teachers' introduced the questionnaire activity to the children as a whole cohort. Whereby, to avoid distractions to the children's learning, the teachers directed the positioning of the researcher in the corner of the classroom(s). Which was pre-arranged before the children started school in the mornings, which was the same as Williamson and Howells (2019).

Purposeful selection was utilised to invite children to participate in the study on a 1:1 basis with the researcher, whereby the researcher utilised the teachers' class registers to ensure all children in the school setting(s) had the opportunity to take part, one at a time, in the HEP efficacy and impact assessment. The practice of purposeful selection, as suggested by Palinkas et al., (2015), is when a researcher chooses the participants based within a specifically selected location, in this thesis' case, schools. This is beneficial, because a researcher could incorporate all children who were delivered the HEP and were present for at least pre-water week and post-water week data collection, which was vitally important to enable a full HEP efficacy and impact assessment of the children's development of knowledge and understanding of fluid intake. As such, purposeful selection should be deemed as a useful method in which to collect the children's questionnaire data.

To collect the data for the children's replies, a Google form questionnaire was utilised on a 1:1 informal basis within their individual classrooms. The researcher believed that when 1:1 data collection protocols are used, responses from the children would stem from their own pre-conceived ideas which the researcher needed to strengthen the reliability of the findings. Supporting this, Bell, Bryman and Harley (2018) suggest in their research methods advice, that

although possibly daunting at first for the participants, 1:1 data collection is more likely to capture participants individual knowledge and understanding of a topic. Furthermore, as the prior work by Williamson and Howells (2019) utilised an identical data collection method to noticeable effect, then to replicate this was the most logical method to collect the knowledge and understanding data to assess efficacy and impact of the implemented HEP. As such, to conduct the same methods for this portion of ascertaining children's fluid knowledge and understanding pre-water week, post-water week and in a follow-up is justified. Furthermore, because the EYFS children were in the beginning phases of phonetical awareness to learn how to read (BAECE, 2012), this could have meant the children were likely too young to comprehend the subjectively complex fluid intake queries if they conducted the questionnaire task independently. As such, it was concluded by the researcher that a 1:1 data collection method was beneficial to collect the most accurate and valid data to assess efficacy and impact of the implemented HEP.

The questionnaire set out a foundation of pre-planned questions, to ensure each query was verbalised the same way for each participant (appendix 12). Therefore, the children's answers to the same questions, used in all three stages of the data collection, should provide a true reflection of the children's knowledge and understanding pre-water week, post-water week and in the follow-up, which strengthens the assessment of efficacy and impact of the HEP. The penalty for inconsistent phrasing of research questions (Barriball and While, 1994) and tone of voice (Cobb, 2016) can contribute to a lack of quality in the findings, as one participant may interpret an alternatively phrased question differently to other participants, which could yield unreliable and invalid results. Therefore, consistent phrasing and tone of voice was subsequently actioned by the researcher to effectively assess efficacy and impact of the resources in the implemented HEP.

Due to the age of the young participants, the use of physical bottles and cups (appendix 13) were used to assist the children's comprehension of some questions to tell the researcher how much water they thought they were drinking in the classroom and at lunchtime (question 9 and 10, appendix 12). The use of visual aids to support children in understanding fluid intake questions was identical to earlier peer-reviewed papers (Williamson and Howells, 2019; 2021), that used only water bottles to estimate daily fluid intake (not lunchtime cups). Drawing upon previous work by Kullgren et al., (2015), where they studied water intake estimation with paediatric kidney transplant patients using an electronic tracking water bottle to assist participants in meeting fluid intake requirements post-surgery. They found that there was a positive impact on the accuracy of children's fluid intake estimation, and adequate consumption, if they could visually see how much fluid they were drinking daily, compared to participants who did not use visual estimation. That said, due to financial limitations of this research, to implement visual estimation data collection procedures, physical water bottles and cups were used to allow the children to estimate their consumption (appendix 13). However, with the researcher offering the children a multiple-choice question in relation to how much they drink from their water bottles a day, the children may have responded with the maximum volume of fluids available to choose from to appease the researcher, as it could be assumed by the children that more water is the best option. Not realising that being over-hydrated is not beneficial to health (Jéquier and Constant, 2010). That said, due to the age of the research participants and their potential to lack understanding of metric volumes of fluid (DfE, 2021), by providing children with a visible resource (appendix 13) this gave them a greater insight into the quantity of fluid they perceive they were physically drinking each day and at lunchtime, due to visibly seeing the multiple-choice volumes. Consequently, to allow children the opportunity

to gauge their intake of fluids through a visual means was useful to reduce any misconceptions in relation to fluid intake due to a possible under-awareness of metric volumes.

Furthermore, within appendix 12, question 14 and 14a, it asked about a child's preference regarding a hypothetical situation as to whether they would they drink water before play and in the middle of playing with toys or ignore thirst signals and play without the uptake of hydration if they believed they wanted a drink. In appendix 13, a toy dinosaur was used to depict the option of 'playing with the toys without drinking'. Due to the replicant nature of the children's knowledge and understanding data collection procedures being identical to Williamson and Howells (2019), but conducted multiple times, this was also utilised in this thesis to symbolise the 'playing without drinking' thought construct previously. As such, the use of visual aids (appendix 13) assisted the children to comprehend questions (appendix 12, question 9, 10, 14 and 14a), that they could subjectively find confusing and therefore prompt more accurate responses from the children to effectively assess efficacy and impact of the resources in the HEP and substantiate the teachers' suggestions to inform modification ii (step 5, figure 1).

Moreover, the absence of an active control group can complicate how the thesis can assess the efficacy and impact of individual resources in the HEP and therefore the overall efficacy and impact of the resources, as there was a not a cohort sample to compare effect data. Shoshani and Slone (2017) drew upon a limitation in their psychology intervention that examined children's subjective beliefs pertaining to learning wellbeing behaviours, with children aged 3-6-years-old (similar age to this thesis), possibly due to ethical implications. As such, using a control group in a school setting to assess efficacy and effectiveness of hydration learning resources would be

challenging as only delivering the HEP to one half of a school group cohort, is unethical due to it being unfair on the control group (Economic and Social Research Council, 2015). Consequently, by collecting pre-water week data, this established the basis of the children's fluid intake knowledge and understanding prior to the delivery of the HEP, to consequently compare their replies to post-water week/follow-up; meaning that a dedicated control group was not required.

3.6.3 - Step 4 - Assessment of Efficacy and Impact i (Study 2) - Materials and Resources (Teacher's Post-Water Week Questionnaire)

The teacher's 1:1 post-water week evaluation questionnaire was conducted with each teacher individually to assess the pedagogical efficacy and impact of the resources and inform modification ii (figure 1). The function of conducting a 1:1 structured questionnaire with the researcher, rather than asking the teachers to complete an online Google questionnaire will be explained in 3.6.4. These were also audibly recorded, and their replies transcribed (like study 1).

The teacher questionnaire data was the primary point in how modifications to the resources were made in step 5 (modification ii, figure 1), whereby the children's data was used to support what the teachers suggested. This endeavour to primarily evaluate the HEP from a teacher's viewpoint would be supported by Creswell and Creswell (2018) in their explanation of the benefits of an exploratory sequential study design. They discussed that to brand a study as an 'exploratory sequential study', a researcher must collect qualitative data from other sector professionals. That criterion was fulfilled in study 1 with the semi-structured teacher interviews. As study 2 was not intended to be the final data collection point in which to base the efficacy and impact assessment for the overall thesis, it had the ability to provide further opportunity to modify the resources to

ensure the maximum impact of knowledge and understanding of fluid intake development could occur in the final larger sample sized study; study 3. As such, the study 2 teacher post-water week questionnaires consisted of mainly open-ended, qualitative questions to allow the teachers to express the full extent of their views to inform modification ii of the HEP following the first formal trial of it, to create version 3.

Utilising the same framework for the development of children's questionnaires, the design of the teacher questions also used Biddix's (2018) framework of crucial characteristics of a good research question. It was viewed by the researcher that to approach the creation of the questions using the same justifying question structure as the study 2 children's questions, would allow for a deeper level of continuity as each question's inclusion was underpinned via a similar justification structure. This could therefore increase the validity of the study, as all questions were founded using the same underpinning groundwork, even though the rationale for why they were asked was different. A justification overview for why the study 2 teacher questions were asked has been provided below, whereby the study 2 teacher questionnaire is in appendix 14.

Question 1 - How did the HEP support your water week?

Question 1 was included to provide an 'icebreaker' to the post-water week teacher interview and give the teachers time to supply an overview of how the delivery of the water week went, what resources worked well and what didn't. To subsequently build upon their replies in later questions.

Question 2 - From your perspective how did the HEP enhance your own knowledge and understanding of fluid intake?

Question 2 was included to establish whether the content in the HEP could be endorsed by teachers who would be delivering the HEP to children in the future. And hence impact not only children's knowledge and understanding of fluid intake, but also teachers.

Question 3 - In your opinion, which resource was the most effective for developing your understanding of fluid intake?

Question 3a. In your opinion which resource was the least effective for developing your understanding of fluid intake?

Question 4. How has the HEP changed your drinking habits, if at all? (Please explain your reasoning)

Question 3, 3a and 4 were included to substantiate the question 2 response, to assess what resources impacted teacher's knowledge and understanding of fluid intake and what effect they had on their understanding.

Question 5 - In your opinion, can you all order / rank the resources from 1 - 12 for effectiveness to develop children's understanding of fluid intake (1 being the most effective and 12 being the least effective) - Please don't give multiple resources the same number.

Question 5 was included to facilitate a quantitative level of data collection to establish what resources were most useful and were the least useful to develop children's knowledge and understanding of fluid intake, to enable further elaboration upon their replies and inform what resources needed to remain in the HEP and what resources needed to be modified to be retained in version 3 or removed entirely.

Question 5a - Why did you think number 1 was the most effective for developing children's understanding of fluid intake?

Question 5b - Why did you think number 12 was the least effective for developing children's understanding of fluid intake? How could the least effective resources be enhanced?

Question 5 and 5b allowed for elaboration as to why the teachers ranked the most and least useful in the order they did, to inform the researcher as to what resources needed to be retained, removed or modified in version 3.

Question 6 - In what ways did you adapt the HEP to meet the needs of all your learners? Or would like to adapt if you repeated the water week? (Please state if you didn't make adaptations / wouldn't make any)

Question 6 specifically informed the researcher as to what resources needed to be modified in version 3 and hence facilitate step 5, modification ii (figure 1).

Question 7 - On repeating water week again, what resources would you discard from the HEP? And why do you discard these?

Question 7 specifically informed the researcher as to what resources needed to be discarded in the version 3 HEP and hence facilitate step 5, modification ii (figure 1).

Question 8 - Do you think delivering the HEP, via a water week, met the curriculum aims of what constitutes a healthy diet, which includes fluid intake? If not, why?

Question 8 was included to support arguments made in part 1 of the results and discussion section, that the HEP can not only impact knowledge and understanding, but also meet the ambiguous fluid intake aims in the health education statutory guidance and EYFS (DfE, 2019; 2021).

Question 9 - Outside of water week, what resources would you continue to use? Why?

Question 9 was included to signpost as to what resources had the ability to continually support fluid intake in the classroom, even if the water week is not directly being delivered, and therefore further support what resources needed to remain or be modified in version 3.

Question 10 - Do you think the HEP will encourage the children to change their drinking habits? (In what ways? / How can it be enhanced?)

Question 10 was included to provide a plenary opportunity for teachers and enable the researcher to establish if the delivery of the resources in the HEP were able to support the development of new healthy habits (Howells, 2012).

As highlighted in appendix 14 all questions apart from question 5 allowed for the teachers to provide a depth of answer via an open question. As aforementioned, Cohen, Manion and Morrison (2018) discuss that this allows for additional information to be accrued by researchers and substantiate why they held thought constructs. For example, in appendix 14, the teacher questionnaire asked primarily ‘why’ and ‘how’ questions to substantiate more in-depth answers from the teachers to inform modification ii. Such as, appendix 14, question 1 – “how did the HEP support your water week?”. This was utilised as an ice breaker question to allow the teachers to provide general information about the HEPs implementation and how it helped them in delivering the HEP, whilst offering an opportunity for teachers to provide a general appraisal of the efficacy and impact of the resources, and what needed to be retained, discarded or modified. Hence, the theme of the open-ended-in-depth questions was essential to modify the resources to optimise efficacy and impact for version 3, using teachers’ expert opinions. Open-questions were repeated

in appendix 14, questions 2, 3, 3a and 4, where it asked the teachers if the HEP impacted their own knowledge and what resources were the most and least effective to impact their knowledge. In capturing what resources were effective in developing teachers' knowledge and understanding of fluid intake ensured the content of the HEP had been endorsed by teachers who would be delivering the HEP to children in the future, and thus strengthens efficacy and impact for developing both children's and teachers' knowledge and understanding of fluid intake.

In appendix 14, questions 5a, 5b, 6, 7, 8, 9 and 10, the purpose of the questions was directed towards the teachers' perceptions of the most and least effective individual resources in the HEP, for developing children's knowledge and understanding of fluid intake. The questions mentioned above also asked the teachers how they would modify each resource to increase their educational efficacy and impact. The process of qualitative evaluation post-water week, as supported by Smith (2010) is a useful approach to triangulate quantitative effect data to form conclusions and recommendations for future work. Hence, using teachers' responses to primarily inform modification ii, triangulated with the supportive quantitative data from the children, was useful to modify the version 2 HEP in study 2, to create version 3, that was delivered in a future study; study 3.

To form the basis of the teachers' in-depth qualitative responses, question 5a and 5b (appendix 14) asked the teachers to undertake a Likert (1932) ranking activity, to rank each resource following the water week implementation from 1 (most effective) to 12 (least effective). This empirically established each of the resources perceived effectiveness to develop children's knowledge and

understanding of fluid intake. Cohen, Manion and Morrison (2018) suggest that this form of quantitative data collection method can stimulate participants replies for a more in-depth qualitative response, as it helps refine thinking into a numerical landscape, to aid in the compartmentalisation of what a researcher is asking of them. The researcher subsequently asked the teachers a series of follow-up questions as part of question 5a and 5b (appendix 14) (as well as questions 6, 7, 8, 9 and 10) to establish justification for their answers in the ranking part of question 5a and 5b.

3.6.4 - Step 4 - Assessment of Efficacy and Impact i (Study 2) - Data Collection Procedures (Teacher's Questionnaire)

The study 2 teacher post-water week questionnaire data collection procedures are identical that of the study 1 teacher interview questionnaire, please see that section for greater explanation to answer how the teachers study 2 interview data was collected (3.3.4).

After the children's post-water week data was collected in week three, the teachers participated in a separate face-to-face structured interview to provide their opinions of the resources perceived effectiveness of the teaching and learning of the version 2 HEP, so that the researcher could modify the version 2 HEP (to create version 3). It was deemed by the researcher that to conduct the teacher data collection portion of study 2 on a 1:1 basis in the teachers' classroom, similarly to study 1, would not only be best use of participant time as they were completed within 20 minutes, but was advantageous to obtain the most comprehensive answers (Thomas, Nelson and Silverman, 2015). Primarily as the teachers did not have to complete a potentially onerous online document which would require them to write their responses but could simply verbalise their thoughts for the researcher to subsequently audibly record and transcribe their replies post-hoc (similarly to study

1). As such, Bell (2010) previously suggested, in her education/social sciences text, that as the onus of time-consuming work is on the researcher to process the collected data, the participants are more likely to be prepared to participate in future research. Consequently, due to the exploratory sequential study design (Creswell and Creswell, 2018), the overarching project was required to undertake additional research after study 2, thus by the researcher having a consideration of the teacher participants time and workload in the middle study of three, this likely assisted with the recruitment of teachers to deliver the version 3 HEP in study 3.

3.6.5 - Step 4 - Assessment of Efficacy and Impact i (Study 2) - Data Analysis

As the type of data that was collected from the teachers in study 2 like that in study 1, the method of how the study 2 teacher data was analysed is also similar (figure 1). As such, please see the study 1 data analysis section for how the study 2 teacher data was analysed (3.3.5).

To analyse the children's data, the Statistical Package for the Social Sciences 24.0 (SPSS) was used. Specifically, Levene's (1961) test for equality of variance was implemented to analyse the children's data, to examine areas of statistical significance ($p < 0.05$). Whereby, a series of post-hoc univariate analysis of variance tests (LSD, Bonferroni and Turkey) were carried out to establish if any of the independent variables had an influence on how the implementation of the HEP impacted the development of knowledge and understanding of fluid intake. The child participants were already split up according to age by year group (due to solely focusing on the EYFS year group in study 2). However, Trost (1986) suggests a researcher can further segment the participants by other means as this allows for a finer level of analysis post completion of data collection. The children were further separated via sex, month the children were born and whether they had an older sibling

or not (older sibling status). The rationale for segmentation by specific month born is because in the Early Years Development Matters Framework (BAECE, 2012) there are different month categories in which children are assessed on whether they have met various developmental milestones, whereby one set of assessed criteria is 30-50 months, and another is 48-60 months which encapsulates the EYFS age phase of the study 2 child participants. This level of segmentation supports Sibley and Etnier's (2003) claim that children in the same year at school can also be cognitively different and as such, could be at various stages in their learning development. Therefore, because in England, children start school the September after their fourth birthday, this led to the issue that some children born in July or August would have just turned four years of age when they started school. This is opposed to the children born in September or October, whom due to being nearly a year older when they commenced their school lives would have gained almost a year's worth of additional life experiences, and thus may have developed extra hydration prompts from their parents or pre-school practitioners. As such, the study 2 age data was separated into three categories: children born in September – December (older group of 5-year-olds), January – March (younger group of 5-year-olds) and April – August (youngest group of 5-year-olds and 4-year-olds). That said, there was one child who started the EYFS school year 12-months later than they traditionally should do. However, since the 6-year-old child was a member of the EYFS class, this was sufficient to meet the participation criteria. Therefore, when analysing the data, age by month born could be one variable in the quality of their understanding of fluid intake. These demographic splits have been provided at the end of this section in table 3. The rationale for separating the data via older sibling status was due to the significance found by Williamson and Howells (2019; 2021), which they reported a finding in which having an older sibling effected the quality of fluid intake knowledge and understanding the younger sibling

demonstrated. Hence, to assess if the delivery of the HEP water week impacted what knowledge and understanding was developed for whether the children had an older sibling, or not, was justified.

Due to the smaller sample size of 45 children (43 children for the follow-up) in relation to the work of Williamson and Howells (2019), it was difficult to draw many conclusions of learning efficacy and impact based study 2 children's data alone (Field, 2017). The study 2 data analysis process was therefore simply to trial the inner workings of how the researcher would ultimately analyse the data for study 3 to help inform modification ii (step 5, figure 1), and provide a preliminary indicator as to each of the resources' efficacy and impact to support what the study 2 teachers suggested for modification ii (step 5, figure 1). Hence as aforementioned, most of the decisions for what resources needed to be removed, modified or retained were taken from the teacher's post-water week interview data, whereby the children's data would act as supplementary support to justify the teacher's replies. The children's pre-water week, post-water week and follow-up data was then compared against each other to analyse whether the delivery of the HEP impacted the children's knowledge and understanding of fluid intake. Field (2017) continues to state that $p < 0.05$ is also the figure that is recognised within academia to establish whether a set factor has a direct effect on a dependent variable, not just main effect statistical significance. As a result, this research used a series of Univariate (ANOVA) and Multivariate Analysis of Variance tests (MANOVA) to analyse the data by coding each type of response and variable into a nominal number. These are tests that analyse one (ANOVA) or more (MANOVA) independent variables on a dependent variable. An independent variable is something that does not change due to the implementation of an intervention, such as sex or age by year or month born. A dependent variable is therefore the

inverse of this, such as how much fluid the children believed they consumed from their water bottles.

To provide an example of how the researcher coded the raw data for MANOVA and ANOVA analysis, in question 9 (appendix 12) which asked how much the children consumed a day from their bottles, the researcher numbered each reply as:

Half a 500ml bottle (250ml) :1

One 500ml bottle (500ml) :2

Two 500ml bottles (1L) :3

Three 500ml bottles (1.5L) :4

Four 500ml bottles (2L) :5

More than four 500ml bottles (>2L) :6

Consequently, when a child participant answered “don’t know” to a question, this was coded as ‘0’ to signify non-interaction with a question. The researcher was then able to process the coding through SPSS with the independent variables, to investigate whether the set factors had a statistically significant main or interaction effect ($p < 0.05$) on the questions when compared to the dependent variables of the questions at each stage of data collection. An overview of this is provided below (figure 12). The children’s data was consequently cross-referenced with the transcriptions from the study 2 post-water week teacher interviews (appendix 15) to inform the study as to what elements of the HEP were most pedagogically useful, and to what extent the resources had on any development of children’s knowledge and understanding of fluid intake. It

was then possible to return to the raw data, to create graphs and charts to inform the PhD thesis in part 1 of the results and discussion chapter (chapter 4). This in turn allowed for deductions and conclusions as to whether each individual resource would be modified, discarded or retained in the version 3 HEP (step 5, modification ii, figure 1), for further implementation (step 6, figure 1) and assessment of efficacy and impact (step 7, figure 1) in study 3.

Figure 12: Study 2 Coding Proforma

Are you a boy or a girl?

Boy: **1**

Girl: **2**

How old are you?

Four Years of Age: **4**

Five Years of Age: **5**

Six Years of Age: **6**

Year Group

Reception: **0**

Month the Children were Born Coding

(Born Aug/Jul/Jun/May) - 56-59 Months Old: **1**

(Born Apr/Mar/ Feb/Jan) - 60-63 Months Old: **2**

(Born Dec/Nov/Oct/Sept) - 64-67 Months Old: **3**

(Born Aug/Jul/Jun/May) - 68-71 Months Old: **4**

Sibling Status Coding

At least 1 Older sibling: **1**

No older sibling (only child or is eldest child): **2**

Twins: **3**

Triplets: **4**

6) Do you like drinking water?

Yes: **1**

No: **2**

Sometimes: **3**

6a) Why do you feel like that?

Don't Know: **0**

Health Related Reply (recognition of sign of dehydration / good for us): **1**

Health Related Reply (including knowledge of hydrate/dehydrate vocabulary): **2**

Like Taste - Other: **3**

Did not like water or sometimes liked water: **4**

Obscure - Other: **5**

7) Why do you think we should drink water?

Don't Know: **0**

Health Related Reply (recognition of a sign of dehydration / good for us): **1**

Health Related Reply (including knowledge of hydrate/dehydrate vocabulary): **2**

(To stay alive / like the taste) Other: **3**

Obscure Other: **4**

7a) Code for children who liked drinking water because it was good for them OR knew it was good for them OR BOTH

Other / Don't Know: **0**

Health Related Reply (recognition of a sign of dehydration / good for us): **1**

Health Related Reply (including knowledge of hydrate/dehydrate vocabulary): **2**

8) During the school day, when do you really feel like you want to have a drink?

Don't know: **0**

During periods of exercise (PE or Playtime): **1**

After periods of exercise (PE or Playtime): **2**

In the classroom: **3**

Other: **4**

8a) Are you allowed to drink at this time?

Don't know (Because don't know when most thirsty): **0**

Don't Know (Did know a time most thirsty, and hence did not know if allowed to drink at that time): **1**

Yes: **2**

No: **3**

Sometimes: **4**

8b) Doing what kind of things make you want to have a drink?

Don't Know: **0**

Exercise / Physical Activity: **1**

Normal Daily Activities: **2**

Other: **3**

9) If you had to guess, how many of these bottles of water do you think you drink A DAY?

Half a 500ml bottle (250ml): **1**

One 500ml bottle (500ml): **2**

Two 500ml bottles (1L): **3**

Three 500ml bottles (1.5L): **4**

Four 500ml bottles (2L): **5**

More than four 500ml bottles (>2L): **6**

10) If you had to guess, how many of these cups for you think you usually drink at lunchtime?

0ml: **0**

100ml: **1**

200ml: **2**

400ml: **3**

600ml: **4**

800ml: **5**

800ml+: **6**

10a) Guessing Volume All Day Bottles + Lunch

<500ml: **1**

500ml – 1L: **2**

1.1L – 1.5L: **3**

1.6L – 2L: **4**

2L – 2.5L: **5**

2.6L >: **6**

11) From the moment you wake up, when do you have your first drink of the day?

Before School: **1**

When I Get to School: **2**

Morning Snack: **3**

After Morning Snack: **4**

Don't Know: **0**

12) Can you tell me all the people who tell you when to drink?"

12a) Parent Mentioned

Don't Know: **0**

Parent / Grandparent mentioned: **1**

No Parent Mentioned: **2**

12b) Sibling Mentioned

Don't know: **0**

Sibling Mentioned: **1**

No Sibling Mentioned: **2**

12c) Teacher Mentioned

Don't Know: **0**

Teacher Mentioned: **1**

No Teacher Mentioned: **2**

12d) Friend Mentioned

Don't Know: **0**

Friend Mentioned: **1**

No Friend Mentioned: **2**

12e) Myself Mentioned

Don't Know: **0**

Myself Mentioned: **1**

Myself Not Mentioned: **2**

13) Is there ever a time at school you are not allowed to drink? If so, when? Need to prompt to ask if there anyone else?)

Don't know: **0**

Never a time: **1**

During Lesson time: **2**

During/After exercising (on the playground or PE): **3**

Other: 4

14) If you really wanted a drink before playing, would you rather play first to get more time or have a drink?

Don't Know: 0

Drink and then Play: 1

Play first to get more time: 2

14a) If you really wanted a drink in the middle of playing, would you carry on playing or stop to have a drink?

Don't Know: 0

Stop to have a drink: 1

Carry on Playing: 2

Table 3: Study 2 Child Participant Demographics.

Boys	Girls	4 Years Old	5 Years Old	6 Years Old	Has Older Sibling(s)	No Older Siblings	Twins	Born (Sept – Dec)	Born (Jan-Apr)	Born (May – Aug)
16	29	7	37	1	26	17	2	21	10	14*

Born Jan	Born Feb	Born Mar	Born Apr	Born May	Born Jun	Born Jul	Born Aug	Born Sept	Born Oct	Born Nov	Born Dec
5	0	2	3	8*	0	3	4	7	2	4	7

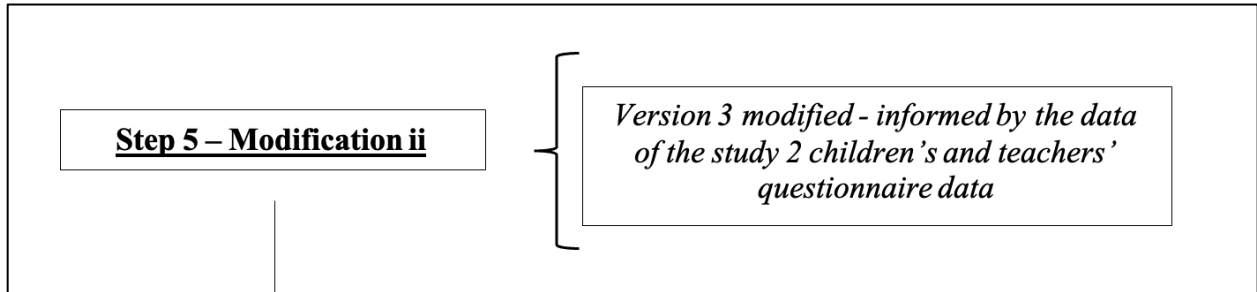
**The 6-year-old child was born in May.*

Child 19 (Girl/5-Year-Old/Born in April/Twin) – Didn't take part in the follow-up

Child 44 (Girl/4-Year-Old/Born in July/Has Older Sibling) – Didn't take part in the follow-up

3.7 - Step 5 – Modification ii

Figure 13 – Step 5: Modification ii Highlight



Following analysis of the study 2 data sets, the researcher was able to action comments for modification ii (step 5, figure 1) to facilitate the final creation (version 3) of the HEP for the purpose of study 3: the full-scale trial (appendix 16 and 17). Following this section, it will outline how study 3 was conducted that subsequently informed the overall research as to what level of teaching and learning efficacy the HEP had to impact children's and teachers' knowledge and understanding of fluid intake.


For ease of reader comprehension, even though what resources were included in version 3 of the HEP and why it was included will be addressed in part 1 of the results and discussion chapter (chapter 4), the author has provided an overview of what resources were retained, modified or removed in the version 3 HEP below and how the resources were altered from version 2 (figure 14) (appendix 16 and 17).

1. Change of wording in the teacher's guide to emphasise the amount required per day: 500ml size bottle in school and 500ml at home.
2. Two packs were made: an EYFS HEP and a KS1 HEP.

- a. EYFS HEP (with Bling your bottle and encourage people to drink poster creation **removed**).
 - b. KS1 HEP (with Bling your bottle and encourage people to drink poster creation **included**).
3. Change of guidance in the teacher's guide about when to use the water song (i.e. during snack time).
 4. Change of guidance in the teacher's guide about when to use the WAVs.
 5. The typing-error was rectified in the 2nd and 5th WAV where dehydration was spelt wrong.
 6. Addition of new information (3rd video) that our brain is like a flower, so we need to drink to make it grow to support why we need to support each other drink.
 7. Clarification in the healthy/unhealthy drinks video (4th video) about the health status of fizzy water, to state that it is good for us and can be consumed regularly.
 8. Larger drinking tracker chart (three landscape A3 sheets) to allow for larger names for children to manipulate more easily down the tracker.
 9. Colour code each day vertically on the sticker chart to enable it to be more easily and accurately have stickers placed by young children.
 10. Change of guidance within the teacher's guide, and on the sticker chart, to highlight the rate that stickers are to be given to children is one sticker a day, per child.

Figure 14: Version 3 HEP Resource List Modifications
 (Left: Version 2) (Centre: EYFS Version 3) (Right: KS1 Version 3)

Version 2 HEP




Water Week

List of Water Week Resources

- Teachers Guide Lesson Plan Pack
 - 1a. **Bling your bottle** Removed from the version 3 EYFS HEP
 - 1b. Water tray dehydration activity
 - 1c. Extremely Thirsty Cricketer Drama / Role-Play / Drawing
 - 1d. Healthy vs Non-healthy drinks sorting (physical and cut/stick)
 - 1e. **Poster Design Example** Removed from the version 3 EYFS HEP
 - 1f. Water Song
- Whole Class Drinking Visual Register Tracker
- Sticker chart with Water Week stickers
- Hydration driving licences
- 5 Whiteboard Animations Series
- Teacher / Parents Information Fact Sheet

EYFS Version 3 HEP




Water Week

EYFS

List of Water Week Resources

- Teachers Guide Lesson Plan Pack
 - 1a. Water tray dehydration activity
 - 1b. Extremely Thirsty Cricketer Drama / Role-Play / Drawing
 - 1c. Healthy vs Non-healthy drinks sorting (physical and cut/stick)
 - 1d. Water Song
- Whole Class Drinking Visual Register Tracker
- Sticker chart with Water Week stickers
- Hydration driving licences
- 5 Whiteboard Animation Videos
- Teacher / Parents Information Fact Sheet

KS1 Version 3 HEP



Water Week

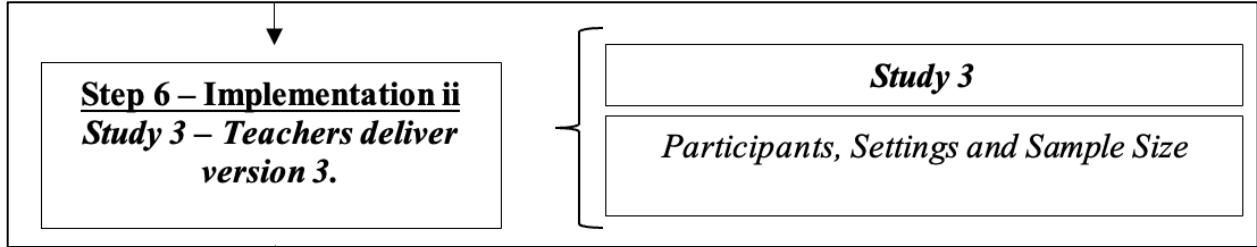
KS1

List of Water Week Resources

- Teachers Guide Lesson Plan Pack
 - 1a. Bling your bottle
 - 1b. Water tray dehydration activity
 - 1c. Extremely Thirsty Cricketer Drama / Role-Play / Drawing
 - 1d. Healthy vs Non-healthy drinks sorting (physical and cut/stick)
 - 1e. Poster Design Example
 - 1f. Water Song
- Whole Class Drinking Visual Register Tracker
- Sticker chart with Water Week stickers
- Hydration driving licences
- 5 Whiteboard Animation Videos
- Teacher / Parents Information Fact Sheet

3.8 - Step 6 - Implementation ii (Study 3)

Figure 15 – Step 6: Implementation ii Highlight



3.8.1 - Step 6 - Implementation ii (Study 3): The Participants, Settings and Sample Size

Between April and July 2023, 161 EYFS and KS1 age children, and 7 EYFS and KS1 teachers, from two state funded schools within the South-East of England participated in study 3. The two school settings were named, school 1 and school 2. School 1 was the same setting as study 2's setting, with the added addition of school year group 2 (KS1/6-7-year-olds) and the 2022/23 EYFS (4-5-year-olds) intake. On ethical grounds (ESRC, 2015), school year group 1 in school 1 were not used, as they were the cohort that were previously delivered the version 2 HEP in study 2. Hence, they would have had prior insight into most of the intended teaching and learning of a previous version of the HEP, thus would have invalidated the overall findings of this thesis. Due to this, the researcher needed to find an additional school setting to include a school year group 1 setting, therefore school 2 was an additional setting whom the researcher previously contacted prior to the commencement of study 1 (appendix 2). Therefore, this was how he was successful in gaining access to that setting for study 3. For clarification, school 2 solely featured school year group 1 children (KS1/5-6-year-olds). And school 1 featured the EYFS children (4-5-year-old) and school year group 2 children (KS1/6-7-year-olds).

There was a staggered implementation structure due to the school year group 2's preparation for the KS1 Standard Assessment Tests (SATs), therefore there were two waves of water week implementation. One in late April / early May (EYFS and school year group 1) and another in early June (school year group 2). Due to bank holidays and teacher strikes, the April/May delivery groups were delivered the full breadth of the version 3 HEP over 4 days. The June delivery group were delivered the version 3 HEP over 5 days as designed. That said, all three cohorts (regardless of whether the water week was delivered over 4 or 5 days) received the same amount of fluid intake tuition, as the only new information that was delivered on the fifth day was the introduction of a plenary quiz. Whereby the plenary quiz, which was planned for delivery on the final day (5th day), could be delivered at the end of the fourth day for the earlier delivery groups. Thus, the hampered delivery schedule for the late April / early May delivery groups should not have significantly impacted the amount of new information that was learnt, as all data collection points were collected to the same timetable of pre-water week data collected a week before delivery, post-water week data collected a week after delivery and the follow-up; 1 or 2 months after delivery (dependent on whether they were the earlier or later delivery group). Whether this statistically impacted the level of new learning that was developed and retained, will be examined in part 2 of the results and discussion chapter.

Ultimately, schools are chaotic places to conduct academic research and unforeseen circumstances arise (Radford, 2006). However, due to separation of the delivery timings and arrangements made to circumnavigate the May bank holidays and teacher strikes in spring 2023, this should not be seen as a sizeable limitation as it replicates 'real-world' usage of the HEP and offers a further level of comparison for the researcher to analyse, due to one group being delivered the full breadth of

the content of the water week over 4 days (late April/early May), and the other receiving the full breadth of content over 5 days (early June).

Similarly to study 2, study 3's implementation ii and assessment of efficacy and impact ii schedule, has been provided in tandem below.

Late April / Early May Water Week Delivery

Week 1: EYFS pre-water week data collection

Week 2: EYFS water week intervention delivered/**Year 1 (KS1)** pre-water week data collection.

Week 3: EYFS post-water week data collection/**Year 1 (KS1)** water week intervention delivered

Week 4: Year 1 (KS1) post-water week data collection

2 Months after Initial Delivery in July 2023: EYFS and Year 1 (KS1) Follow-up data collection with the children.

Early June Water Week Delivery

Week 1: Year 2 (KS1) pre-water week data collection

Week 2: Year 2 (KS1) water week intervention delivered

Week 3: Year 2 (KS1) post-water week data collection

1 Month after Initial Delivery in July 2023: Year 2 (KS1) Follow-up data collection with the children.

As previously stated, the purpose of study 3 was to assess the final implementation of the version 3 HEP and what level of efficacy it had to impact development of knowledge and understanding of fluid intake with a full-scale sample. As alluded to earlier in this methodology chapter, Cohen,

Manion and Morrison (2018) suggest that within academic research, the optimal sample size should have at least a ratio of 30 cases per variable. This is to lessen the probability of reporting findings that may or may not be physically present. As such, because study 3 had separated data by five main variables (figure 16), this meant that study 3 needed at least 150 children to minimise the risk of type 1 and type 2 errors. Therefore, as 161 children participated in study 3, this met Cohen, Manion and Morrison's (2018) requirement.

Figure 16: Study 3 Main Variables Overview

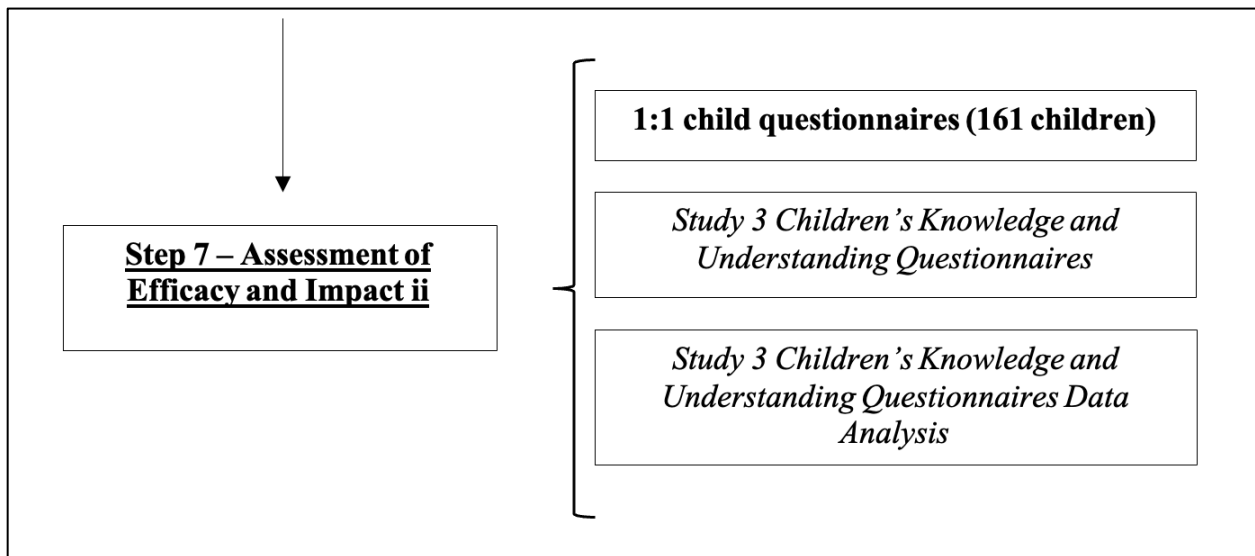
- Sex
- Age by School Year Group (this is also essentially Age by Year Born)
- Delivery Timing (this is also essentially 1-or-2-Month Follow-Up)
- Class Teacher
- Older Sibling Status

The removal of the study 2 variable (month the children were born), was justified due to the expanded age phase of study 3, to include KS1 children. Hence the finer analysis of the month the children were born was not required. Additionally, a shorter follow-up timing was implemented, when compared to study 2. This was due to the limitation discussed in part 1 of the results and discussion chapter, that found collecting follow-up efficacy and impact data in a new academic year was problematic. This is because the children were taught by a new teacher, for a proportion of the new academic year, who did not deliver the water week previously and hence may have caused unknown variations to the findings. Hence, the researcher ensured he finished the study 3 data collection within the same academic year to avoid this. As such, class teacher separation was

also considered to evaluate if different teachers caused variation in fluid intake knowledge and understanding development.

3.9 - Step 7 - Assessment of Efficacy and Impact ii (Study 3)

Figure 17 – Step 7: Assessment of Efficacy and Impact ii Highlight



3.9.1 - Step 7 - Assessment of Efficacy and Impact ii (Study 3) - Materials and Resources

The questionnaire used with the children in study 3 (appendix 22) was identical to that used in study 2. Please see that section for the rationale for questioning (3.6.1).

3.9.2 - Step 7 - Assessment of Efficacy and Impact ii (Study 3) - Data Collection Procedures

The methods of how the data was collected to assess children's knowledge and understanding of fluid intake was nearly identical to that of study 2, for example: the same pre/post/follow-up water week questionnaires were conducted 1:1 with the researcher; the same visual water bottles, cups and a toy were also used to aid in question comprehension. A CPD session was again provided for the teachers after collecting the children's pre-water week data. The rationale for primarily

focusing on children's quantitative knowledge and understanding in study 3, rather than teachers as well, was simply because one can make deductions of the quality of teachers and care givers' knowledge and understanding development via the quality of the children's development of knowledge and understanding, as children usually learn in cooperation with their teachers and parents (as well as independently) (Durlak et al., 2011). Hence, the decision was made that if, for example, the version 3 HEP was shown to be beneficial to children's knowledge and understanding development of fluid intake, then it was likely it was also useful for the teachers as well.

3.9.3 - Step 7 - Assessment of Efficacy and Impact ii (Study 3) - Data Analysis

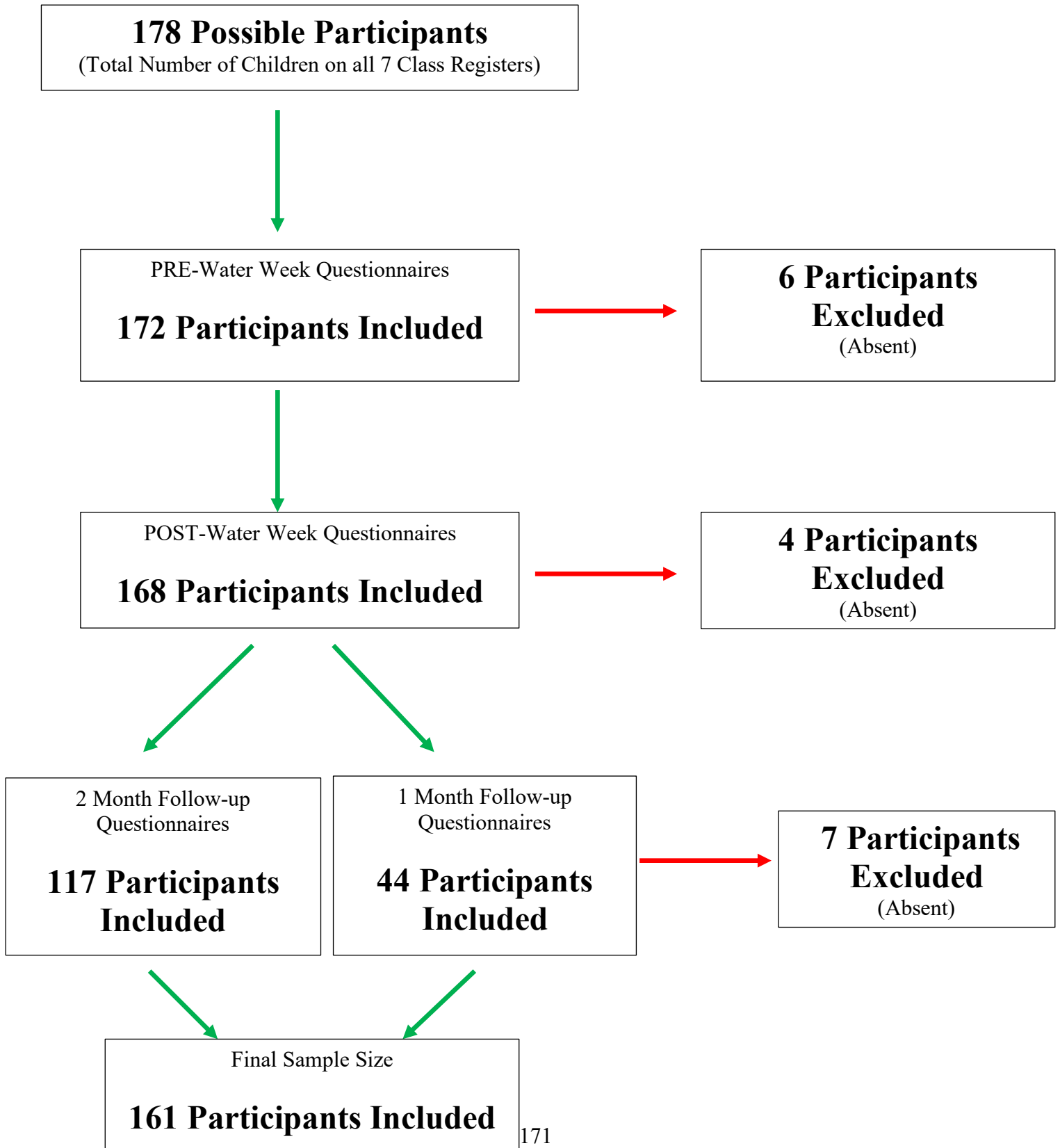
The methods for how the data was analysed were near-identical to that used to analyse the children's data in study 2. Please see that section for the rationale of how and why this was used (3.6.5).

Out of the 161 children used in the final study 3 data set, a potential total of 178 children could have been questioned, as this was the entire size of the 7 classes between the two schools. However, six children were omitted from the sample as they were not present during the pre-water week data collection, four children were absent for the post-water week data collection and seven children were absent during the follow-up (figure 18). A process of removing participants from the data set if they failed to participate in all three data collection periods was different to that of study 2 (which did not remove participants who failed to complete the follow-up phase). This is because study 2's purpose was to evaluate the teaching and learning efficacy of the individual hydration resources, to ultimately modify the HEP for study 3, it therefore needed to maximise the number of participants in the pre-water week and post-water week sample and analyse this data with the teacher's evaluative replies (which primarily informed modification ii); hence not withdrawing

participants in study 2 was justified. Whereas, because study 3 was intended to answer the question of what level of efficacy and impact the HEP holds to impact the development of knowledge and understanding of fluid intake, it needed to ensure that all data collection periods reported identical sample sizes to consequently compare the identical data sets reliably based off the children's data alone. This practice is otherwise known as data cleaning (Osborne, 2013), whereby a researcher must ensure all anomalies in the data set are rectified before formal analysis, or risk reporting results that may or may not physically be present (type 1 or type 2 errors) if data cleaning is not conducted. The participation criteria was like that of study 2, however the age group was extended to children within Key Stage 1 settings to reflect the older age groups, and the children must have completed all three phases of data collection to be included, as previously mentioned, and were present at school for the study 3 water week delivery. The teachers were automatically included as they were the children's teachers.

Please see below for an abbreviated depiction of how this process was conducted (figure 18):

Figure 18: Study 3 Participant Inclusion Flow Chart



The children were separated by a similar means to study 2, however with a few additional variables to allow the researcher to analyse their replies with a greater level of scope, due to the larger age range. Following removal of the ‘month the children were born’ variable as previously justified, the demographics are outlined in table 4 at the end of this section.

These additions included:

- **Class teacher** separation because different teachers have different teaching ethos’ around the consumption of fluids in the classroom (Howells and Coppinger, 2020).
- **Water week delivery timing** separation because school year group 2 (due to SATs) observed a June delivery, and therefore was the start of the English summer with hotter temperatures, as opposed to the late April / early May temperatures. Hence this could have affected perceptions and knowledge accumulation due to a possibility for increased homeostatic consumption (Severs, 1979), even though children tend to have a poor thirst response (Benelam, 2010; Shaw, 2010). This primarily acted as the indicator whether temperature influenced the acquirement of fluid intake knowledge and perceived fluid intake.
- **Follow-up timing** separation because of the staggered delivery of the two phases of initial delivery. The year 2s participated in a 1-month follow-up and the year 1s/EYFS conducted a 2-month follow-up. Hence the difference in the timing of the follow-up could have impacted what new knowledge was retained, due to the month difference, and the possibility for a greater level of new-information degradation could arise due to the time difference. Kaufman-Shriqui et al., (2016) found a small reduction of reported fluid intake knowledge accumulation in their follow-up (when compared to post-intervention) and hence to evaluate what level of new fluid intake knowledge and understanding has been retained, due to the difference in follow-up timing, was worthwhile.

The coding was altered slightly to reflect the new additions to independent variable segmentation and extended delivery age groups. These additions are attached below (figure 19), whereby the remainder of the coding formula (figure 12) can be found in the study 2 data analysis section (3.6.5).

Figure 19: Study 3 Additions to the Coding Proforma

How old are you?

Four Years of Age: **4**

Five Years of Age: **5**

Six Years of Age: **6**

Seven Years of Age: **7**

Year Group

Reception: **0**

Year One: **1**

Year Two: **2**

Follow-Up Timing

1 Month Follow-up: **1**

2 Month Follow up: **2**

School Number

School 1: **1**

School 2: **2**

Class Teacher / Individual Year Groups

Teacher 1 (EYFS): **1**

Teacher 2 (EYFS): **2**

Teacher 3 (Year 2): **3**

Teacher 4 (Year 2): **4**

Teacher 5 (Year 1): **5**

Teacher 6 (Year 1): **6**

Teacher 7 (Year 1): **7**

Water Week Delivery Timing

Late April/Early May: **1**

Early June: **2**

Table 4: Study 3 Child Participant Demographics

Boys	Girls	4 Years old	5 Years old	6 Years old	7 Years old	School 1	School 2	Has an Older Sibling(s)	No Older Siblings(s) or is the Eldest Child
<i>76</i>	<i>85</i>	<i>17</i>	<i>50</i>	<i>64</i>	<i>30</i>	<i>80</i>	<i>81</i>	<i>103</i>	<i>58</i>

Late April/Early May Delivery	Early June Delivery	Reception (EYFS)	Year 1 (KS1)	Year 2 (KS1)	1 Month Follow-up	2 Month Follow-up
<i>117</i>	<i>44</i>	<i>36</i>	<i>81</i>	<i>44</i>	<i>44</i>	<i>117</i>

Teacher 1 (Rec)	Teacher 2 (Rec)	Teacher 3 (Year 2)	Teacher 4 (Year 2)	Teacher 5 (Year 1)	Teacher 6 (Year 1)	Teacher 7 (Year 1)
<i>17</i>	<i>19</i>	<i>22</i>	<i>22</i>	<i>29</i>	<i>27</i>	<i>25</i>

3.10 - Ethics (Study 1 / Study 2 / Study 3)

Before each of the 3 studies could commence, ethical approval was obtained from the Faculty of Science, Engineering and Social Sciences Ethics Committee at Canterbury Christ Church University before each individual study started (appendix 1, 8 and 18). This ethical approval was necessary due to the research residing solely with human participants. Alderson (2005) suggests that ethical clearance, when working with human participants, is compulsory to ensure the research is legitimate and implemented without unethical practices. Furthermore, BERA (2011, p. 56) state that all data collected must be protected on a secure server and any names titled within the research must be anonymised to protect their identities. Moreover, this requirement is necessitated by law in the Data Protection Act of 2018 (Department for Crime, Justice and Law) with the General Data Protection Regulation (GDPR). The law states that any personal data that organisations possess also have a responsibility to securely store the data and provide a copy of it to interested parties on request to protect their personal information. Consequently, this process was completed, while ensuring all identities and integrity of the participants were safeguarded.

Participants names were removed from all studies and replaced with numbers to protect their confidentiality in line with GDPR (Department for Crime, Justice and Law, 2018). The study 1 and study 2 teacher interviews were recorded and transcribed onto a word document before formal analysis in NVivo, and the resulting raw data was securely stored on a biometrically secured and password protected computer; ensuring only the researcher, and the PhD supervisor(s) had access. The researcher ensured he obtained permission to audibly record as described in earlier sections (3.3.4 and 3.6.4). The study 2 and study 3 children's questionnaires were stored in an identical manner. The ESRC (2015) state that for individuals who have the cognitive capacity to provide written consent should do so, with a signed record of their consent

formally recorded and stored securely. To safeguard the anonymity of the signed consent from the participants/gatekeepers was collected (appendix 4, 11 and 21), the hard copy versions of these consent forms were stored within a locked filing cabinet on a secure site, whereby only the researcher had access. The ESRC (2015) also state that to ensure consistency in research studies, all participants and interested parties should be provided the same set of written instructions (appendix 3, 9, 10, 19 and 20) before any questions are asked – this was actioned. Additionally, to ensure the parameters set by Faculty of Science, Engineering and Social Sciences Ethics Committee at Canterbury Christ Church University for study 2 and study 3, parents were provided an information sheet (appendix 3, 9, 10, 19 and 20) so that they were aware of what the research was, whereby they were free to notify the class teacher if they would prefer their child to not participate, who would subsequently inform the researcher, whereby no parents objected to their child's participation. Further to this, the ESRC (2015) state that researchers should acquire permission before commencing research even if signed consent has been granted – this was actioned. The participants were subsequently informed that to decline the offer was acceptable, and that if applicable, their data could be exonerated from the research data set at any time during or following completion, without providing a reason. As a requirement for ethical approval from the ethics committee, following completion of study 3, all schools were contacted to provide them with a dissemination letter (appendix 24) to update them with the key findings and conclusions of the PhD thesis.

Chapter 4 – Results and Discussion

4.0 - Chapter Introduction

This results and discussion chapter will provide two main sections to answer the two overarching research questions. The first being how a HEP can be created and logistically implemented in schools. Whereby, the second question relates to what level of educational efficacy the created and implemented HEP holds to impact knowledge and understanding development of fluid intake. To answer the first research question, part 1 of the results and discussion chapter will firstly recap how each individual resource should work in theory following the literature review (step 1, figure 1), what evidence it had to initially be included/modified in version 2 (step 2, figure 1), then analyse whether the resource should remain in the HEP unedited, whether it needed to be modified to subsequently remain in the HEP, or whether there was evidence to remove it entirely for the version 3 HEP/study 3 trial (step 3/4/5, figure 1). For the ease of reader comprehension, the extracted study 1 teacher quotes will be written in blue font, whereas the extracted study 2 teacher quotes and descriptions of the study 2 children's results will be written in green font.

These will be presented via the steps as outlined in the methodology and introduction:

- Creation (step 1)
- Modification i (step 2)
- Implementation i and Assessment of Efficacy and Impact i (step 3 and 4)
- Modification ii (step 5)

Consequently, part 2 of the results and discussion chapter will discuss the findings from study 3 to answer the second overarching research question, which were:

- Implementation ii (step 6)
- Assessment of Efficacy and Impact ii (step 7)

Results and Discussion: Part 1

4.1 - Step 1: Creation, Step 2: Modification i, Step 3: Implementation i, Step 4: Assessment of Efficacy i, Step 5: Modification ii

As outlined by Coyle et al., (2014) in their guidance on how to create and test educational resources, phase 4 of the production guidelines pertains to the necessity of testing the draft materials to enable refinement of the resources. Consequently, in response to how educational resources can be tested and refined, La Gomez et al., (2019) produced a rubric to facilitate effective evaluation of educational resources, whereby they suggest that a validation criteria is crucial to enable a rigorous testing process to occur, as it allows evaluators to tangibly assess what resources were educationally useful, what was not useful, or what needed further modification. As such, a validation criterion was utilised by the researcher to systematically form conclusions on a 'per-resource' basis. The validation criteria that was created and used by the researcher is below:

- **(Inclusion without modification)** The teachers supported that the resource was (or could be) pedagogically beneficial to develop knowledge and understanding of fluid intake, and did not provide recommendations for modification.
- **(Inclusion with modification):** The teachers supported that the resource was (or could be) pedagogically beneficial to develop knowledge and understanding of fluid intake, and did provide recommendations for modification.
- **(Removal from the version 3 HEP):** The teachers did not support that the resource was (or could be) pedagogically beneficial to develop knowledge and understanding of fluid intake, and did not provide recommendations for modification.

4.2 - Whiteboard Animation Videos (WAV)

4.2.1 - Whiteboard Animation Videos (WAV): Creation

The literature review discussed that the use of cartoons and videos could be beneficial in teaching children new vocabulary as teachers can pause and play the created material to enrich the learning experience (Aziza and Syafei, 2018). Coupled with this type of learning resource, teachers can substantiate learning points made by the content of the educational videos within their teaching practice, which the teachers themselves may not be entirely knowledgeable with the content of the videos from the outset. The benefit of multi-media approaches was further explored by Bartan (2020), who found that the most effective storytelling pedagogy was from a computer concerning the longevity of children's attention spans. It was established by Bartan (2020) that children's active attention spans were the longest when a computerised resource was used (233 seconds/3 minutes and 53 seconds). Thereby, if the researcher was to facilitate computerised learning in the HEP, in the form of a WAV series, it is possible that the children would be able to engage with the fluid intake learning for an extended period of time when compared to other modes of information delivery, whilst providing the teacher with the control to pause and play the video on the computer to scaffold that learning.

Therefore, considering the background literature (Wiseman, 2012; Aziza and Syafei, 2018; Bartan, 2020), the WAVs hold a well-evidenced level of theoretical support to aid teachers' and children to develop the core knowledge and understanding required of fluid intake and facilitate the first learning process (concrete learning) as outlined by Kolb (1984).

4.2.2 - Whiteboard Animation Videos (WAV): Modification i

Below, the researcher has provided quotes from the teachers concerning their views as to what level of teaching and learning efficacy they believed the prospective use of the WAVs during the water week would hold. The researcher has provided further explanation as to the context of the comments, how it relates to modification i of the HEP (step 2, figure 1), and where to locate the comments in the transcriptions (appendix 6).

Teacher 3, Study 1 (line 1909-1911)

“That chart [water tracker chart]. Something as simple as that and the videos I would say are the two most effective initially would be those two. It’s like the spark is almost coming from the video.”

This suggests that teacher 3 believed that the two most effective resources (before teaching the water week) would be the WAVs and the drinking tracker chart (discussed in 4.10), as these would be the spark to engage children’s interest in the topic. Supporting the use of the WAV series in the version 2 HEP.

Teacher 1, Study 1 (line 395-397)

“If you had it at the beginning and the end of your videos and after the week, you can just play the song afterwards. Where after they are like AHHHH – must drink water bottle. Must retrieve.”

This suggests that teacher 1 also believed that the water song should function as a theme tune for the WAVs, as she felt that if children heard the song, they would be conditioned to retrieve their water bottle and drink water. Following completion of the water week, a teacher could simply play the music, and the children could be reminded to drink to help reinforce habitual drinking behaviours.

Teacher 1, Study 1 (line 799-804)

*“Yeah, (*1) if the song is linked to your videos, they’ll sing along to it quite quickly. As long as you choose the catchy, repetitive bit. If you can then watch the song separately from the videos and there’s the dance you could do that before lunchtime maybe. (*2) I think the videos are going to be the go-to. Your selling point is almost like a constant bringing home of the song, and if there’s a dance move to it as well, that’s great. It’s really great, well done you.”*

*1 This indicates that teacher 1 believed that if the water song were also in the WAVs, the children would ‘catch’ onto the lyrics, possibly making the WAVs more enticing for a young audience. Whereby, the comments relating to the dance moves supports the previous literature (Mullen, 2017), and continued inclusion of the water song (as part of the WAVs and as its own entity) in the version 2 HEP.

*2 This highlights that teacher 1 believed the WAVs would be the core resource to enhance children’s knowledge and understanding of fluid intake due to the belief that they would be the “go to” for children’s interest in learning about fluid intake. This agrees with Bartan (2020) who found that the most useful mode of teaching and learning delivery was via computerised content due to encapsulating the children’s attention span the longest.

There was a significant level of praise from the teachers in study 1 to indicate that the WAVs could be effective in developing knowledge and understanding of fluid intake. In addition to teacher 1 and 3’s general comments, teacher 1 substantiated her praise by stating that the children could not only immerse themselves into this visual mode of learning, but the children could also use the WAVs to alter their drinking habits when hearing the water song once the water week had finished, providing a potential justification for extended use of the water week resources. As such, a WAV series, accompanied with the water song as the theme tune, would

accommodate visual and audible learners (table 1), as well as the first three learning processes (Kolb, 1984) in the view of the teachers. This is because the WAVs aimed to deliver the fundamental core knowledge required to know and understand about fluid intake, it explained why it was important to know and understand about fluid intake, whilst offered contextual scenarios in how the children can apply this knowledge and understanding. As such, because the teachers advised that there should be the water song a theme tune, the WAVs were included in the version 2 HEP with modification. Whereby, the version 1 scripts (appendix 2a) were modified into a WAV series (with the water song as the theme tune and on its own) and included in version 2 of the HEP for delivery in study 2, that were accessed by the teachers through [YouTube](#) (appendix 7).

4.2.3 - Whiteboard Animation Videos (WAV): Implementation i and Assessment of Efficacy i (Children's Data)

This section will present a critical selection of data that are important to justify the teaching and learning implementation and efficacy/impact of the WAVs and offer explanations for why they have been selected. This data will then be cross-referenced with the teachers' replies from study 2 to form the conclusion of how the WAVs fit in the HEP for version 3's delivery in study 3.

Do The Children like Drinking Water – Study 2

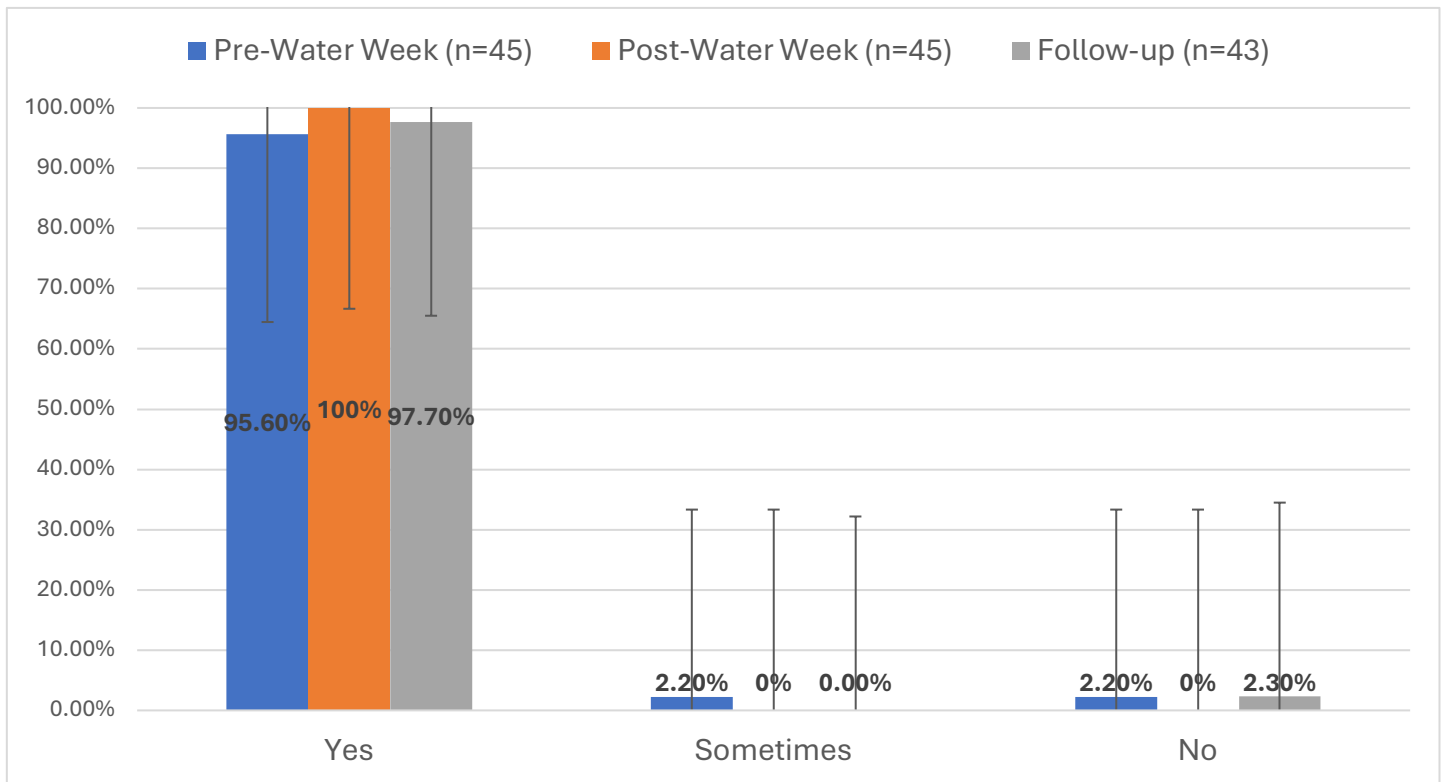


Figure 20: Percentage values for the whole research sample for if the children, disliked or sometimes liked drinking water – Study 2

There were small fluctuations in responses around liking water, but these were not statistically significant post-water week ($F=2.772, p=.103$) or in the follow-up ($F=1.295, p=.262$). More children liked drinking water post-water week (100%, n=45) compared to pre-water week (95.6%, n=43). This uplift of liking water post-water week, returned to near pre-water week levels in the follow-up (97.7%, n=42).

Health Reasons: Signs of Dehydration/ Fluid Intake Vocabulary – Study 2

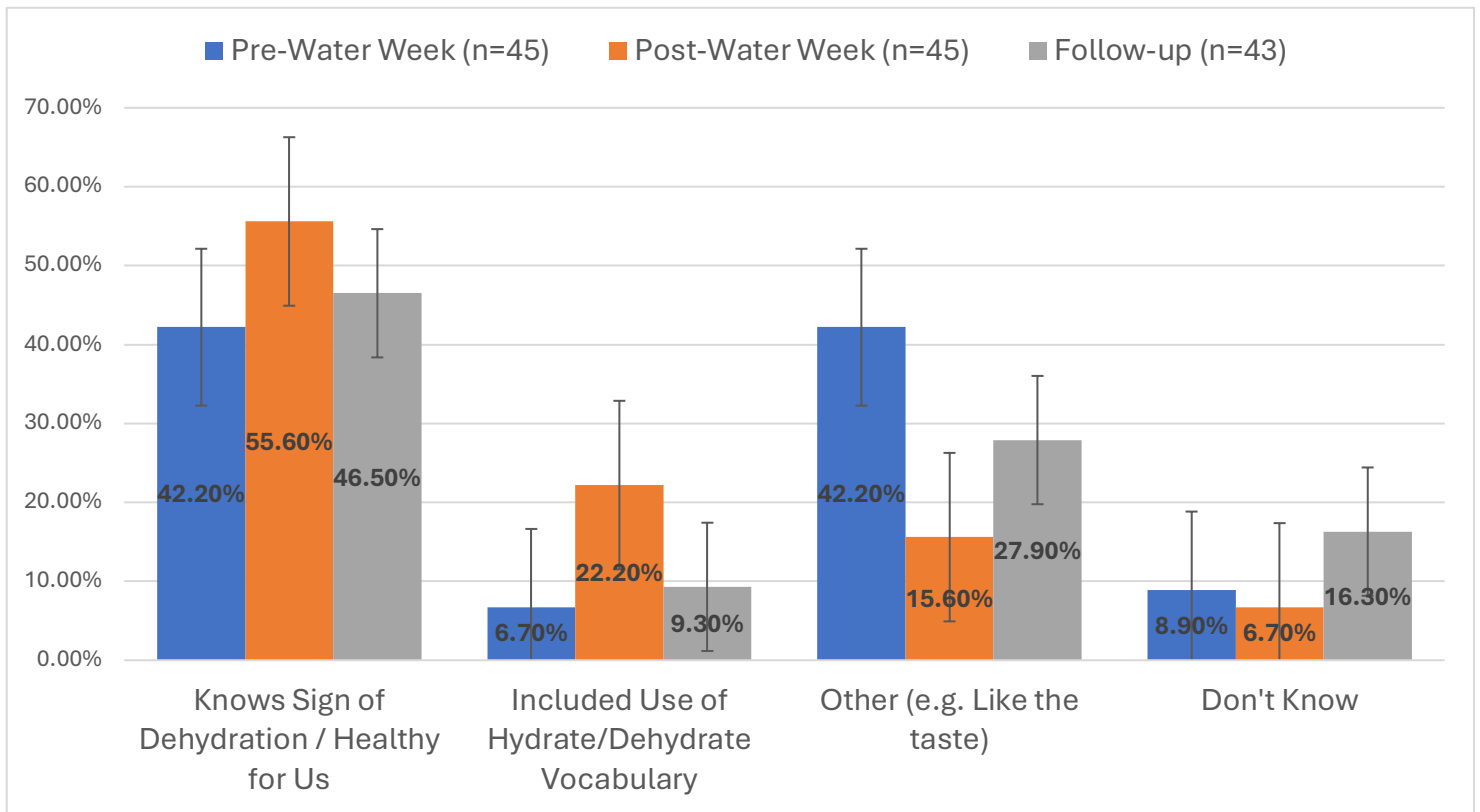


Figure 21: Percentage values for the whole research sample for why the children held their opinion towards drinking water – Study 2

There were also no significant differences for opinions towards drinking water, post-water week ($F=3.463$, $p=.070$) or in the follow-up ($F=2.047$, $p=.160$). More children were able to utilise fluid intake specific vocabulary post-water week (22.2%, $n=10$) compared to pre-water week (6.7%, $n=3$), although the observed increase returned to near pre-water week levels in the follow-up week (9.3%, $n=4$). More children held their opinion towards drinking water due to health reasons, or articulated health reasons with fluid specific vocabulary post water week (77.8%, $n=35$) and in the follow-up (55.8%, $n=24$), compared to pre-water week (48.9%, $n=22$).

Before the version 2 HEP water week was implemented, figure 20 shows that the children were firstly asked whether they liked drinking water. It was found that 95.6% (n=43) of the children answered yes, with 2.2% answering “no” (n=1) or 2.2% “sometimes” (n=1). Following the delivery of the study 2 water week, 100% of the children stated they liked water (n=45). Even though this change was not statistically significant, Van Belzen, Postma and Boesveldt (2017) previously indicated that a like for water can positively affect fluid consumption levels. In the 5-month follow-up data collection period, 97.7% (n=42) replied that they liked drinking water. These small changes represent a return to near pre-water week levels of the children’s like of drinking water. That said, there is evidently a selection of resources in the version 2 HEP that could have the ability to alter the children’s collective opinion of liking to drink water in the short-term. Thus, if the researcher were to combine the children’s statistics and teacher’s quotes in study 1, (line 1909-1911, appendix 6), where study 1’s teacher 3 outlined her opinion that the WAVs could be the spark to engage the development of children’s fluid intake understanding and perception in their concept that the consumption of adequate fluids is beneficial to health and should be actioned regularly. Hence, the WAV series resource could be one of the main instigators in developing children’s vocabulary (discussed in 4.2.4). As such, the researcher needed to extract if there was any change of why the children liked, disliked or sometimes liked water and if they have developed knowledge of why they need to drink water for good health.

Figure 21 provides the rationale for why the children liked sometimes liked, or disliked drinking water. It was intended that this would allow the children to demonstrate whether they understood that water is beneficial to their health (Jéquier and Constant, 2010). Pre-water week, 48.9% (n=22) of the children stated that the rationale for why they liked, sometimes liked, or disliked water was due to health benefit imperatives. With 6.7% (n=3) of the 48.9% of children

substantiating their explanation by utilising pre-learned vocabulary such as - “*to stay hydrated*” or “*to not be dehydrated*”. Post-water week, there was an increased percentage of children (77.8%, n=35) replying that they liked water due to health benefit imperatives, with 22.2% (n=10) of the 77.8% of children utilising vocabulary such as - “*to stay hydrated*” or “*to not be dehydrated*”, following HEP delivery. Indicating that a possible trend of 28.9% (n=13) of the children either developed new core knowledge (that drinking was good for their health) or advanced their pre-water week understanding by articulating their response by utilising fluid intake-specific terminology such as - “*hydration*” or “*dehydration*”. In the 5-months follow-up, there was not a complete return to the children’s pre-water week health knowledge in relation to explaining their preference for drinking water was due to health/used fluid intake vocabulary (55.8%, n=24) (figure 21). Therefore, even though this data was not statistically significant in study 2, this supports that although the children seemed to have returned to their pre-water week levels of reported preference of liking/disliking water, it appears that they may have been able to retain the development of knowledge and understanding that water is good for their health. Consequently, meaning that by solely utilising the children’s data, the WAVs are a prime candidate for inclusion in the version 3 HEP, due to this reported development of health knowledge and understanding, as the videos were the primary form of new information delivery. Whereby, to assess efficacy and impact of the version 3 HEP with the WAV series included, with a larger sample size is supported.

4.2.4 - How Fluid-Specific Vocabulary Development is an Indicator of Knowledge Learnt

As development of vocabulary can be an indicator that knowledge and understanding has been developed, the researcher should explore if the version 2 HEP could develop vocabulary. Joshi (2005) supports the idea that vocabulary development, and correct contextual use of that vocabulary, is one core indicator that new knowledge and learning has occurred. Where, he supported that regularly hearing these new words aids in vocabulary development. By the researcher subscribing to that theory, a child's success within school systems can be limited if vocabulary is not developed, therefore one use of the WAV series was to develop new fluid intake vocabulary through pause and play discussion points with their peers and teachers. It was subsequently supported by Joshi (2005) that to develop new vocabulary, it is crucial to encourage children to audibly hear unfamiliar words within an appropriately used context by speakers. The WAVs allowed for this approach to occur, as the researcher provided a voiceover to the whiteboard animations. Hence, by the version 2 HEPs non-significant demonstration that at least some part(s) have seemed to facilitate a development in vocabulary, that is specific to fluid intake (figure 21), this supports the inclusion of the WAV series in version 3 for the full-scale trial.

Additionally, the children's development of fluid-specific vocabulary may be primarily attributable to the WAVs because this was the only resource that allowed the children to audibly hear spoken words specific to fluid intake, to develop knowledge and expand their vocabulary without teacher's use of the vocabulary. Hence, the WAV series essentially provided the teaching and learning for the teachers, which is recognised by Howells and Coppinger (2020), who found that teachers could benefit from further support to encourage children's fluid consumption in the classroom. As such, it is useful to consider the frequency in which the fluid intake phrases were repeated: 'hydration', 'dehydration' or that 'water is

good for health’ were used in the WAVs. As highlighted below (table 5), hydrated/hydration was repeated 16 times over the five WAVs, dehydrated/dehydration was mentioned 13 times, and the theme of ‘water being beneficial to health’ was revisited 10 times. Indicating that the WAVs were useful in encouraging children’s comprehension of vocabulary because the concepts were repeated in the correct context on multiple occasions. Consequently, the reported findings of children's development of vocabulary and understanding of fluid intake are likely to have been encouraged due to the frequent presentation of new fluid-specific vocabulary, in context, with the appropriate pronunciation. Whether teacher’s also supported fluid intake and the development of knowledge and understanding will be explored in a later section (4.10). That said, this supports the preliminary conclusion that the WAVs should remain in the version 3 HEP for study 3. Whether the teachers agree, and if they held comment for further modification (modification ii) will be explored below.

Table 5: Fluid Specific Vocabulary Timestamps Videos #1 to #5

“Hydration” / “Hydrated” Mentioned (16 Occasions)						
<i>Video 1</i>	2:15	2:26	2:27	2:26	2:41	3:56
<i>Video 2</i>	1:10					
<i>Video 3</i>	1:43	1:50	1:58	2:58	3:33	5:30
<i>Video 4</i>	5:03					
<i>Video 5</i>	2:47	5:44				

“Dehydration” / “Dehydrated” Mentioned (13 Occasions)							
<i>Video 1</i>	N/A						
<i>Video 2</i>	1:22	1:28	1:41	2:24 – 3:16	3:48	4:00	4:24
<i>Video 3</i>	1:53	3:02	3:13	5:19			
<i>Video 4</i>	N/A						
<i>Video 5</i>	4:15	4:27					

“Health” / “Healthy” / “Unhealthy” Mentioned (11 Occasions)					
<i>Video 1</i>	2:17				
<i>Video 2</i>	N/A				
<i>Video 3</i>	4:49	6:46			
<i>Video 4</i>	1:54	2:15	3:02	3:36 - 3:51	4:29
<i>Video 5</i>	5:36	6:08 - 6:24			

4.2.5 - Whiteboard Animation Videos (WAV): Implementation i and Assessment of Efficacy i (Teacher's Data)

As outlined in appendix 15, below are the extracted quotes verbatim from the two teachers' post-water week transcriptions in relation to comments they expressed, regarding the WAVs (appendix 15). Contextual explanation of the quotes will be made throughout.

- In the ranking activity to order the 12 resources according to the teachers' perceived ability to develop children's understanding of fluid intake; teacher 1 and 2 both ranked the WAVs as number 1 out of 12 (with 1 representing the most effective and 12 the least effective).

Teacher 1, Study 2 (line 20-24)

*“The children really enjoyed the videos. (*1) In fact, they would say every morning. When are we doing the water wizard video? So, we found the song really catchy, and they were singing it by the end of the week. (*2) They liked finding out all the disgusting facts. You know, stinky, stinky yellow wee is their favourite thing in the whole wide world. So Yeah. Yeah. They really, really enjoyed the WAVs.”*

*1 This states that in teacher 1's class, her children actively wanted to watch the WAVs and sing the water song every day. Agreeing with statements in study 1, when initially modifying the HEP, that the WAVs were useful to capture the children's attention, which in turn helped enhance their understanding of fluid intake as there was a reduced barrier to viewing and understanding the content of the WAVs.

*2 This highlights that the children in teacher 1's class also enjoyed the WAVs where they found out some of the interesting facts that occur when the body becomes dehydrated. Suggesting that in the view of teacher 1, the WAVs were able to teach children about the signs

of dehydration and the associated vocabulary, hence concurring with the children's knowledge data previously outlined.

The creation of the "Water Song" was written and produced by Alison Wheeler and Mama G (2021), whereby Dr Kristy Howells also consulted on the writing of the lyrics, that according to teacher 1, the children were reportedly singing by the end of each day of study 2. The repetition of singing songs and listening to the melody of music was found to be a useful aid to encourage the development of drinking behaviours, which is concurrent with Kolodziejcki et al.'s (2015) study from a child development point of view, which supported how music is a useful part of children's learning development as it is a fundamental part of children's play. This is partly because music can stimulate children to imitate physical movements that relate to the lyrics in the song (Mullen, 2017); and hence supports additional learning styles to benefit from the teaching (Kolb, 1984). In turn, as teacher 1 reported that the children were repeating the song by the end of the water week, this reinforces that repetition of actions through music actively inspired the children to mimic the lyrics to physically move to the song, to encourage the development of healthy drinking behaviours and understanding of fluid intake. As such, by including the water song in the WAVs, this resource not only assisted the teachers in supporting children to consume more fluids, but repetition of the words in the song, reinforced that water is beneficial for health (figure 21). Thus, the repetition of the lyrics of the water song in the WAVs was also a useful supportive resource to teach children about fluid intake. Consequently, this provides justification for the water song to be included as the WAVs theme tune in version 3, without modification.

Teacher 1, Study 2 (line 155 - 158)

“So, it is really, really clear the video was great, they really enjoyed it. They looked forward to it every day. They were able to recall what we’ve done. The quiz they absolutely aced it. You know, it said more than probably you needed and wasn’t being noted down, but yeah, you know, they were able to remember so much, it was really good!”

This comment supports the enjoyment factor of the WAVs that the children in study 2 displayed. Teacher 1 further noted that the WAVs possibly provided too much information. However, this was not a criticism as the children were able to “ace” the quiz in the final WAV, suggesting that knowledge and understanding of fluid intake had been developed, in which the WAVs were instrumental to support this. Moreover, as teacher 1 commented that the children aced the quiz, the WAVs also provided an alternative assessment method for practitioners to encourage children’s learning of fluid intake.

Teacher 1, Study 2 (line 177 - 181)

“I think the videos were great, we were able to stop it and ask them questions and rephrase it if need be. Maybe if someone didn’t get it, we could stop and pause, but they actually all did! You know, there were very good at picking up on the vocabulary and understand what it was they had to do and basically just the lure of sticker can get you very far too. You know, that was a really, really good thing.”

This states that teacher 1 was able to use the WAVs in the way in which they were designed, such as allowing teachers the opportunity to pause and play the WAVs to check knowledge and understanding of what was being explained by the narrator. Hence supporting that the WAVs were useful from a pedagogic point of view, as well as fluid intake knowledge delivery. Moreover, as teacher 1 supported the usefulness of the pause and play points in the WAVs, this further substantiates research made by Aziza and Syafei (2018) about crucial pedagogical features of an educational video. Hence, with teacher 1 stating that she was able to scaffold

learning in a similar nature to Aziza and Syafei's (2018) suggestion; this supports the notion that the WAVs were one key instigator for why there was possibly a non-significant development in new knowledge and vocabulary of fluid intake (figure 21).

Teacher 1, Study 2 (line 263 - 268)

“I will say when you have to drink, it's like, you know you're watering your brain. Your brain's growing all the time and learn lots and lots of new things. Just like we did to water the plants where they are aware of that. We are a big sponge, maybe in one of your videos have a sponge expanding as you add more water? This is like our brain growing and getting bigger and bigger and clever and clever in classroom.”

This was a comment on how to improve the WAV video on the need for why children need to support each other to drink is to water their brains like a flower. This was edited into the 3rd WAV for version 3 of the HEP, as this aided in why children and teachers should support each other to drink.

Teacher 2, Study 2 (Line 496 - 503)

*“I think that's where we would use it, that pack will come into its own, it's like an entire science week. That's what you're looking at, that's what a teacher needs. But that's what a year two teacher wants, they do this – “right you've got an hour to get to that point”. Whereas for us [in EYFS] we were trying to shoehorn things in a way and quickly at speed because they were hot after lunchtime, but also, they just can't listen for very long. Some of them can that you met, but some of the characters can't. Some can hold wonderful conversations. *but others are just off this planet and not with us at all. So yeah, it covered in a way, it covered early years and key stage one for me”.*

This response suggests the WAVs were able to ignite a spark in children who may be disengaged to conventional learning, such as teacher's spoken input. This supports how the WAVs can provide a more inclusive approach to learning as the feedback from teacher 2

suggested the WAVs were useful to capture the attention of children who she felt were “*just off this planet and not with us at all*”. Additionally, this mode of learning helps engage a wider variety of learners more effectively to understand the concept of fluid intake which was a useful commodity as all children were able to engage with the WAVs together.

Teacher 1, Study 2 (line 89-97)

“Yeah, it’s probably the one that the children found the trickiest was actually the drink sorting which was quite interesting. So that’s what probably highlighted to me that they learned something. And maybe taught me the most that they didn’t understand at the start. There was blurred lines shall I say? Things like fizzy water. They didn’t get that if that was good for you or not so good for you, or whether it’s bad. Cos before enjoying the video. We did say that fizzy drinks are normally bad. You know, so most fizzy drinks aren’t good for your teeth. When the pictures came out, they were like, oh there’s fizzy water, what does it mean? Milk is good for you, so you can give blurred line like with smoothies and milkshakes.”

In teacher 1’s view, the children reasoned that fizzy water was bad for their health due to it being carbonated, in a similar vein to sugar-sweetened carbonated beverages (i.e. coke cola), which is not ideal for one’s health to consume regularly (Sichieri at al., 2009). As such, this misconception was addressed for study 3, to enable the children to understand that fizzy water is appropriate to drink regularly, unlike coke cola, and edited into the 4th WAV video. This will also be addressed later (4.7.4).

**After the meeting, teacher 1 commented that 2nd and 5th WAV contained a typing error for the word ‘hydration’. This was also addressed.*

4.2.6 - Whiteboard Animation Videos (WAV): Modification ii

Fundamentally, the WAVs were endorsed heavily by the teachers in the study 1 interviews to develop the whole series for version 2 of the HEP. Following study 2, there was non-significant data to suggest the children have begun to indicate that there is some educational efficacy and impact to develop knowledge and understanding of fluid intake (figure 21). The children have additionally indicated a possible trend that they have begun to know that water is beneficial for their general health and likely developed new fluid intake vocabulary that supports this development of new understanding of fluid intake. Finally, the WAVs also received further support from the two experienced teachers (with modification suggestions) who delivered the water week in study 2, which confirms how instrumental this resource could have been in supporting the development of children's knowledge and understanding of fluid intake. As such, because the teachers agreed that the WAV series (and water song as the theme tune and on its own) was pedagogically useful but provided areas for modification, the WAV series remained in version 3 of the HEP, with some modification. The modifications were:

1. Further clarification on what constitutes a healthy drink, which should directly explain the health status of 'fizzy water' also being a healthy drink in the 4th video.
2. The typing error for 'hydration' in the 2nd and 5th WAV was corrected.
3. A metaphor for drinking water is required as it 'waters our brains – like a flower' was edited into the 3rd WAV video to support why children and teachers need to support each other to drink.

The unlisted [YouTube](#) link to the version 3 WAV series (with modifications) is hyperlinked and signposted in appendix 16 and 17.

4.3 - Teacher's Lesson Guide

4.3.1 - Teacher's Lesson Guide: Creation

Currently, only 11% of teachers based in the UK and internationally self-reportedly encourage the regular consumption of fluids in the classroom to aid children's hydration (Howells and Coppinger, 2020), and hence teachers could also require specific assistance to deliver the topic of fluid intake in the form of a teacher's lesson guide. Furthermore, Johnston Molloy et al., (2008) previously reported that the small sample of teachers in their study could have been more proactive in supporting their pupils' regular access to water during the school day. Consequently, they perceived that adequate fluid intake could cause disruptions to learning and were less likely to support consumption. As such, in the view of the researcher, some level of CPD and formal guidance (teacher's lesson guide) was required in the HEP to assist teachers in developing pedagogical strategies to effectively support consumption in the classroom. As such, the teacher's lesson guide (and a CPD session before the water week) could theoretically alter practitioners' perceptions to combat the challenges raised by Johnston Molloy et al., (2008), as well as provide an overview of the lessons to teach children about fluid intake on how to deliver the water week.

As such, the researcher produced the teacher's guide for three reasons: -

1. To explain why teachers need to support children's regular fluid consumption in the classroom.
2. To develop teachers' understanding of the core pedagogic practices that need to be addressed to encourage children to drink an adequate amount of fluid during the school day.

3. To succinctly provide an overview of the water week lessons and what resources were needed for each day to ensure there is a consistent delivery structure between cohorts.

4.3.2 - Teacher's Lesson Guide: Modification i

Below, the researcher has provided quotes that reflect the teachers' views regarding the teacher's lesson guide. Moreover, the researcher has provided further commentary to highlight how the teacher's views relate to the wider development and modification i of the HEP and where to locate the comments in the transcriptions (appendix 6).

- Teachers 2 and 3 both rated the teacher's lesson guide 3 out of 3 for its possible teaching and learning efficacy and impact.
- Teacher 1 rated the teacher's lesson guide 2 out of 3 for its possible teaching and learning efficacy and impact.

These quantitative ratings reinforce that all three teachers supported the use of the teacher's guide in their prospective delivery of the water week before study 2. Considering these ratings alone, two of the teachers commented that the teacher's guide was essential, whereas one teacher stated that it was useful but not necessarily essential. However, this does not explain why they think the teacher's guide could be useful or how it could be adapted. This is explored below.

Teacher 2, Study 1 (Line 1619 - 1622)

"Maybe it's because I am looking more in detail because I like to cover myself to know what I'm doing. And I that I can't just pick it up and go with it. Maybe that is being a teacher for a long time, but I like it laid out and specially if someone's covering your lesson for you."

Teacher 2, Study 1 (Line 1626 – 1627)

"I would rather give them more information than less. And if there is, why not give it to the mass?"

These two comments suggest that teacher 2 felt that she would benefit from the support provided in the teacher's lesson guide to successfully deliver the water week; as such, she reasoned that providing more information, rather than less information, is preferable as this offers more teachers to gain a wider understanding of how to use the resources; increasing accessibility for all teachers.

Teacher 3, Study 1 (Line 2108 - 2111)

Researcher: *“Errrm so the lesson pack?”*

Teacher 3: *“Oh I mean, come on! Three for a teacher! You need that. Otherwise. Without that, I'm making it up. I could make it up, but I'll be missing lots of those beautiful key terms that you want to say, and I might not be using the details within the curriculum either, so yes, Three.”*

Teacher 3 was highly complementary about the necessity of the teacher's guide, where she substantiated this statement by highlighting that it would be useful for her implementation of key terms and phrases that related to fluid intake when teaching the children in her class.

The previous two comments are a duo of supporting reasons for why the teacher's guide could help to assist teachers in delivering the water week HEP as it was viewed this would assist in structuring their delivery of the water week, as designed.

Teacher 1, Study 1 (Line 460 – 465)

“errrm the Lesson pack would be interesting to read for teacher information, but like I said, I think if you're introducing everything through your videos. And you wouldn't necessarily want to be reading that as well as the teacher's guide lesson pack. I mean, I might just be a lazy teacher, but yeah. I wouldn't want to do the video and then go back to me with the teacher's

guide, and then say 'I want you to do this boring thing but hang on! Let me just read this script cause I've got to read it'."

Teacher 1 stated that the inclusion of a teacher's guide could be useful for her own information to effectively deliver the water week, however, she would not welcome the teacher's guide acting as a script for her to read. The researcher clarified her concern by stating that the teacher's guide was only intended to be used for teacher information on how to deliver the water week to provide a collection of resources and guidance on how to use them, as well as highlight what pedagogic strategies are useful to encourage adequate consumption in the classroom.

In summary, all three teachers agreed to the inclusion of the teacher's lesson guide as a general aid to support the teaching of the water week, which reinforces one of the justifications for why it was included in the version 1 HEP. The comments from two of the teachers substantiate a need for more teacher guidance rather than less. However, one teacher commented that the WAVs would be sufficient for her to deliver the content of the water week. As such, for the benefit of all teachers, irrespective of their level of teaching experience, the researcher decided that to provide the teachers with a teacher's guide and a range of adaptable resources that they can use and integrate into lessons during the water week would be useful. For example, each lesson could start with a WAV to introduce the children into the individual concepts linked to the broader subject of fluid intake. Subsequently, the teachers can refer to the teacher's guide to support the children's learning through the WAVs, as well as scaffold their learning through the auxiliary activities and other resources prepared in the HEP. Therefore, as the teachers provided some new activities and resources (discussed later), the version 2 teacher's guide remained in the HEP with modification. The modified version 2 HEP that was trialled in study 2 has been supplied in appendix 7.

4.3.3 - Teacher's Lesson Guide: Implementation i and Assessment of Efficacy i (Children's Data)

As the purpose of the lesson guide was designed for the teachers to assist them in structuring the water week, the researcher therefore did not need to assess if the lesson guide impacted the development of children's knowledge and understanding of fluid intake. Consequently, the children's data will not be analysed to help in the implementation and efficacy/impact of the teacher's lesson guide in study 2.

4.3.4 - Teacher's Lesson Guide: Implementation i and Assessment of Efficacy i (Teacher's Data)

Below are the pertinent comments that both teachers made in relation to the teacher's lesson guide following their delivery of the water week in study 2. To provide greater context, the appropriate signposts indicate what line(s) these comments can be found in the transcriptions (appendix 15).

- Out of the 12 resources provided for the water week, Teacher 1 did not rate the teacher's lesson guide in the HEPs ability to develop children's understanding of fluid intake in the study 2 post-water week structured interview.
- Out of 12 resources provided, Teacher 2 rated the teacher's lesson guide 8/12 in the HEPs ability to develop children's understanding of fluid intake in the study 2 post-water week structured interview.

Although teacher 1 used the WAVs to lead her teaching of the water week, she preferred not to refer to the lesson guide as she already felt she held enough pedagogical knowledge to confidently deliver the resources in the HEP. Notably, two of the reasons the researcher included the teacher's guide was to be an advisory tool to aid the structuring of the water week and implementation of fluid intake pedagogical advice. As a result, this was accepted by the

researcher as teachers have a strong level of professional autonomy in their teaching practices (DfE, 2011).

In teacher 2's study 2 post-water week interview, she commented on what resources were most beneficial in developing children's understanding of fluid intake. Teacher 2 was able to provide specific comment regarding the teacher's lesson guide, stating that for the children's knowledge, it wasn't very useful and hence why she gave this resource as the 8th most effective in developing children's knowledge of fluid intake. However, she did comment on her perceived importance of the resource to structure the water week and how she believed it could be improved. These comments have been supplied below.

Teacher 2, Study 2 (Line 294 - 295)

“Oh, it underpins the whole thing. I don't think I would have been able to get off to the right start without it.”

This supports that the teacher's guide was useful for teacher 2 to gain momentum to understand how to deliver the water week and hence was essential in directing her on how to deliver each component.

Teacher 2, Study 2 (Line 329 - 332)

“Videos really. I know they are aimed at the children, but I really need videos and the teacher's pack just set us up. Yeah, I mean, that resource [teacher's lesson guide] you are so kind to have made them, but we could have, you know, if you had an advance, you could do that. But the guidance in the teacher pack was just giving out a structure.”

This supports the continued use of the WAVs, in conjunction with the teacher's guide, to direct teachers in their use of the HEP water week in study 3.

Teacher 2, Study 2 (line 411 - 416)

“They were exhausted by the end of the mini talking to me [after the videos]. But was that whether it was after lunch, depending on the weather we were boiling, or whether we were doing this at about 1:00 o’clock in the afternoon, so have come in pretty sweaty from lunch. So, they just don’t, just don’t concentrate for five or six minutes. That’s all we had. So, it just didn’t lend itself to those type of activities”

Teacher 2, Study 2 (Line 496 – 503)

“I think that’s where we would use it, that pack will come into its own, it’s like an entire science week. That’s what you’re looking at, that’s what a teacher needs. But that’s what a year two teacher wants, they do this – “right you’ve got an hour to get to that point”. Whereas for us [in EYFS] we were trying to shoehorn things in a way and quickly at speed because they were hot after lunchtime, but also, they just can’t listen for very long. Some of them can that you met, but some of the characters can’t. Some can hold wonderful conversations. But others are just off this planet and not with us at all. So yeah, it covered in a way, it covered early years and key stage one for me”

The two previous comments (line 411-416 and 496-503) suggests that even though the direction for teachers in the guide was useful, some of the learning activities produced as part of the lesson structure within the teacher’s guide for the EYFS were not entirely appropriate for the children in the teachers’ classes due to the speed in which the water week needed to progress, possibly due to the difference in cognitive processing of the younger children in teacher 2’s EYFS class and concentration levels.

Teacher 2 concluded that the lesson guide was trying to cover all bases for EYFS and KS1 children; implying that the HEP was attempting to be a ‘Jack of all trades; a master of none’. Moving forward, the quantity of the resources in the HEP will need to be reviewed. As such, the resources in the version 3 HEP will be separated into two packs for study 3 - a EYFS HEP

and a KS1 HEP. This should ensure that all resources are age-appropriate and meet the learning needs for both EYFS and KS1 learners and will be explored further below.

4.3.5 - Teacher's Lesson Guide: Modification ii

In addressing the teacher's comments from study 2, to inform modification ii, because teacher 1 did not use the teacher's guide, whilst accepting that teacher 2 insisted that the teacher's lesson guide was essential in providing her with a day-by-day overview of the water week to ensure it was delivered efficiently to children. The teacher's lesson guide needed to remain as part of the version 3 HEP due to half the teachers who delivered the water week in study 2 remaining a strong advocate for its usefulness in the post-water week interviews.

That said, teacher 2 also believed that some activities were not necessarily best suited for an EYFS classroom, due to the longer time it takes to complete some of the tasks and due to the nature of how the EYFS is usually delivered (favouring learning through play) (Ephgrave and Bilton, 2012; DfE, 2021). Concluding, that some of the activities provided within the teacher's guide could be better suited to a year 2 class (KS1 setting), and after anecdotal informal conversations with the two teachers following the post-study 2 interviews, it was suggested that the modification of two packs (EYFS HEP and a KS1 HEP), could be more beneficial for teachers' delivery to their specific year groups, therefore the teacher's lesson guide remained in the version 3 HEP with modifications for both age phases. The examination of what activities will be used in the two lesson guides, and if there should be any crossover of included activities, will be explored and evaluated below and thus will answer how both the EYFS and KS1 teacher's lesson guide will be modified in version 3 of the HEP.

4.4 - Supporting Learning Activities

The following sub-sections within this chapter will discuss the creation, modification, implementation and assessment of efficacy/impact of the substantive learning content which formed the basis of the lessons provided for the teaching practitioners in the teacher's lesson guide. The researcher utilised the areas of fluid intake subject knowledge and understanding children are likely to be deficient in, (why-when-what children need to drink, how much children need to drink and who supports children to drink), to direct what learning objectives needed to be addressed, and thus what activities needed to be created to assist children in meeting those learning objectives.

As such, with the aim of aiding teachers in enabling children to meet those objectives, the following activities will be discussed and evaluated for inclusion in the study 3 HEP: -

- A Dehydration Activity.
 - *(To address when and why children need to drink, and the signs of dehydration).*
- Bling Your Bottle.
 - *(To address how much children need to drink).*
- Healthy Drinks Sorting.
 - *(To address what types of fluid children need to drink.)*
- Story Book Drama Guide.
 - *(To further address when and why children need to drink).*
- Encourage people to Drink Poster Creation.
 - *(To address who supports children to drink).*

4.5 - Dehydration Activity

4.5.1 - Dehydration Activity: Creation

As concurred by Coppinger and Howells (2019), the majority of children in their study could not name factors as to what makes them thirsty, and hence it was reinforced that the same majority in that study were unable to recognise the crucial signs of thirst and dehydration, such as: dry mouth, flushed skin, headache, lethargy etc, (Kleiner, 1999), and thus hinders children to autonomously rehydrate, due to not knowing when they are dehydrated or even why they are dehydrated.

As such, the HEP needed an activity to convey the important message of how, when and why children become dehydrated and how one can minimise the possibility of being dehydrated. That said, the literature review presented an activity whereby children could highlight the various body parts that are affected by dehydration, as inspired by BBC Bitesize's (2022) naming of the body parts task (appendix 2a).

4.5.2 - Water Tray Dehydration Activity: Modification i

Teachers 1 and 3 did not comment on a way to teach dehydration to young children. Teacher 2 was able to suggest an activity that could work to teach children about how they become dehydrated. Below are the pertinent comments that teacher 2 made in relation to the signs of dehydration activity and the appropriate signposts of where in the transcriptions they can be found for greater context (appendix 6).

Teacher 2, Study 1 (line 1359 – 1375)

Teacher 2: *“maybe we could do something like where we get a big jug that represents a person and pour an amount of water to show how much you start with at the beginning of the day. And then you would give scenarios like ‘this person is hot today, and they are going out for a run’*

so the children can pour some water out to visually see that exercise and sweating results in losing bodily fluid, and so you need to replace that amount of water to be hydrated. Where the teacher can say, 'you've run out [of water] and that is what causes you to want to drink more otherwise you will get headaches, tiredness and fatigue'. So as a really fun activity, this will be interesting to as its practical and the children enjoy a practical activity."

Researcher: *"That could be like the dehydration lesson potentially?"*

Teacher 2: *"Yeah, yeah. So, you can be like, 'where are you going to get your water from?' And then that's where you throw out the questions to the class and they will say by drinking and eating this type of food, that can go onto another kind of solid lesson because I don't think most of my children would know what food you get water from. I mean to be fair as an adult I would find this interesting as well."*

Continued...Teacher 2 Study 1 interview (line 1383 - 1387)

"I think this will help the adults, as well as the children, and then we could kind of turn it with a fun activity. And we could turn into like a fun activity where the children then moan at the adults if they haven't drunk enough. To say we're not very good at that, as both adults in my class are not very good at it. So, it contains the whole class that we having a drink of water at the same time? I mean it would help me out!"

Teacher 2 felt this activity could teach not only children about dehydration and enable them to respond well to the activity, but also teach adults too. The general idea for the activity was to support learning of what contributes to being hydrated and that exercise/gradual loss of bodily fluids force dehydration if the uptake of fluids is not actioned. This could be due to the agreement from the study 1 teacher that this activity essentially would allow visual and kinaesthetic learners (Kolb, 1984) to see and tactilely feel how much they need to drink and understand the hydrating effects of fluid and dehydrating effects of how exercise equates to the loss of body fluid in the water tray, which could facilitate children to form a greater association between physical activity/loss of bodily fluids (resulting in dehydration) and drinking (resulting in hydration). Therefore, this modified activity supported the final two stages of

Kolb's (1984) learning processes to explain why being hydrated is important and how the children can apply this knowledge in their lives. Consequently, this provides justification to modify such an activity for study 2, due to the teacher 2's experienced opinion stating that it could help her and her pupils to understand a potentially complex construct by facilitating children to implement knowledge learnt via the practical water tray dehydration activity. As such, because there was little feedback for modification of the original dehydration body map activity in version 1, this was therefore removed and replaced/modified with the water tray dehydration activity in the version 2 HEP (appendix 7).

4.5.3 - Water Tray Dehydration Activity: Implementation i and Assessment of Efficacy i (Children's Data)

Signposted below are the study 2 children's results that relate to the implementation and children's assessment of efficacy and impact of the water tray dehydration activity to help inform the activity's retention, modification or removal from the HEP. Due to Coppinger and Howells (2019), stating that many children do not know what induces thirst or what activities make them thirsty and when the children are thirsty, study 2 charts that relate to thirst recognition were selected.

When The Children Get Most Thirsty At School – Study 2

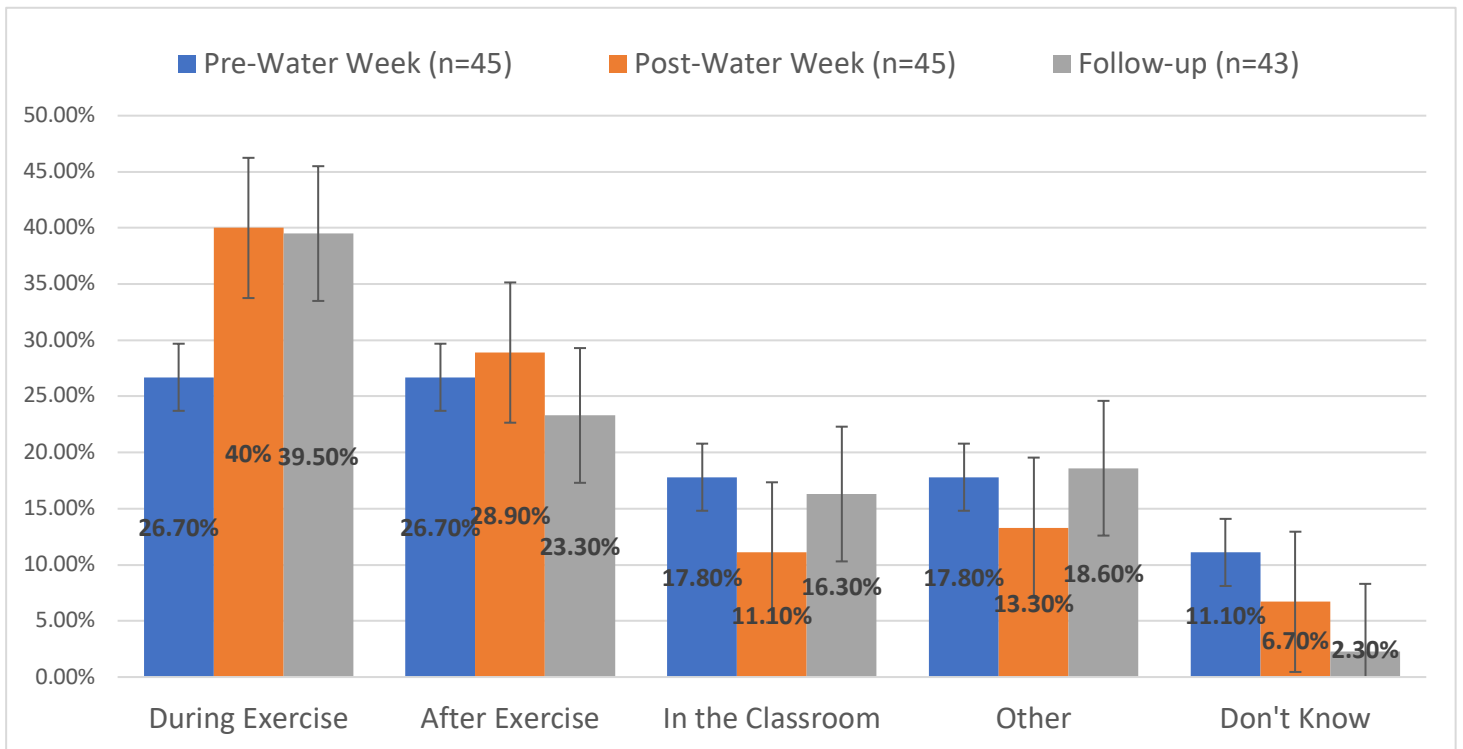


Figure 22: Percentage values for the whole research sample for when the children get most thirsty at school – Study 2

There were no significant differences for when the children are most thirsty at school, post-water week ($F=0.725$, $p=.399$) or in the follow-up ($F=0.084$, $p=.774$). More children stated they feel most thirsty during exercise post-water week (40%, $n=18$), and in the follow-up (39.5%, $n=17$), when compared to pre-water week (26.7%, $n=12$). Less children did not know any time they get most thirsty post-water week (6.7%, $n=3$) and in the follow-up (2.3%, $n=1$), when compared to pre-water week (11.1%, $n=5$).

Do The Children Recognise That Exercise Induces Thirst? - Study 2

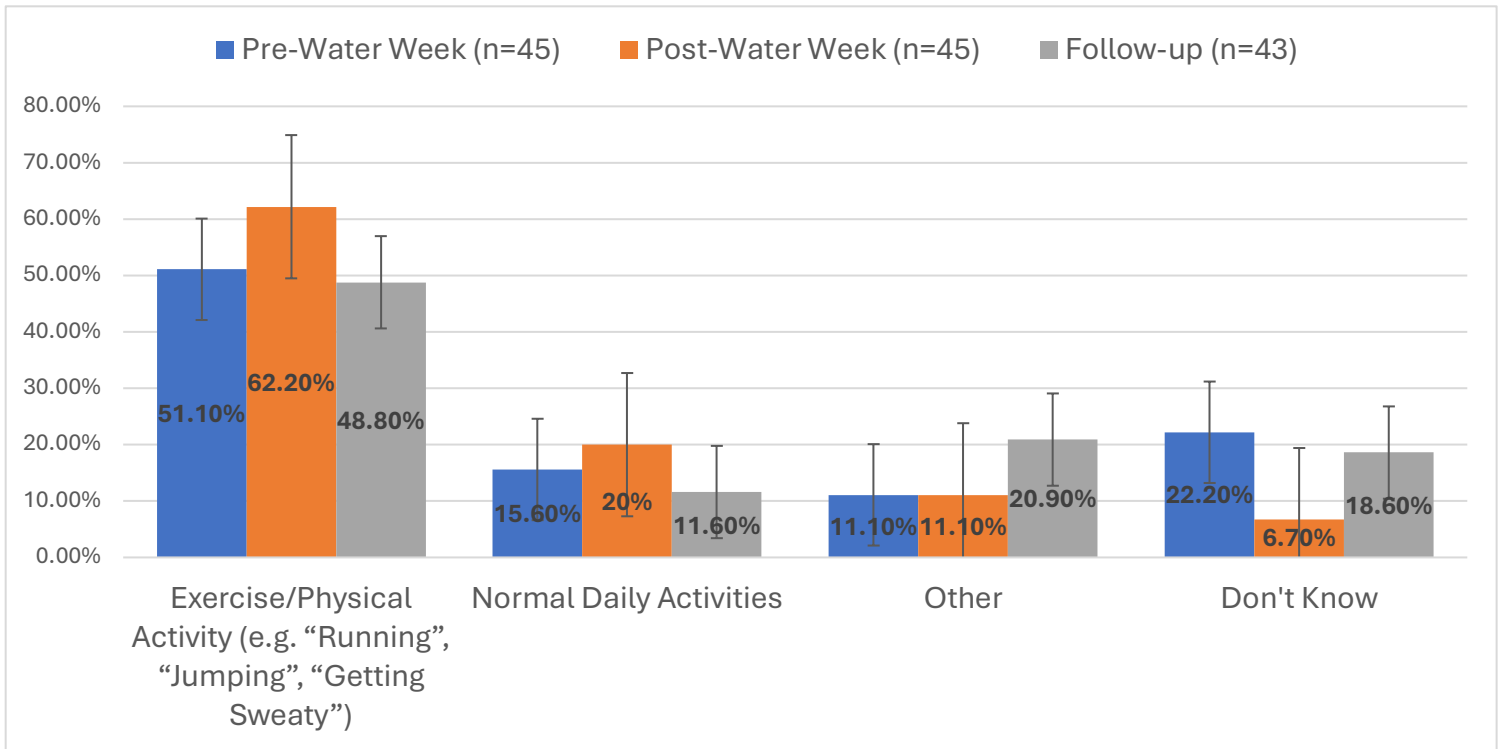


Figure 23: Percentage values for the whole research sample of what activities the children believed made them thirsty – Study 2

This was also the case for if the children recognise that exercise induces a thirst response, there were no significant differences post-water week ($F=1.435, p=.237$) or in the follow-up ($F=0.923, p=.342$). More children believed that exercise/physical activity made them thirsty post-water week (62.2%, n=28), compared to pre-water week (51.1%, n=23). This increase observed post-water week, reduced to below pre-water week levels in the follow-up week (48.8%, n=21).

Less children did not know any activities that made them thirsty post-water week (6.7%, n=3) when compared to pre-water week (22.2%, n=10).

The practical water tray dehydration activity was aimed to teach children the important knowledge that exercise induces a thirst response, and why it induces a thirst response, as well as the signs of dehydration, in the expectation this could teach children about the necessity of replacing lost fluids after physical activity to avoid dehydration, and to recognise dehydration signs to provide them with the knowledge to autonomously avoid dehydration. As outlined in the study 2 children's results section, before the introduction of the version 2 HEP, 26.70% (n=12) of the children named a time when they are most thirsty was during periods of exercise (figure 22). This increased non-significantly to 40% (n=18) immediately after the water week, whereby the trend remained high at 39.5% (n=17), 5-months after in the follow-up, suggesting that there could be a resource(s) that are able to teach children about dehydration and the signs of it, due to the increased trend of children stating they become most thirsty at the time in which they should (i.e. during exercise). Moreover, this could be partly due to the water tray dehydration activity as the concept of being thirsty during exercise was one learning outcome of this. Furthermore, although a non-significant finding, the change of recognition that exercise/physical activity induces a thirst response changed by the 11.1% (n=5) from pre-water week to post-water week (figure 23), this further supports that the water tray dehydration activity could be effective to develop awareness of when and why children need to drink, and the signs of dehydration.

That said, even though the non-significant difference of children's knowledge data could imply there were other factors which could have influenced the trends observed in figure 22 and figure 23, it cannot be ruled out that there could be a resource(s), at least in the short term, which were effective in teaching children that dehydration is caused by a fluid deficit, and hence there could be some resources in the HEP that can provide children with the tools to know and understand that drinking around periods of exercise is good practice to rehydrate,

due to the likelihood of a reduction of bodily fluids (Sawka et al., 2007). Arguably, one could suggest that the non-significant trends were due to the WAVs, because of the input of new core information. However, this project is centred around the creation, modification, implementation and efficacy assessment of what impact a HEP has on children's and teachers' knowledge and understanding of fluid intake, and hence needs to be substantiated with more than just a WAV series. Therefore, with the raised trend of the recognition that exercise usually induces sweating and thus provide opportunities to build an effective thirst response to consume fluids, the water tray dehydration activity could have scaffolded the development of that understanding. Consequently, the children's data suggests the resource should remain in the version 3 HEP for study 3 without modification. However, do the teachers agree?

4.5.4 - Water Tray Dehydration Activity: Implementation i and Assessment of Efficacy i (Teacher's Data)

Below are the pertinent comments from the teachers' post-water week interviews (appendix 15) as to the efficacy and impact of the water tray dehydration activity. The researcher has provided a contextual commentary throughout.

Teacher 1, Study 2 (line 23 – 29)

*“So Yeah. Yeah. They really, really enjoyed the videos. We did the bling the bottle. We did the sorting of the drinks. (*1) We did the replenishing fluids activity as well. So, we did them. *2 I don't think we necessarily needed them to be honest. I think the videos were appropriate enough for their age group and they, errrm had lots of chat. You know, we pause the video every time you mentioned it. And yeah, lots and really good feedback from the kids. The thing they did love most of all was the chart and the stickers.”*

*1 This indicates that most of the activities were physically conducted by the children and taught by the teachers, including the water tray dehydration activity.

*2 Teacher 1 conducted the activity with her class but felt that some activities weren't really needed, and the WAVs would suffice for her EYFS class. However, the fact that this needs to be a HEP and not simply a WAV series needs to be addressed.

Teacher 1, Study 2 (line 184 - 196)

Researcher: *“So that brings me quite nicely onto...on repeating in the Water Week again, what resources would you discard from the educational HEP and why would you discard those?”*

Teacher 1: *“Yeah, that's it really, stick with the video, I thought the videos were great. (*1) I understand why you got to pack those things and why you're offering people those different opportunities, but I don't think for what we needed to achieve with them, being so young. I think the video did that. It was a really easy thing to them to do, they enjoyed it looked forward to it, you know. So that was really good, I think sometimes. You know if you're later in the point of it. If you have slightly older children that could be good. But they didn't need it. Some of them did it and it was fine, and they would then continue to chat about it and things. (*2) But Yeah, you know, cause they can't read necessary the little things on the cards. So, you know they just worked out that blue edged cards where the good things. The things that would dehydrate you and, in the end, they just sorted by colour in end.”*

*1 Teacher 1 prefaced their comment by saying that she understood there was a need to include activities, as well as the WAVs, as this is a package of fluid intake resources and not just a WAV series. This supports that some activities do need to remain in the EYFS HEP even though version 3 of the HEP will be separated into two variants (EYFS and KS1).

*2 Teacher 1 suggested that due to an inability to always read accurately, the children essentially turned this activity into a colour sorting activity and that there were some activities she didn't necessarily need for her children in the EYFS. That said, the fact the children could sort the two types of cards, essentially means the researcher can conclude that the cited effect

data from the children in study 2 could have resulted from this activity as they were sorting hydrating liquids and dehydration activities into the hydration/dehydration themes. Therefore, supporting knowledge and understanding development of what factors cause dehydration.

Teacher 2, Study 2 (line 427 - 429)

Teacher 2: *“It’s super! However, we couldn’t. We couldn’t engage with that much content in a way in in a week, unless we had abandoned all of the curriculum and we immersed ourselves fully, which I’d love to have done, really in a water week.”*

This statement implies that if there were fewer activities and were all age-appropriate, then this activity could be more effective in teacher 2’s view, possibly due to greater teacher support in helping children accessing the resource.

Drawing back to teacher 1’s comment that suggested the children learned the colours of the cards and how they related to dehydrating activities or hydrating liquids, children were still able to see the pictures and relate the cards to what makes them hydrated or dehydrated. Hence, due to the more practical nature of this activity and the researcher’s awareness of the way the EYFS is usually delivered (Ephgrave and Bilton, 2012; DfE, 2021), that if this activity was given a greater focus of time (with less ineffective content for EYFS children), then the feedback from teachers could have been more positive as to its pedagogical efficacy and impact in study 2. Hence this supports the previous conclusion that there needs to be an EYFS HEP and a KS1 HEP made. Whether the water tray activity remained in the HEP or was modified or removed will be explored below.

4.5.5 - Water Tray Dehydration Activity: Modification ii

After considering the comments regarding the dehydration water tray activity, there appeared to be a view from the teachers that although the WAVs, drinking tracker chart (discussed in 4.10) and reward system (discussed in 4.11) were more effective in altering knowledge and consumption habit change with the EYFS children, there is a requirement to include some activities to support the teachers' belief that the majority of learning was yielded from the WAVs, drinking tracker chart and reward system. However, considering the children separated the water tray cards into hydration/dehydration themes, there is evidence that the activity could have been attributable to the non-significant impact on times the children were most thirsty (figure 22) and association of exercise inducing a thirst response (figure 23).

Consequently, as the water tray dehydration activity was a practical task and therefore is orientated towards a younger learner audience due to this, whilst accepting the view by teacher 2 that discussed the effect of removing other activities and the resulting freedom of time this could yield for the remaining activities when assessing efficacy/impact in of the teacher's guide in section 4.3.5, the water tray dehydration activity remained in the EYFS and KS1 HEP without modification. However, this can only occur on the condition that other activities are removed from the EYFS HEP to ensure it is not overwhelming for EYFS teachers to deliver. As to what activities were removed from the EYFS HEP to allow the water tray dehydration activity to remain, will be examined later (sections 4.6 and 4.9). The unmodified version 3 water tray dehydration activity for study 3 is in appendix 16 and 17.

4.6 - Bling Your Bottle

4.6.1 - Bling Your Bottle: Creation

Due to the requirement for the HEP to support the learning of how much fluid children need to consume daily, there was a need for the researcher to produce an activity to facilitate children in their conceptualisation of this volume consumption requirement. As such, as children in the UK spend half their waking hours in the school setting (Owens et al, 2000), children have a requirement to drink at least one water bottle at school, in addition to some fluid consumption at lunchtime.

The researcher was able to accumulate ideas from previous UK governmental health education initiatives (Bikeability Trust, 2021), which presented a ‘bling your bike’ activity for children to understand what a bike is and the various parts of one, to aid in using a bike to travel to school. Therefore, a ‘bling your bottle’ activity was inspired by this to aid in the visualisation of how much fluid children need to drink at school and help in the formation of healthy habits to consume at least the one bottle requirement daily, to be hydrated.

4.6.2 - Bling Your Bottle: Modification i

Below, the researcher has provided quotes from the teachers in relation to their views of the teaching and learning efficacy of the prospective use of the bling your bottle activity in the HEP. The researcher has provided further explanation as to the context of the comments and how it relates to the development of the HEP and where to locate the comments in the transcriptions (appendix 6).

Teacher 1, Study 1 (Line 522 - 526):

Teacher 1: “Yes. Teachers have so much effort they have to put in anyway. To give them a worksheet today. I mean, that’s just another thing, you know to give more worksheets today is just another thing, isn’t it? And people [teachers] don’t wanna do it? Better if it’s a video you can stick on at the end of the day for five minutes and you can actually. ...relax but listen in the background.”

Teacher 1 was initially quite hesitant about the number of worksheets proposed in version 1 of the HEP made for study 1 teachers to critique. Although once the researcher assured her that the provided worksheet-based activities were the exhaustive list of worksheets planned, she agreed that this could be useful to scaffold taught learning after viewing the WAVs.

Teacher 1, Study 1 (Line 541-542 and 546-547):

“I mean ours won’t be able to do the water measurement thing as that’s too complicated.”

“Yeah, I mean, obviously when you’re in early years that would be empty. Nearly empty, nearly full and full.”

These two comments by teacher 1 indicate that in her view, the children in her class may struggle to understand and complete the volumes on the bling your bottle activity; providing an alternative suggestion of writing vocabulary to encourage children to drink from their “full” water bottle until it is “empty”. As such, in the bling your bottle activity, additional options were facilitated with vocabulary, as well as volumes requirements, in the hope that this could allow for a wider scope of pupils to access the intended teaching and learning of the bling your bottle activity.

Teacher 1, Study 1 (Line 753 - 758):

“Yeah, I mean you know the idea is nice and yeah, the sorting one looks good. I mean, you know, the tracking bottle look quite nice, but the sorting one would be the one...they would be interested in and obviously, you know, the bling in the bottle. They would do that, but they probably won't be fussed about that as it's not quite as exciting as moving things and chatting to your friend about it but still all good.”

Teacher 1 also suggested that even though the bling your bottle activity was not quite as exciting as some of the other proposed resources in the HEP, she did imply an acknowledgement that with this resource, packaged together with the other ‘more exciting’ activities, was “*still all good*”. Hence, implying that the inclusion of this activity in the HEP (with the modification of including words to enhance vocabulary to aid children to drink their bottles until it is empty), could be a worthwhile endeavour to support the development of fluid intake knowledge and understanding of how much the children need to drink. Furthermore, this could be because of the previous conclusion following the creation of the version 1 bling your bottle task that this activity should enable children to see how much they need to drink, in the hope that they action this knowledge to drink a sufficient volume of fluids at school: concurring with Kolb's (1984) theory of learning styles and learning processes. Therefore, as the teachers provided areas for modification and did not provide comment as to the activity being ineffective, the bling your bottle remained in the version 2 HEP, with modification, and been supplied in appendix 7.

4.6.3 - Bling Your Bottle: Implementation i and Assessment of Efficacy i (Children's Data)

The purpose of the bling your bottle activity was to support children's knowledge of drinking at least one bottle of water a day while at school. So, did the formation of this habit and understanding materialise as evidenced by the data?

How much Do The Children Think They Drink? – Study 2

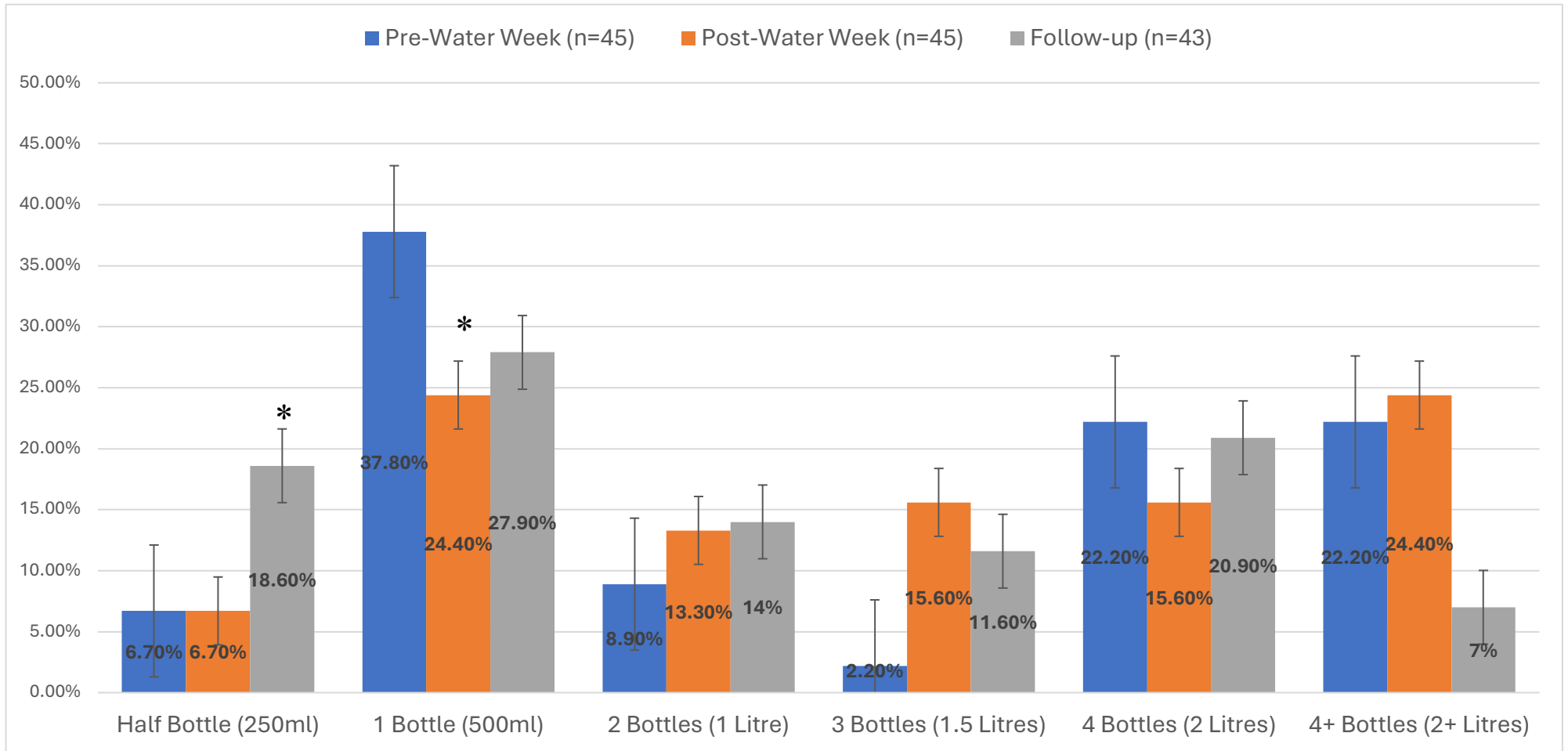


Figure 24: Percentage values for the whole research sample for how much the children believed they consumed from their water bottles a day – Study 2

Figure 24: Percentage values for the whole research sample for how much the children believed they consumed from their water bottles a day – Study 2

There were significant differences for how much the children believed they consumed from their water bottles in the follow-up ($F=4.678$, $p=.036$). More children believed they consumed half a bottle a day (250ml) in the follow-up (18.6%, $n=8$) when compared to pre-water week (6.7%, $n=3$) and post-water week (6.7%, $n=3$).

Post-water week more children were drinking to at least 1L a day from their bottles (68.9%, $n=31$), when compared to pre-water week (55.5%, $n=25$) or the follow-up (53.5%, $n=23$) ($F=0.546$, $p=.464$). Resulting in less children believing to be drinking 1 bottle or under (<500ml) post-water week (31.1%, $n=14$) than pre-water week (44.5%, $n=20$). However, there was a return to pre-water week levels of children reporting to drinking one bottle or less in the follow-up (46.5%, $n=20$).

The data demonstrated by figure 24 presents whether there was an impact on the children's consumption habits and hence indicates whether the children learnt how much they need to drink while in the classroom. Because, in theory, the action and understanding of healthy habits (i.e. drinking enough fluids) should have resulted from a knowledge of healthy habits (Howells, 2012). This results in one justification for utilising this piece of data to examine whether the children in study 2 understood how much they should be consuming daily in the classroom.

When the children were asked how much they thought they consumed a day from their water bottles pre-water week, 44.5% ($n=20$) of the children estimated to be drinking 1 bottle or under a day (figure 24). Post-water week, there was a non-significant change of perception to 31.1% ($n=14$) of the children, indicating that 13.4% ($n=6$) of the children could have learnt recommended consumption levels at school where they weren't previously before the water

week. Suggesting that there are resources in the HEP that could be effective in imparting crucial information of how much children need to drink, at least in the short term. However, in the 5-month follow-up, 46.5% (n=20) of the children estimated to be drinking 1 bottle or less a day; representing a non-significant return to pre-water week knowledge and reported drinking habits. This could be due to the significant change ($p < 0.05$) of children believing to be drinking half a bottle a day in the 5-month follow-up (18.6%, n=8) when compared to pre-water week (6.7%, n=3) and post-water week (6.7%, n=3); implying other factors have reduced knowledge and understanding of how much the children should drink and their actioning of this awareness. Consequently, this supports a conclusion that some resources should be continually used (discussed in 4.10). That said, this trend of fluid volume consumption awareness returning to pre-water week levels in the follow-up, potentially mirrors the returning trend of children stating they sometimes liked or disliked water 5-months after the water week, as shown in figure 20. Possibly suggesting that due to the near-return of a collective like for water in the 5-month follow-up when compared to pre-water week, this could explain the reason why reported consumption levels returned to pre-water week levels as well (Van Belzen, Postma and Boesveldt, 2017).

Although it must be acknowledged that the percentage of children stating why dislike/sometimes liked water, in the follow-up (figure 21), was far lower than the 46.5% (n=20) of children who reported to be drinking one bottle or under a day in the follow-up (figure 24). There could be a clear rationalisation to be made that there is at least one resource in the HEP (possibly bling your bottle) that was able to impart important information of how much fluid children need to drink post-water week. Which is feasible because the children could visually see how much fluid they required in the bling your bottle activity, and possibly was one proponent in the new knowledge and understanding development. Concluding, that if

the researcher were to exclusively use the quantitative data from the children, then the bling your bottle activity should remain in the version 3 HEP for study 3, without modification. However, do the teachers who delivered the water week agree with this preliminary conclusion?

4.6.4 - Bling Your Bottle: Implementation i and Assessment of Efficacy i (Teacher's Data)

Below is a selection of quotes from the teacher's post-water week study 2 interviews. The researcher has supplied the line number and who stated each quote (appendix 15) and supplied a contextual commentary to aid in how their comments impacted decisions for modification ii (step 5, figure 1).

Teacher 1, Study 2 (line 162)

“So, bling your bottle. Yeah, it was basically a colouring activity for them.”

This suggests that teacher 1 believed the bling your bottle activity was not particularly conducive to enable a great degree of learning to materialise other than developing fine motor skills to facilitate ‘colouring’ the bottle. Suggesting that the bling your bottle activity was possibly not a contributing factor for why more EYFS children possibly reported to consume the recommended amount of fluid after the water week (figure 24).

Teacher 2, Study 2 (line 411 - 416)

“They were exhausted by the end of the mini talking to me [after the videos]. But was that whether it was after lunch, depending on the weather we were boiling, or whether we were doing this at about 1:00 o'clock in the afternoon, so have come in pretty sweaty from lunch. So, they just don't, just don't concentrate for five or six minutes. That's all we had. So, it just didn't lend itself to those type of activities”

Teacher 2, Study 2 (line 427 - 429)

“It’s super! However, we couldn’t. We couldn’t engage with that much content in a way in a week, unless we had abandoned all of the curriculum and we emersed ourselves fully, which I’d love to have done, really in a water week.”

Teacher 2 summarised that due to the WAVs taking much of the children’s concentration after the lunch break, this resulted in children not selecting the bling your bottle activity due to the paper-based nature of it. This was one concern that teacher 1 held in the study 1 interviews (appendix 6), thus justifying her previous concern about this activity due to another teacher commenting on the same issue, post-water week delivery in study 2. Supporting that perhaps this activity was not well suited to an EYFS audience and should be removed for the EYFS version 3 HEP.

4.6.5 - Bling Your Bottle: Modification ii

In summary, even though it appears that the bling your bottle activity could have been one of the core instigators of the short-term non-significant raised trend of recommended consumption perception levels, as demonstrated by figure 24. When considering the post-water week comments made by the teachers who delivered the water week resources in study 2, it is likely that the bling your bottle activity was not the reason as to why the children developed knowledge and understanding of how much they need to drink changed post-water week. This is because teacher 1 offered a comment that the children essentially treated this activity as a colouring task; providing little educational benefit in teaching EYFS children as to how much they need to drink while at school. This could also be due to teacher 2’s comments, that for EYFS children, this paper-based activity was not entirely suitable for them due to the time taken up viewing the WAVs, which resulted in minimised concentration levels to effectively

complete the bling your bottle task. Therefore, the EYFS children do not require this activity in their HEP for study 3; furthering the cause to ensure the WAVs remain in the HEP.

When the researcher assessed both the teachers' comments who delivered the water week resources and their expressed criticism as to the suitability for EYFS children, in conjunction with the previous conclusion made in the teacher's lesson guide section (4.3), which concluded there will be a separation of the version 3 HEP into an EYFS and KS1 HEP. The bling your bottle activity was removed from version 3 of the EYFS HEP in its entirety, due to the incompatibility to that age group's style of learning, dwindling concentration levels, and the suggestion that other activities would be better suited to an older age group (KS1). As such, the bling your bottle activity remained unmodified in the KS1 HEP due to the teachers omitting any constructive feedback in which to improve it for that older audience, other than reporting to be an advocate to use that activity with children older than EYFS. The unmodified version 3 KS1 version of the bling your bottle activity can be found in appendix 16.

4.7 - Healthy Drinks Sorting

4.7.1 - Healthy Drinks Sorting: Creation

As summarised earlier, it is important to teach children about what fluids are best to consume on a regular basis to enable themselves to be hydrated effectively. As highlighted by Sichieri et al., (2009), they found that the use of a drinks pyramid resource allowed children to compartmentalise the frequency of when they should consume different types of drinks (figure 3), which resulted in the increase of water intake. Meaning that their suggestion for the frequency of beverage consumption could be useful in the development of an activity to teach children about what fluids children should drink on a regular basis to maintain hydration.

Sichieri et al., (2009) outlined four key phrases in relation to the frequency of different fluid types:

- (1) Water whenever
- (2) Milk with meals
- (3) Juice just once
- (4) Pop only at parties

This in turn supported the use of similar terminology within the water week HEP when it explored what resources could be useful for teachers to deliver and children to use (figure 3). As such, the researcher utilised his own knowledge of activities that he had facilitated for EYFS and KS1 children in his own initial teacher training and created a cut-and-stick activity where it was hoped that children would “cut” different types of drinks out and then “stick” them where they believe the frequency of consumption should be, as part of the version 1 resources; supporting different learning styles (Kolb, 1984). Resulting in a practitioner’s ability to assess what knowledge had been developed to learn what the children need to drink. An example of the healthy drinks sorting cut and stick activity that was supplied in the study 1 teacher interviews is attached in appendix 2a.

4.7.2 - Healthy Drinks Sorting: Modification i

The researcher has provided quotes from the study 1 teachers in relation to their views of the teaching and learning efficacy of the prospective use of the healthy drinks sorting activity in the HEP. The researcher has also provided further explanation as to the context of the comments and how it relates to the development of the HEP, and where to locate the comments in the transcriptions (appendix 6).

Teacher 1, Study 1 (line 318 – 320)

“You could get the hoops for sorting circles. So maybe if you almost list the ones that you’re going to have in your video, you know, we could try and get the same ones and say, do you hoops look like mine? And show them what you think?”

Teacher 1 was optimistic about the potential the healthy drinks ordering activity had to enhance the development of children’s fluid intake knowledge and understanding, where she offered some critiques to improve and expand the scope of the activity, and the WAV, which would teach children the initial content of what they need to drink. She suggested using physical hoops and drinks for children to sort.

Teacher 1, Study 1 (line 753 - 757)

*“Yeah, I mean you know the idea is nice and yeah, the sorting one looks good. *I mean, you know, the tracking bottle look quite nice, but the sorting one would be the one...they would be interested in and obviously, you know, the bling in the bottle. They would do that, but they probably won’t be fussed about that as it’s not quite as exciting as moving things and chatting to your friend about it but still all good”*

This comment highlighted teacher 1’s optimism of the learning potential for the healthy drinks sorting activity.

Teacher 2, Study 1 (line 1281 - 1287)

“So, the sorting activity, mine love a sorting activity and again its visual. They’re picking it up and they’re seeing what kind of group colour bands they should be drinking. Red shouldn’t have it often. Orange, you can have it, like the apple juice every now and again, and then the water which is green for good. I would like to hope that they would already know that they would be in the green and, then if you did that and have that up in the class, they could always refer back to it and we can just bring it in every now and again.”

Teacher 2 outlined that, from her perspective, the healthy drinks sorting activity would engage her class in learning about what fluids are good for them and complete the activity to support

their understanding of fluid intake. Furthermore, she outlined her own understanding of how the activity would work in the classroom, which is useful for a teacher's delivery to ensure their pupils' complete it sufficiently.

In modification i's conclusion, there is clear support for this activity from two out of the three teachers in study 1 and its potential to teach about what fluids are healthy to drink on a regular basis and the nuances of the somewhat complex topic of fluid intake. Teacher 3 decided not to comment; suggesting to the researcher that there was not anything visibly wrong with the activity in its prospective ability to develop knowledge and understanding of fluid intake. Teacher 1 suggested that, in addition to the cut and stick activity, a variant of the task to allow children to physically sort over-sized pictures into large, coloured hoops could prove useful too. This could be because this activity accommodates all visual, audible, and kinaesthetic learning styles (table 1) (Kolb, 1984). This is due to visually allowing children to see what drinks they should drink frequently, physically cut/stick or place the drinks into the three colours of consumption frequency, as well as hear this information in the WAVs. Consequently, this facilitates all levels of Kolb's (1984) learning processes to materialise. Firstly, due to the initial concrete teaching and learning of what drinks should be consumed frequently in the WAV. Secondly, why this is important to know (reflective observation). Thirdly, how the children can apply this knowledge in their lives (abstract conceptualisation), and fourthly, actively experiment with this knowledge by engaging with the activity itself, in the hope that children practically action this new knowledge and understanding. As such, the healthy drinks sorting activity was modified to include both variations (cut/stick and physical sorting) and was supplied in the version 2 HEP for study 2 (appendix 7).

4.7.3 - Healthy Drinks Sorting: Implementation i and Assessment of Efficacy i (Children's Data)

The researcher can ascertain from the children's data that the healthy drinks sorting activity could be another of the core catalysts for the non-significant raised trend of the children liking water, due to the researcher asking the children why they held their opinions towards drinking water (figure 21). Primarily because this activity's underlying nature was to scaffold the learning of the health benefits of drinking water, whilst minimising SSBs. It can subsequently be suggested that this could be one rationale for why the children's replies non-significantly changed regarding a perception that of liking water (which figure 20 seems to suggest occurred in the short-term), as the children learnt that they need to drink water more regularly than SSBs, assumedly many children also like the taste of. As such, this gives one rationale for the healthy drinks sorting activity to remain in the HEP for study 3. However, is this resource effective in the view of the teaching professionals who delivered the HEP in the study 2 water week?

4.7.4 - Healthy Drinks Sorting: Implementation i and Assessment of Efficacy i (Teacher's Data)

Below are a selection of pertinent comments made by the study 2 teachers in the post-water week interviews (appendix 15). A contextual commentary has been supplied, as well as how their comments relate to the inclusion, modification or removal of the healthy drinks sorting activity for the benefit of the version 3 HEP.

Teacher 1, Study 2 (line 89-97)

“Yeah, it's probably the one that the children found the trickiest was actually the drink sorting which was quite interesting. So that's what probably highlighted to me that they learned something. And maybe taught me the most that they didn't understand at the start. There was blurred lines shall I say? Things like fizzy water. They didn't get that if that was good for you or not so good for you, or whether it's bad. Cos before enjoying the video. We did say that fizzy

drinks are normally bad. You know, so most fizzy drinks aren't good for your teeth. When the pictures came out, they were like, oh there's fizzy water, what does it mean? Milk is good for you, so you can give blurred line like with smoothies and milkshakes."

Teacher 1 highlighted the misconception from children that they didn't know if fizzy water was healthy, due to it being carbonated like many unhealthy drinks, such as coke cola. Highlighting a need for modification to clarify this misconception in the version 3 HEP for study 3, as this was counter-productive to the activity's intended efficacy and impact. However, teacher 1 did state that this was the one activity, above all others, that allowed her to understand what the children had learnt in relation to fluid intake. This supports a pedagogical benefit and retention of the activity in the version 3 HEP.

Teacher 1, Study 2 (line 103 - 107)

"You know, the fact that when you said about the frequency of drinking drinks... It is a nice word to describe it to the children about there being some drinks that you can drink once a day, but maybe drink at meals. Apple juice, fruit juice I'll drink with breakfast. And then saying other drinks that are good to drink such as at parties or celebrations. So that was that was actually nice way to describe it to them."

Teacher 1 also complimented the researcher's articulation of how he described what frequency the children should consume different beverage types (as proposed by Sichieri et al., 2009). Highlighting that in the view of teacher 1, it was effective in disseminating important health information as to what children need to drink, in addition to how much and when they need to drink to maintain hydration.

4.7.5 - Healthy Drinks Sorting: Modification ii

To inform modification ii, although teacher 2 did not present any comments regarding the pedagogical effectiveness of the healthy drinks sorting activity, teacher 1 was able to offer a strong appraisal. She firstly noted that it was interesting for her own assessment of the children's learning as to whether they understood what constitutes a healthy drink and what does not and thereby learn what to drink. As such, allowing teacher 1 to ascertain whether children understood that water was healthy for them, and which children required more support to enable them to learn this important information, which is an additive benefit of this resource. Hence, this supports the researcher's previous conclusion that the healthy drinks sorting activity could have been useful in supporting children to understand that drinking water was beneficial to their health; possibly verifying the non-significant finding demonstrated by figure 21. Teacher 1 also highlighted that the articulation of how often the children should drink various fluid types was useful for the children's own development of knowledge and understanding. However, the categorisation of 'fizzy water' left many children confused as to where to rank its healthy drink status, due to the carbonated nature like unhealthy SSBs, such as coke-cola. This consequently meant that clarification needed to be made in the WAVs when it delivered the concrete information of what to drink, to ensure this misconception does not repeat during study 3.

In summary, due to the non-significant finding demonstrated by figure 20 and figure 21, that altered children opinion to drink water and nearly 30% of the children could have developed an understanding that adequate fluid intake is good for them, or possibly established new vocabulary specific to fluid intake post-water week, and some have retained this knowledge 5-months after the initial teaching of the water week, there is evidence that there could be resources in the HEP that can teach children about fluid intake, in which the healthy drinks

sorting activity is likely attributable. Furthermore, due to the comments made by teacher 1 following her delivery of the water week resources, the healthy drinks sorting activity was able to effectively articulate what frequency the children should drink various fluid types; whilst aiding in teacher 1's own assessment of what the children learnt from this activity, and hence justifies this activity from a pedagogical point of view as well. Teacher 1 did however suggest a point for modification that clarification of the health status of 'fizzy water' needs to be addressed for version 3 of the HEP in study 3 and commented that this advice should be in the 4th WAVs voiceover. As such, the healthy drinks sorting activity remained in the HEP for study 3 (both the EYFS and KS1 variants and both cut/stick and physical sorting) with the modification to clarify the health status of carbonated water (appendix 16 and 17).

4.8 - Story Book

4.8.1 - Story Book: Creation

Story books were also a useful resource for consideration to help develop knowledge and understanding. Aziza and Syafei (2018) compared the length of young children's attention spans regarding teachers using common storytelling delivery methods. They found that even though storytelling with a computer (233 seconds / 3 minutes and 53 seconds) captured the children's attention spans 20% longer than the 2nd longest mode of delivery (186 seconds / 3 minutes and 6 seconds), reading from a story book was still effective in holding attention spans, and hence could still be an effective tool to teach children about fluid intake. Therefore, the creation of a fluid intake story was developed in the version 1 HEP – "The Extremely Thirsty Cricketer". The story outline that was presented to teachers in the study 1 interviews is attached within appendix 2a.

4.8.2 - Story Book Drama Guide: Modification i

The researcher has provided quotes from the teachers in study 1 in relation to their views of the teaching and learning efficacy of the prospective use of a story in the HEP. The researcher has provided further explanation as to the context of the comments and how it relates to the development of the story book in the HEP, and where to locate the comments in the transcriptions (appendix 6).

Teacher 2, Study 1 (line 1579 - 1581)

“I sometimes use the book, but it would be cool to do different scenarios. So maybe I’ll throw that one in. Maybe the lessons, or maybe come up with a few versions as a book or PDF book”

Teacher 3, Study 1 (line 2097 - 2100)

“I would love a book cos I get asked for a book all the time, but depending when you suggest to would use it and depends on their concentration. So maybe a two out of three of usefulness, but I mean I could deliver it without the book, but I would love the book.”

Both teachers who made comments about the story book (teacher 2 and teacher 3), stated that to include a book could be advantageous to assist in their delivery of the water week resources and to aid the development of children’s knowledge and understanding of fluid intake to understand some of the implications of dehydration. Teacher 3 specifically asked for a book with a story, whereas teacher 2 suggested that creating scenarios for the children to imagine what would happen during different circumstances, such as being dehydrated, could be a beneficial aid in supporting knowledge and understanding development of fluid intake. That said, due to the limited availability of tools in which to develop the resources in the HEP and the limited financial budget available to the researcher, he was unable to contract an illustrator to draw pictures to depict what each page of the story stated. Hence, this was why the researcher was necessitated to adopt a marginally different approach to realise a similar effect to a

storybook (i.e. facilitating fluid intake scenarios) that the teachers agreed within the study 1 interviews.

As such, utilising his own teaching experience, the researcher devised a story book outline that utilised the core story which was presented to the teachers in the study 1 interviews, where it was suggested that teachers could read the story to the children while directing them to act out what was read. Additionally, it was suggested in the teacher's guide that children could draw pictures to visually allow them to demonstrate their understanding of the various scenes in the book. Therefore, by creating a dehydration story/scenario for children to listen to and act out, the teachers were advised that it could facilitate all visual, audible and kinaesthetic learners to effectively engage with the intended learning of knowing the signs of dehydration and when to drink (table 1). Primarily, as the children would be listening to the story and see/act out the story. This also facilitates all four stages of Kolb's (1984) learning processes to occur. The children would initially listen to the story to understand the core knowledge that dehydration is not healthy for children and adults in the WAVs (concrete learning). Consequently, the children would understand why they need to know this information due to the lessons learnt in the story (reflective observation). Whereby, abstract conceptualisation and active experimentation can materialise because the children should learn through the story that to maintain hydration levels results equates to the avoidance of dehydration (Jéquier and Constant, 2010). This story book drama guide was therefore intended to be an acceptable 'halfway house' in relation to teacher 2 who specifically requested a book for children to understand different scenarios where one might typically become dehydrated, but also allow for a logistically and financially viable alternative activity to materialise. As such, as the teachers' requested scenarios to be included in the version 2 HEP, the story book outline was modified into the story book drama guide in the version 2 HEP (appendix 7).

4.8.3 – Story Book Drama Guide: Implementation i and Assessment of Efficacy i (Children’s data)

As will be outlined below, the teachers in study 2 did not deliver this activity with their pupils’ and hence, to present children’s data on how their understanding of fluid intake might have been impacted by this water week resource would be incorrect.

4.8.4 – Story Book Drama Guide: Implementation I and Assessment of Efficacy i (Teacher’s data)

Both teachers in study 2 elected not to rank the story book drama guide due to not using the resource. One explanation for this could be due to teacher 2’s comment regarding the number of activities presented as part of the HEP which is below.

Teacher 2, Study 2 (line 427 - 429)

“It’s super! However, we couldn’t. We couldn’t engage with that much content in a way in a week, unless we had abandoned all of the curriculum and we emersed ourselves fully, which I’d love to have done, really in a water week.”

Teacher 2 highlighted that there were too many activities for the children to engage with, and perhaps the story book drama guide was omitted from the teacher’s study 2 HEP delivery due to engaging with other activities which might not have been entirely suitable for an EYFS audience, such as the bling your bottle activity. This issue will be examined below (4.8.5).

4.8.5 – Story Book Drama Guide: Modification ii

As a result of the above statement, it implies that the number of activities needed to be condensed in the final version of the EYFS HEP to allow time for other, potentially more effective, activities to be completed by the children. Therefore, if no other activities can be removed, then the storybook drama guide activity must be removed from at least the version 3 EYFS HEP, due to the dearth of supporting evidence in which to keep it in the version 3 HEP for study 3. That said, as will be explored in a later section of this chapter (discussed in 4.9),

the encourage people to drink poster creation was also not delivered by the teachers due to the same rationale of dwindling EYFS children's concentration levels, and an overload of teaching content for EYFS practitioners to deliver. As such, because the researcher withdrew the bling your bottle activity from the version 3 EYFS HEP (which was an activity that was delivered by the teachers in study 2), and due to the enhanced practical nature of the story book drama guide activity (which offered drama scenarios to teach some of the implications of being dehydrated), when compared to the less practical bling your bottle activity, as the researcher actioned teacher advice elsewhere (removal of the bling your bottle and the encourage people to drink poster creation activities), the story book drama guide remained unmodified in both the EYFS and KS1 version 3 HEPs (appendix 16 and 17).

4.9 - Encourage people to Drink Poster

4.9.1 - Encourage people to Drink Poster Creation: Creation

As highlighted by Coppinger and Howells in 2020, only a small fraction of teachers self-reportedly support the consumption of fluids in the classroom, where it was also reported that 91% of the teachers in their study were drinking under what is recommended for their sex by WHO (2004) (2L a day for women / 2.5L a day for men), therefore some of the resources in the HEP needed to address how children and teachers can help each other to drink. Coppinger and Howells (2020) consequently claimed that the level of support of fluid intake in the classroom would also result in a limited ability for teachers to model effective drinking practices for children to maintain optimal levels of hydration during school because many teachers are not drinking enough themselves. Thereby, Howells and Coppinger (2020) suggest this would limit children to support their peers' consumption due to a likelihood that most children would not have been shown how to support their peers to drink by their teachers. This resulted in the requirement of supplying a session (and resources) within the HEP that held a

central theme related to how children (and adults) can support each other in drinking enough fluid.

Howells and Coppinger (2020) suggested that as part of a package of hydration resources, informational posters could be included to assist in teaching children about fluid intake. As such, in previous support of using posters, this provided the researcher with a rationale of presenting an example activity for the children to create a poster in how they can encourage people to consume more fluid, to maintain an adequate level of hydration. As such, the researcher supplied the teachers in the study 1 interviews with this idea in the version 1 resources and created an example poster for the children to use as inspiration to create their own (appendix 2a).

4.9.2 - Encourage People to Drink Poster Creation: Modification i

The researcher has provided the quotes from the teachers in study 1 in relation to their views of the teaching and learning efficacy of the prospective use of the encourage people to drink poster creation activity in the HEP. The researcher has provided further explanation as to the context of the comments and how it relates to the development of the HEP and where to locate the comments in the transcriptions (appendix 6).

Teacher 2, Study 1 (line 1334)

“Errrm I’ve seen poster there. I like the idea of a poster design.”

Teacher 2 stated that she liked the idea of a encourage people to drink poster creation activity and the example presented to her in her study 1 interview. However, she was a KS1 teacher and hence a rationale for her comment could be explained by the greater level of teacher prescription required to complete this activity in KS1 (DfE, 2019).

Teachers 1 and 3 did not comment on this activity in the modification i phase of the resource in study 1. That said, they also did not provide any negative comments as to the activity's ability to teach EYFS children about fluid intake. As such, the clear support by teacher 2 (KS1 teachers) and the lack of any comments on the contrary by teachers 1 and teacher 3 (EYFS teachers), consequently resulted in the encourage people to drink poster creation activity remaining in version 2 of the HEP for the study 2 trial without modification. Moreover, this activity facilitated reflective observation and abstract conceptualisation processes to occur (Kolb, 1984) as it can scaffold why it is important to support other peoples' fluid consumption and how one can action this (appendix 7).

4.9.3 - Encourage People to Drink Poster Creation: Implementation i and Assessment of Efficacy i (Children's Data)

It would be inaccurate to present the children's data on how this water week resource may have impacted development knowledge and understanding of fluid intake, because the teachers in study 2 did not carry out this activity with their EYFS pupils', as will be explained below.

4.9.4 - Encourage People to Drink Poster Creation: Implementation i and Assessment of Efficacy i (Teacher's Data)

Both teachers omitted this activity from their comments in relation to its pedagogic efficacy and decided not to rank this resource in order of most effective in developing children's understanding due not delivering this activity.

4.9.5 - Encourage People to Drink Poster Creation: Modification ii

Due to a dearth of supporting evidence in which to retain this resource for the version 3 EYFS HEP, or indeed modify it to retain this resource for the version 3 EYFS HEP, this suggests that this activity is also not well suited to an EYFS audience and should be removed from that age phase's HEP in study 3. Supporting this suggestion, teacher 2 discussed in her study 2 post-water week interview (appendix 15, 411 - 416), the topic of the children's concentration levels being a problem to engage with all the content the researcher supplied. Furthermore, as this activity was primarily a less practical task, this also does not concur with an EYFS style of learning through play (Ephgrave and Bilton, 2012; DfE, 2021). Hence, with these issues considered in conjunction with the report that the EYFS teachers did not deliver this activity in study 2 and was less practical, the encourage people to drink poster creation was removed from the version 3 EYFS HEP (appendix 17).

That said, due to the KS1 teacher supporting the inclusion of this activity in her study 1 interview, it remained unmodified in the version 3 KS1 HEP. Primarily due to the teaching and learning delivery of the health education statutory guidance (DfE, 2019), which starts with year 1, that also formalises learning to a greater degree. As such, this type of activity would likely be better suited to a KS1 learning environment due to the structured nature of the encourage people to drink poster creation activity. The unmodified version 3 KS1 HEP poster creation activity can be seen in appendix 16.

4.10 – Drinking Tracker Chart

4.10.1 - Drinking Tracker Chart: Creation

There was a need for the HEP to include a resource that allowed the children and teachers to visually track how much water they consumed during the school day, by using a drinking tracker chart. Howells and Coppinger (2020) endorsed that the implementation of charts and displays could be useful for teachers to support children's consumption in the classroom as it could enable them to assess what children have consumed enough fluids and who has not; thereby also supporting teachers to encourage the children to drink more water who have under-consumed. As such, the introduction of a drinking tracker chart in the shape of a water bottle, was presented to teachers in the study 1 interviews (appendix 2a).

4.10.2 - Drinking Tracker Chart: Modification i

Below are the comments provided by the teachers which enabled them to critically appraise the drinking tracker chart's prospective benefit to incite awareness of healthy drinking habits and develop the action of any new accumulated knowledge and understanding of fluid intake of how much to drink. The comments from the study 1 interviews are signposted in the next sub-section, with the line number attached to ensure successful location in the transcriptions (appendix 6).

Teacher 1, Study 1 (line 478 - 479)

“And the tracker thing, I think we could do that quite easily, so yeah. I mean, you know all sounds good”

This comment states that teacher 1 was optimistic about encouraging the use of the drinking tracker chart with her EYFS class and that it could logistically function appropriately as part of her pedagogic practices.

Teacher 2, Study 1 (line 1477 - 1479)

*“The bottle (**drinking tracker chart**) may be turned into three rather than four. They can just have a couple of minutes to change it after lunch.”*

Teacher 2 substantiated her agreement that this resource could be beneficial in developing children’s knowledge and understanding of fluid intake, however she offered a point for modification to simplify the drinking tracker. She stated that it would be a good idea to reduce the tracking compartments from 4 areas to 3 areas to reduce the complexity of it. These areas were recommended to be: ‘full’, a middle area with no title, and ‘empty’.

Teacher 3, Study 1 (line 1909 – 1911)

*“That chart [**drinking tracker chart**]. Something as simple as that and the videos I would say are the two most effective initially would be those two. It’s like the spark is almost coming from the video.”*

This comment suggests that teacher 3 held the view that the two most effective resources (before teaching the water week) would be the WAVs and the drinking tracker chart. Primarily as this would spark children’s interest and action of health habits.

Teacher 3, Study 1 (line 1821 - 1823)

*“But although it’s hard managing multiple charts and things, but this is a beautiful visual idea specially if you had it at kiddie height. (**pointing to the drinking tracker chart.**)”*

Teacher 3 held the reservation that managing multiple charts could be problematic. However, she did accept that it was visually eye-catching, and hence it is worth exploring its efficacy and impact to develop children’s knowledge and understanding of fluid intake in study 2.

Teacher 3, Study 1 (line 1827 - 1833)

“It’s so easy it introduces that element of competition which some of them will loooove. And they will be guzzling [water]. And that’s what you find in the first day, specially in the summer when it’s new, and there’s a heatwave and they’re absolutely conscious. We must all drink or we’re going to collapse. Then it’s almost like a competition, yes, they have to be careful that they don’t overdo it, where they are like on the 3rd refill, and your like “oh you will be OK”, but this would be brilliant at something like that”

Although teacher 3 did believe that managing multiple charts could be problematic, she did accept that this could be useful to integrate an element of extrinsic competition, which could be beneficial to observe if this causes an increase of fluid intake in children who might be under consuming while at school.

All three teachers were positive as to the potential of how the drinking tracker chart could reinforce children to drink at least one bottle of water a day while at school – which was the minimum volume advised for children to drink a day. Teacher 2 commented that moderating this resource in the classroom should be a simple endeavour to remind children to move their names, for example, after the lunch break when children usually have been physically active, and thus the greater need for additional fluids may be present (Sawka, 2007). Teacher 1 supported this by stating that integrating this resource into the water week should also be “quite easy”. Teacher 2 also commented that the chart could be simplified by removing one of the four compartments, to have three, due to her perception that it might be too complicated for all children to understand if it was left unmodified. Additionally, teacher 3 noted that the drinking tracker chart (and the WAVs) could be the most useful for developing children’s understanding, possibly due to her subsequent comment that the drinking tracker chart resource could incorporate an element of competition for the children to extrinsically motivate action of healthy habits (Pyszczynski, Greenberg and Solomon, 1997). That said, teacher 3 held some

reservation as to a possible difficulty in her ability to manage multiple charts in the classroom, although both the other teachers made statements to the contrary. As such, due to the only reservation residing with teacher 2's comment of a potential difficulty to manage multiple charts, and one small modification suggested in removing one of the four compartments for children to move their consumption status into, the drinking tracker chart was modified and therefore supplied in the study 2 HEP as shown in appendix 7.

4.10.3 - Drinking Tracker Chart: Implementation i and Assessment of Efficacy i (Children's Data)

The primary purpose of the water bottle drinking tracker chart resource was to scaffold teachers' support to ensure their pupils have consumed enough fluid during the school day and for children to track adequate consumption themselves; principally at least one school water bottle a day while at school. As such, this section will examine the teaching and learning efficacy of the resource by exploring if there was an impact on children consuming at least one school water bottle, if for example, they weren't consuming this volume of fluid before the introduction of the water week (figure 24). Whilst also addressing if there was an effect on increased teacher support of fluid consumption in the classroom from the perspective of the children themselves to aid in the assessment of whether the teachers used the chart to support fluid consumption, and the impact and efficacy of it (figure 25).

As explored in the bring your bottle resource evaluation, figure 24 demonstrates the non-significant trend that immediately following the delivery of the water week, 13.4% (n=6) of the children were self-reportingly consuming the recommended volume at school, where they likely weren't previously before the introduction of the version 2 HEP. This suggests that there was possibly at least one resource that could support the development of this reported short-term perception of habit change. As the core rationale for why the drinking tracker chart

resource existed in the version 2/study 2 HEP was to support the fluid consumption from the children's bottles at school and help teachers to prompt consumption, this therefore is positive to support a prospective conclusion for continued use of the drinking tracker chart for version 3 of the water week resources in study 3. That said, it must be acknowledged that figure 24 also highlighted a non-significant return to pre-water week levels of consumption 5-months after the completion of the water week, but a significant raise ($p < 0.05$) of children believing to be drinking half a bottle a day in the follow-up. Suggesting that these resources need continual use to sustain any possible boosted trend of adequate consumption. However, to assess if the drinking tracker chart should remain in the HEP for study 3, the researcher needs to examine whether it was physically used in the classroom. This will be explored below (figure 25).

Who The Children Believe Tells Them When to Drink? – Study 2

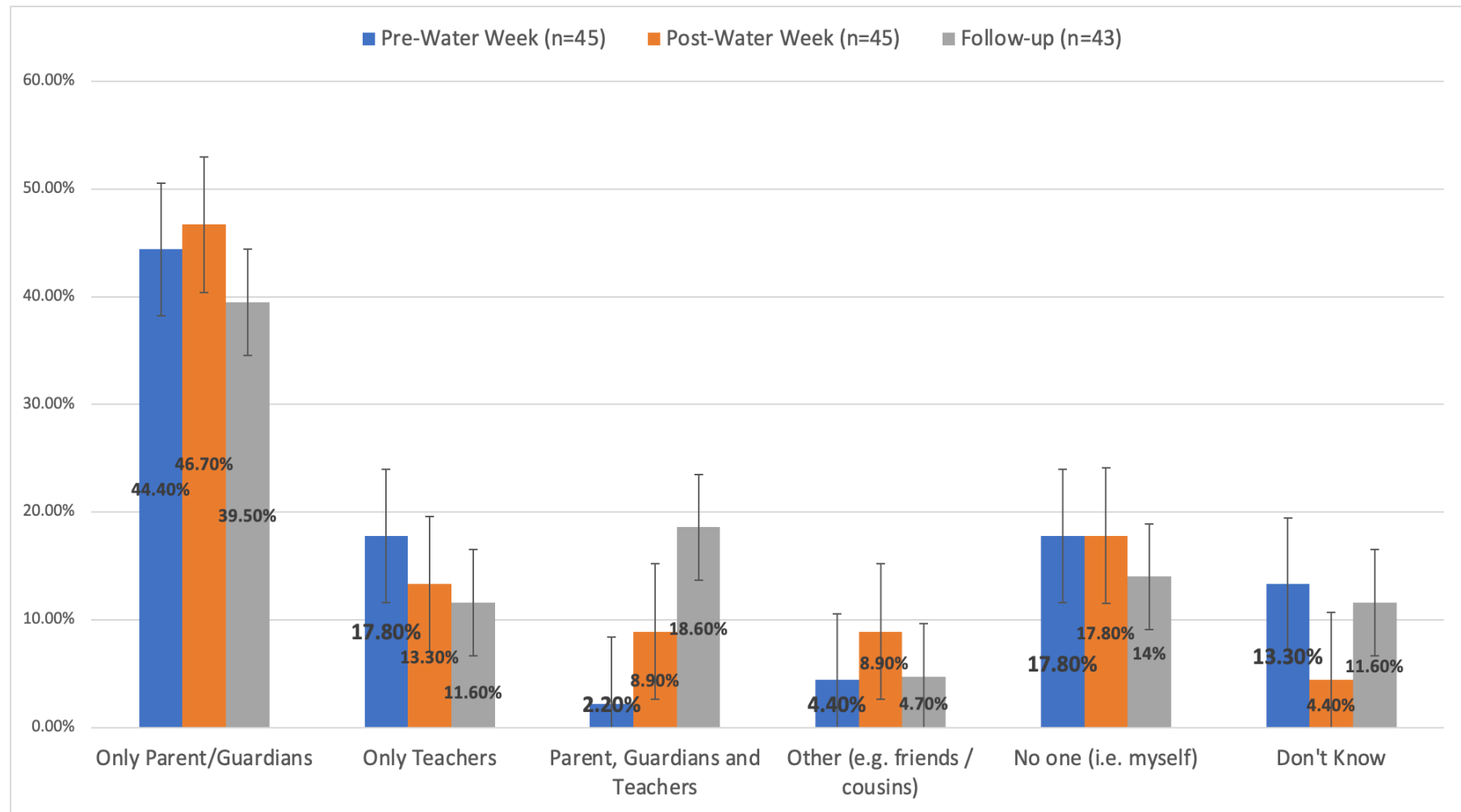


Figure 25: Percentage values for the whole research sample for who the children believed told them when to drink – Study 2

Figure 25: Percentage values for the whole research sample for who the children believed told them when to drink – Study 2

The results did not show any significant differences across time periods for who the children believed told them when to drink, post-water week ($F=3.341$, $p=.074$) or in the follow-up ($F=1.340$, $p=.253$). More children reported that their teacher tells them when to drink post-water week (22.2%, $n=10$) and in the follow-up ($n=30.2\%$, $n=13$), when compared to pre-water week (20%, $n=9$).

More children reported that a parent tells them when to drink post-water week (55.6%, $n=25$) and in the follow-up (58.1%, $n=25$), when compared to pre-water week (46.6%, $n=21$).

When the children were asked to name as many people they could think of as to who supports their fluid consumption; there was a slight increase in trend that the children's teachers supported them (figure 25), albeit non-significant. Pre-water week, 20% ($n=9$) of the children reported that their teacher reminded them to drink fluids while in the classroom, whereas post-water week, this trend increased to 22.2% ($n=10$). Admittedly, the rise was only one child who stated that their teacher supported their consumption where they did not previously before the water week, however; it is nevertheless still a possible rise in perception of drinking encouragement in the classroom following the study 2 trial. Supporting this point, in the children's view, the teachers could have used this resource to aid in their encouragement of children's fluid consumption and hence the researcher cannot rule out that this wasn't partially due to the drinking tracker chart resource. As such, without consideration of the teacher's post-water week comments for retaining/removing/modifying the resources, the water bottle drinking tracker chart has reasonable grounds to remain in the version 3 HEP for study 3

unmodified, due to the non-significant improvement of reported volumes of fluid the children consumed (figure 24) and the slight increase of perceived practitioner support (figure 25).

4.10.4 - Drinking Tracker Chart: Implementation i and Assessment of Efficacy i (Teacher's Data)

As it appears that the drinking tracker chart could be of some benefit to support children's consumption of fluid while at school and appears teachers may have used the resource within their pedagogical practices during the water week, it is important to evaluate if the teachers self-admittedly used the resource, justifying the conclusion in the previous sub-section. Below are the pertinent comments by the teachers in study 2, whereby the researcher has provided reference as to what line in the post-water week teacher transcriptions they can be found and an overview explanation as to how it relates to the HEP (appendix 15).

Teacher 2 rated the drinking tracker chart as the 4th most effective resource to develop children's understanding of fluid intake. Teacher 1 rated the drinking tracker chart as the 3rd most effective, although teacher 1 did not provide a critical appraisal of the resource.

Teacher 2, Study 2 (line 454 - 458)

"We could see the vision. But I think they just, with their little hands, they needed a super size monster sized bottle for the tracker. So that would have been even more effective, they did love it and the people who got the hang of it, did it. But I was finding myself looking at bottles, calling our names to then go move their name. Some weren't getting it to necessarily move themselves."

This highlights that although the children in teacher 2's class enjoyed the visual depiction of how much water they consumed in the school day and was useful for the children to understand what volume of consumption is required for the benefit of their health, teacher 2 also noted that

the provided single A3 laminated bottle was too small for young children, due to the follow-on effect that their names were required to be small because 30 names needed to be attached to the display (DfE, 2021, p. 31). As such, a larger visual bottle is likely needed for study 3.

Teacher 2, Study 2 (line 522 - 531)

“Yeah, I would love that all the time. Will keep that. It is only from my class that the tracker wasn’t ideal because of the children just climbing over the carpet. They wanted to do it though! I might just maybe have a set of them available nearby? I might adapt that. I think you need it for water because you want to see the focus. And then I could also keep an eye as the day went by, there were some really reluctant water drinkers. You know, I know they go home, and they’ve had four sips all day and maybe a teeny sip at dinner time. So that was really handy. And I could see it was really good for me as another visual, I could glance from far across the room and seek out with my class, I’ll know of a couple of names I would know, and I would direct them. And they were like it ok but wasn’t the walk of shame. But they didn’t know.”

Teacher 2 stated that this resource would be one that she would continue using post-water week, as she was able to keep an eye on who was drinking enough and who was not. Teacher 2 did state that she would modify the resource to have the visual display closer to the children to prevent them from ‘climbing all over the carpet’, which consequently caused disruptions to teaching and learning. As such, this suggestion should be added in the teacher’s guide for study 3.

Teacher 2, Study 2 (line 552 - 555)

“Yes, for those who love water, I think they are.... Completely motivated by the water tracker bottle, the giant one, and the sticker chart, it just worked. I mean, it was too good at times. As I say, we had to rein it in on Monday and Tuesday as they were drinking so much water they were going to explode. We had a couple of accidents where they wet themselves. They just overdone it.”

This comment by teacher 2 also suggests that some children emerged themselves a little too much into the water week (including using the drinking tracker chart), and possibly put themselves in a state of hypo-hydration (i.e. drinking too much) (Jéquier and Constant, 2010). As such, further guidance in the teacher's guide needs to be outlined to enable a more in-depth teacher explanation of this resource. Whilst there also needs to be further work in the HEPs core information delivery tool (the WAVs) to warn of the dangers of overconsumption, as well as underconsumption.

4.10.5 - Drinking Tracker Chart: Modification ii

In modification ii's conclusion, both teachers rated the drinking tracking chart highly in the quantitative ranking question to evaluate teaching and learning efficacy, where teacher 2 provided constructive feedback for version 3/study 3. This, in effect, demonstrates evidence of practitioner use and hence justifies the researcher's conclusion that this resource could have been a contributor to the non-significant findings highlighted in figure 24 and figure 25. Teacher 2 commented that the resource worked too well for the children that understood the concept and that some were drinking too much; sometimes causing incontinence. As such, advice within the WAVs needed to be added about the problems of overconsumption to counter this misconception. Additionally, due to the children's smaller hands, a suggestion for modification was made that the drinking tracker chart needed to be larger to allow the individual names of the children to also be larger for their smaller hands to manipulate more easily. Resulting in the researcher making the modification to separate the drinking tracker chart over three landscape sheets of laminated A3 paper in version 3 (appendix 16 and 17) rather than one portrait A3 sheet that was used in version 2. Finally, advice was applied in the teacher's guide about the placement of the resource in the classroom to avoid children "climbing all over each other". That said, even though statistics from the children shown in

figure 24 and figure 25 were non-significant, the constructive feedback provided by teacher 2 in study 2, supports that the drinking tracker chart could hold a strong level of effect and impact to aid in the development of children's knowledge and understanding of fluid intake and consumption habit creation support during a larger sampled trial. As such, the drinking tracker chart remained in the version 3 EYFS HEP and KS1 HEP, with the previously mentioned modifications actioned (appendix 16 and 17).

4.11 - Reward System (Stickers, Sticker Chart and Hydration Driving Licence)

4.11.1 - Stickers: Creation

As part of the recommendations for future practice and research, Howells and Coppinger (2020) suggested that if teachers set rewards and challenges for their pupils this could be a useful tool to support children to consume an adequate amount of fluid during the school day. As previously outlined, due to children spending approximately half their waking hours in the school setting (Owens et al., 2000); this results in children needing to consume at least one water bottle at school, due to children requiring 1.1-1.3L a day in total (WHO, 2004). That said, using a reward system to provide an incentive to consume an adequate level of fluid at school (minimum of one bottle) was of interest to aid in the development of fluid intake knowledge and understanding (Cooke, 2011; Wilders and Levy, 2021).

Moreover, as the researcher utilised his own teaching experience that children can respond positively to stickers as a reward for achieving set teaching expectations, a water bottle sticker prototype was created to allow teachers in study 1 to comment on the prospective effect on the teaching and learning of fluid intake before any mass-print of the exemplar stickers was actioned. The comments from the study 1 interviews are signposted in the next sub-section,

with the line number attached to ensure successful location in the transcriptions, (appendix 6) as well the sticker itself in appendix 2a.

4.11.2 - Reward System: Modification i

Teacher 1, Study 1 (line 83)

“Yeah. And when stickers come out, they will suddenly drink so much.”

Teacher 1, Study 1 (line 102 - 104)

“Especially you know when we do start saying if you drink your water bottle, especially in the warmer months, you can have a sticker. You can see at the end of day they are all like [excited noise].”

Teacher 2, Study 1 (line 1667 - 1668)

“Love it and I like the idea of the stickers maybe during the week. I love the idea.”

Teacher 1, Study 1 (line 489 - 493)

“Yeah that’s going to be your most exciting bit for the children. You want them to be excited about it. I mean, like I said, you know it doesn’t take a lot to get a 4-or 5-year-old to do some things with a bit of bribery, with a bit of sticker. They will do it anyway, but to get them to jump on the bandwagon, I suppose onto the drinking bandwagon, this could get it started off.”

All four of these statements from teacher 1 and teacher 2 were extremely optimistic about using stickers to encourage children’s consumption of fluids during the school day. Primarily on account that this could excite and inspire their pupils to consume additional fluids to meet hydration demands.

Teacher 1, Study 1 (line 253 - 255)

“Give them something to, I don’t know, maybe you could even make some sort of chart that they can stick their stickers on for the first week, so they get your special stickers for a week when they finish their water bottle.”

Teacher 2, Study 1 (line 1448)

“But then if you’ve got a reward chart going. That will encourage them.”

Teacher 1 and teacher 2 both provided extra detail in their support for stickers as a reward. They suggested that a sticker chart could be useful to facilitate a location where the children could place their sticker throughout the week and further highlight to the teacher who has and who has not consumed enough fluid each day. As such, a sticker chart was created (appendix 7).

Teacher 1, Study 1 (line 339 - 342)

“Again, you put into your videos ‘how hopefully you’ve got your five stickers on your certificate’. Take that home, be really proud of it. I think your teacher might agree if you all say please”

This statement highlights a comment regarding how the generalised reward system could provide a culminating prize of finishing the water week for the children who consumed at least one bottle every day of the water week. Teacher 1 suggested that this could be achieved by producing a small certificate to take home. As such, to provide further incentive to consume water during the water week, a certificate (hydration driving license) was created. This is attached in appendix 7.

In summary, the sticker in the version 1 HEP that was initially presented to the teachers in the study 1 interviews was heavily praised, with a complete absence of negative comments from the teachers to state that the stickers would fail to encourage children to drink at least one bottle of water a day at school. The only possible draw back to supplying a reward system is that the lure of extrinsic rewards can be temporary (Cooke, 2011; Wilders and Levy, 2021). As such, dedicated stickers were printed on-mass and provided for teachers to use in the study 2 HEP trial, whereby to assess retention (in the medium-term as part of the follow-up data collection) of any development of healthy drinking habits is worthwhile. Additionally, two teachers built upon the researcher's initial conception of providing stickers. Teacher 1 and teacher 2 both suggested that using a sticker chart could also be useful to encourage children to drink an adequate amount of fluid during the water week as both the teachers and children could see who has consumed the recommended volume of fluid each day of the week. As such, a landscape A3 sticker chart was supplied (appendix 7).

Finally, teacher 1 suggested that to give the children a reward for reaching the end of the water week could be useful to provide an extra reason for the children to collect the stickers. She suggested that this could be fulfilled via a certificate to celebrate the children reaching the end of the water week and for those who have consumed/learnt to consume at least one bottle a day. Consequently, a 'hydration driving licence' was conceptualised by the researcher and packaged into the study 2/version 2 HEP (appendix 7). As such, the initial reward of solely a sticker in the version 1 HEP, was modified into a reward system of: the water bottle sticker, sticker chart and hydration driving licences in the version 2 HEP (appendix 7).

4.11.3 - Reward System: Implementation i and Assessment of Efficacy i (Children's Data)

For the researcher to assess if these set of resources were effective in altering drinking habit change and development of the ability to drink autonomously (figure 26), he must reiterate points made earlier regarding children liking/disliking/sometimes liking water. As previously discussed, figure 20 presented a non-significant finding that suggested there could be resources in the HEP that can alter children's perception of liking water if they did not previously before the water week delivery. The reported non-significant trend in water preference returned to near pre-water week levels 5-months after the initial delivery, the reward system was a set of resources that were only used during the water week, and not after, therefore this could be one rationale for why this boost of water preference returned to pre-water week levels, due to the lack of a reward system essentially conditioning the children to like drinking water, which Wilders and Levy (2021) and Cooke et al., (2011) suggest can happen more generally when using extrinsic rewards.

If Thirsty, Would The Children Play First To Get More Time, Or Drink First? – Study 2

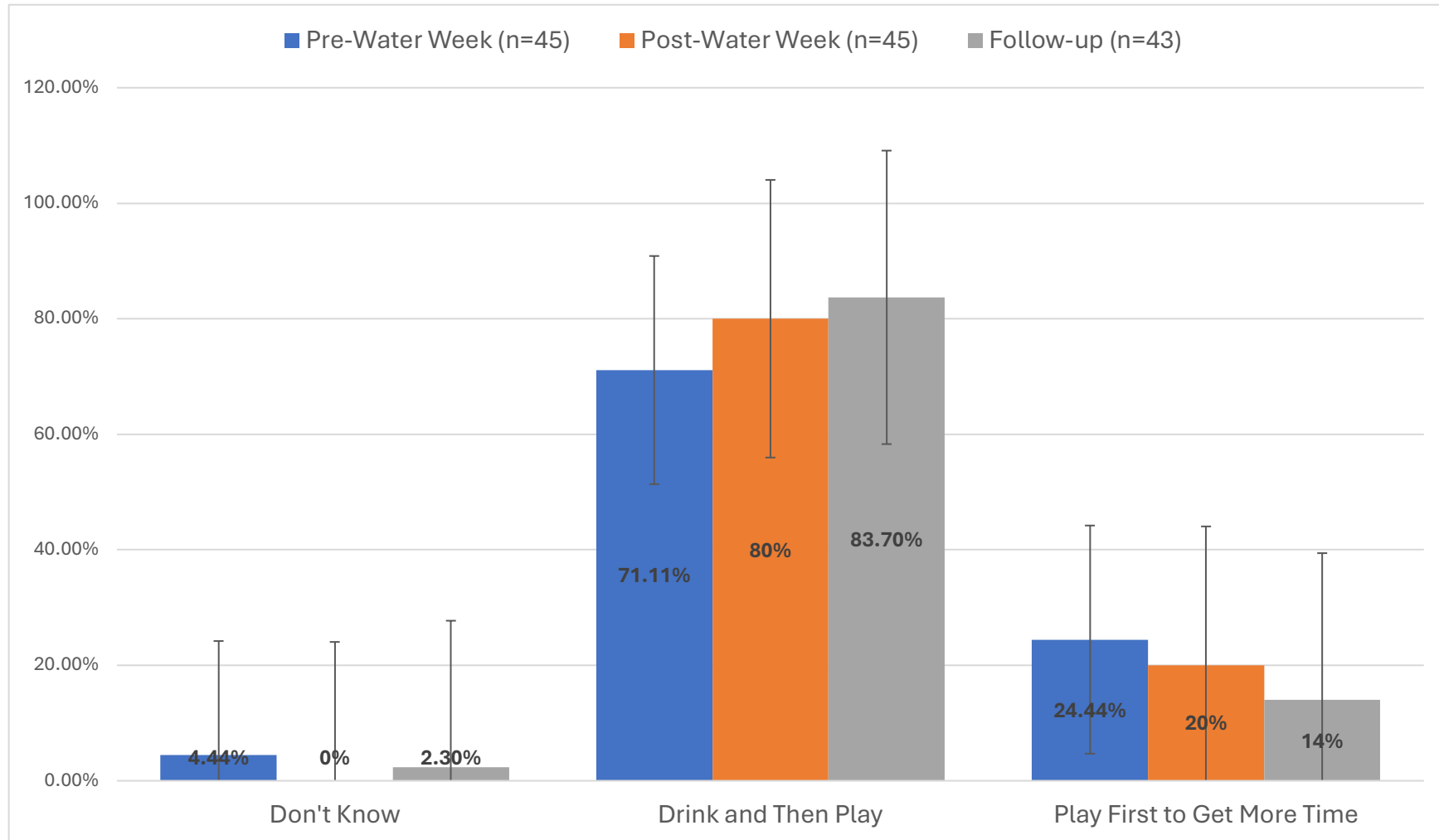


Figure 26: Percentage values for the whole research sample for whether the children would drink or play first if they were thirsty – Study 2

Figure 26: Percentage values for the whole research sample for whether the children would drink or play first if they were thirsty – Study 2

The results did not show any significant differences for whether the children would drink or play first if they were thirsty, post-water week ($F=0, p=1.000$) or in the follow-up ($F=0.069, p=.473$). More children stated they would drink before play if they needed fluid post-water week (80%, n=36) and in the follow-up (83.7%, n=36), when compared to pre-water week (71.1%, n=32).

One advocate for the use of a reward system could be explained by the non-significant finding in figure 26. The graph demonstrates a non-significant change that suggests 8.9% (n=4) more of the children would drink before play if they were hypothetically thirsty before starting a play session post-water week (80%, n=36) compared to pre-water week (71.1%, n=32). This non-significant trend in reply sustained into the 5-month after water week delivery, whereby 83.7% (n=36) of children would elect to drink before play if they thought they needed a drink, suggesting that this prioritisation of fluid intake may have the ability to be retained in the medium-term. As such, there could be resources within the HEP that are able to teach children about the importance of maintaining hydration, even if there is an option of extra time playing, which assumedly would be an enticing choice for young children. That said, on the proviso that playing is an activity most children enjoy and consequently would likely want to maximise the time and opportunities to play when the occasion(s) arises; this further supports the HEPs positive impact on the teaching and learning of fluid intake to know and understand when and why they need to drink regularly, and how much to drink. Although, this non-significant finding could be an additional piece of evidence to support using the WAVs, since the WAV series was one of the core resources that aimed to teach new information and fluid intake vocabulary (table 5), the reward system could have been another supportive catalyst for this

statistic (figure 26). This is because the reward system possibly incentivised children to drink at least one bottle a day, and thereby could receive a sticker each day to consequently be rewarded with a hydration driving licence at the end of the water week, thereby they would have needed to maximise the opportunities in which they consumed fluids, including before periods of play. Hence, by assessing this non-significant hypothetical understanding and retention of reply in the 5-month follow-up (figure 26), it supports the use of the reward system for the version 3 HEP in study 3. This incentivisation is useful to consider because if children can learn healthy habits at a young age, then there is a higher chance of continuing these habits into adulthood (Howells, 2012). That said, even though there appears to some evidence from the children themselves to support the use of the reward system for version 3/study 3, do the teachers who delivered the water week HEP agree with these findings to inform the validation criteria decision?

4.11.4 - Reward System: Implementation i and Assessment of Efficacy i (Teacher's Data)

Below is the pertinent post-water week comments made by the teachers that relate to the critical appraisal of the reward system. The researcher has provided a short commentary on how these comments impacted the development of the HEP as the project progressed into study 3. He has additionally provided notification of the line number in relation to the transcriptions (appendix 15).

Teacher 1, Study 2 (line 28 - 29)

“The thing they did love most of all was the chart and the stickers.”

Teacher 2, Study 2 (line 459 - 463)

“They absolutely loved the stickers and however, what they would end up doing was wanting a sticker every time they finished a bottle. I couldn't say that when they had drunk another

bottle that they couldn't have second sticker, so we went a bit bananas. Day one we were drinking and then we talked about that if you drink too much water, that wouldn't be good for you either. So were overdoing it."

Both teacher 1 and teacher 2 in the study 2 post-water week interview stated that the children enjoyed the prospect of receiving dedicated stickers when they consumed at least one bottle of water at school; providing a likelihood that this could have impacted the children's non-significant upwards trend of liking to drink water and the volumes reportedly consumed (figure 20 and figure 24). This also concurs with the child's replies to consume water if they were thirsty before play (figure 26), as the children have possibly learnt that they enjoy drinking and need to drink an adequate amount at the appropriate times, with the by-product of also being rewarded for that consumption. However, teacher 2 did state that some children became a little too enthusiastic in their consumption and were expecting a sticker for every bottle they consumed, not just one sticker a day after drinking the recommended volume. Resulting in a confused message about how to accrue the stickers. As such, within the teacher's guide and on the sticker chart itself, there needs to be a modification in the advice that children can only receive one sticker a day, no matter how many extra bottles the children consume, so that over-consumption is not rewarded.

Teacher 1, Study 2 (line 243 – 245)

"Yeah, I mean, you know, if it [the sticker chart] was completely different colours like yellow, blue, red, whatever, it would be very, very obvious. Orange Column says Tuesday, that sort of thing."

Teacher 1 did however state that children of this age struggled to place their stickers independently onto the sticker chart, especially for the children at the bottom of the sticker

chart. As such, teacher 1 suggested that the days in the week could be colour co-ordinated on the chart to aid with teacher direction to help with the children to independently place their own stickers correctly against their name. The chart was therefore modified as seen in appendix 16 and 17.

4.11.5 - Reward System: Modification ii

To summarise, as observed by the children's data, there was non-significant evidence to suggest that the reward system was one of the supporting resources to non-significantly increase a trend of water consumption habit change, as it may have incentivised more children to drink at least one bottle a day at school; possibly demonstrating the beginning signs of developing children's knowledge and understanding to drink an adequate amount of water. Furthermore, it is possible that the reward system enabled children to understand that consuming fluid before play to ensure hydration is maintained is useful for their health, due to a possibly increased awareness that they needed to provide themselves additional opportunities to consume fluid to reach the one bottle target. Moreover, both teachers who delivered the version 2 HEP were positive about the continued use of the reward system into version 3/study 3. It was noted that the children became a little too enthusiastic about the prospect of receiving a sticker, resulting in requesting a sticker for each bottle they consumed. As such, two options were available for modification; either allow this to continue into study 3 or modify the guidance to ensure the teachers and children are fully aware of the sticker allowance of: one sticker per day (once the children have consumed the one bottle minimum), not a sticker per bottle. As the researcher did not wish to enable the children to put themselves into a state of hypo-hydration, where side effects are like dehydration (Jéquier and Constant, 2010), he consequently did not want to reward this level of consumption. Primarily because it would solve one problem (underconsumption) with the creation of another problem

(overconsumption). As such, additional advice (one sticker per day) was applied within the teacher's guide and on the sticker chart itself (appendix 16 and 17).

Finally, due to the children's age, it was reported that some children struggled to accurately place the water bottle sticker in the correct place independently. This is because it became increasingly more difficult to place accurately as the week progressed, due to the day moving further away to the right, from their names on the left. As such, the researcher retained the reward system in the version 3 HEP but modified the sticker chart to be colour co-ordinated for each day, as this could aid the children to accurately place their sticker on the correct day, due to the simplified process of the teacher directing to a colour rather than a day written at the top of the chart. The modified version 3 resources have been supplied in appendix 16 and 17.

4.12 - Parent Fact Sheet

4.12.1 - Parent Fact Sheet: Creation

Involving parents was previously used by Franks et al., (2017). They facilitated created material for parents to read, that prefaced some of the technical jargon regarding fluid intake, such as how much to drink and why it is important. This could allow parents to reinforce the core teaching and learning messages of their hydration resources at home. The researcher concluded that a resource that involved parents could be needed in the HEP, however he did not know what could be implemented. As such, due to the sequential study design, the researcher interviewed experienced teachers to aid in the development of the HEP to comment in study 1.

4.12.2 - Parent Fact Sheet: Modification i

The comments from the study 1 interviews, in relation to the parent fact sheet, are signposted in this sub-section, with the line number attached to ensure successful location in the transcriptions (appendix 6).

Teacher 2, Study 1 (line 1416 - 1420)

“I would like to somehow get a leaflet sent home to explain to the parents why they need to drink, coz some I mean myself, I would sometimes be like ‘have you drunk enough?’ And some parents might be so busy they might not even thought of that. Something like, the facts. Make them kind of hardcore facts that make you think like, ‘whooh I didn’t realise that.’

Teacher 2 was an advocate for the inclusion of parent fact sheet on what was due to be taught within the water week. In addition to this advocacy, the literature review supports the inclusion of such parental material to be implemented in health education programmes (Franks et al., 2017). Thereby, because children spend an equal amount of time in the home and school setting (Owens et al., 2000), this justifies the rationale to examine how the HEP can be modified to include parents in the home environment – as such, following the support of providing a resource in version 1 (with no activity created), a parent fact sheet was created/modified and included in the version 2 HEP (appendix 7).

4.12.3 - Parent Fact Sheet: Implementation i and Assessment of Efficacy i (Teacher’s Data)

As this was a home-setting resource and not a teacher-directed one, both teachers declined to comment as to the efficacy and impact of implementing such a resource due to not physically including this in the water week teaching in their study 2 post-water week interviews, other than distributing the document to parents at the start of the water week.

4.12.4 - Parent Fact Sheet: Implementation i and Assessment of Efficacy i (Children's Data)

To consider what data the researcher could use to assess the impact of implementing the parent fact sheet to support knowledge and understanding of fluid intake development, the only reasonable question to ascertain if this resource had any impact on what fluid intake support children receive, is the query regarding who tells children when to drink, because this should indicate whether the parents read the fact sheet and implemented some of the suggestions made for fluid intake support.

As highlighted by figure 25, before the water week was conducted, 46.6% (n=21) of the children stated that a parent tells them when to consume fluids. In the week following the delivery of the water week, there was a non-significant increase of fluid support trend, whereby 55.6% (n=25) of the children stated that a parent reminds them when to consume fluids. This indicates a non-significant change of 11% (n=4) more children reporting that a parent supports their consumption, where they did not believe this previously before the water week was delivered. As the parent fact sheet was the only resource in the version 2 HEP that involved parental involvement, this provides evidence the parents could have used the resource to support their children's fluid intake. Therefore, this provides some evidence to conclude that the parent fact sheet should remain in the version 3 HEP for the study 3 full-scale trial. It could be argued that this non-significant effect was due to a greater awareness of who supports the children's consumption in general because they were asked the same question again, and therefore the children had a greater opportunity to think of their reply (Thomas, Nelson and Silverman, 2015). However, due to the researcher's reluctance to involve primary caregivers to collect formal parental data to contradict this finding (due to the drop-out rates of Franks et al., (2017)) and a dearth of comments from the teachers who delivered the water week to enable

further modification, the researcher can conclude that the parent fact sheet likely did not appear to hinder the development of children's knowledge of fluid intake, and possibly could have aided in the expansion of fluid intake knowledge and understanding, as it supported in awareness of who supports fluid consumption. Furthermore, 5-months after the completion of the water week, the parental support perception (figure 25) remained and exceeded post-water week levels (58.2%, n=25) of children stating a parent supports them to consume fluids; suggesting that parents have possibly continued their levels of support in the months following the water week, strengthening the argument to retain the parent fluid fact sheet resource in version 3 of the HEP for study 3.

4.12.5 - Parent Fact Sheet: Modification ii

Consequently, because the teachers decided they were not suited to make modification suggestions due to their only involvement pertaining to the distribution of the fact sheet to parents at the beginning of the water week, even though the children's data suggests that there could be evidence of the parent fact sheet as a supportive resource. An exception in the validation criteria was applied, which meant the researcher utilised the children's data and not the teachers data to inform modification ii. Consequently, as there was an improvement of perceived parental fluid intake support post-water week, and in the follow-up (figure 25), the parent fact sheet remained unmodified in the version 3 HEP for study 3, for both the EYFS and KS1 variants (appendix 16 and 17).

4.13 – Implementation i, Assessment of Efficacy and Impact i and Modification ii - Limitations

It is important establish what limitations there were in the small-scale trial (study 2) to subsequently ensure that are not repeated in the large-scale trial (study 3) (ESRC, 2015). One possible limitation to study 2 was the timeline the data was collected. With the initial phase of data collection taking place in Whitstable in June 2022, this was the start of the United Kingdom's metrological summer, and hence would usually experience a warmer climate compared to other months. As Jéquier and Constant (2010) and Severs (1979) would subscribe to; higher external temperatures usually lead to higher levels of sweat production to maintain body temperature, and hence the need for the intake of additional fluids is required, even though children tend to have a poor thirst response (Benelam, 2010; Shaw, 2010). As such, the researcher was necessitated to examine the historical temperature of Whitstable in June 2022. This was to explore if higher temperatures may have led to an augmentation of the findings due to the children possibly naturally drinking more fluid (Severs, 1979) or being encouraged to drink more often by their teachers, to ensure they are hydrated. According to timeanddate (2022), the average high temperature of Whitstable for the days in which the researcher collected the pre-water week data in week 1 was 19.5°C, whereas during the water week itself in week 2, the average highs were 21.6°C. This indicates that on average, the external temperatures were higher during the water week delivery, and hence the need to naturally consume more fluids may have been present (Severs, 1979).

Within Sawka et al.'s (2007) research, it found that if the sweating rates of a 50 kilogram human were to be ratioed out to the weight of a 20 kilogram person, which is the average weight of a 5-year-old child (WHO, 2007), if they were running for an hour in 18°C degree heat (which would be the average length of a lunch hour during the school day), they would sweat

172ml of fluid and thus this would need to be replaced during exercise, or as soon after exercise, to avoid dehydration physiologically materialising within 45 minutes (Benelam, 2010). Considering that in the research school's location, the average temperature was 21.6°C degrees in the water week and in turn was higher than pre-water week temperatures, the children's fluid loss could also be naturally higher during the time children typically are most active in the school day, than the reported 172ml of fluid loss previously implied by Sawka et al., (2007). Hence, arguably resulting in a greater level of fluid consumption needed by the children more naturally rather than the direct impact of the water week resources. Thus, for study 3, to have a proportion of the version 3 HEPs delivered during a spring timeline could be advantageous to withdraw the possibility that the higher external heat factors caused the impact of the reported findings, rather than a causal relationship of the HEP impacting development of children's knowledge and understanding of fluid intake. However, for teachers delivering the HEP without a researcher assessing its learning efficacy and impact, the summer could be useful to have an impact on children's knowledge of fluid intake due to the possibility for increased awareness due to increased sweating. As such, study 3 data collection during both timeframes (spring and summer) could be a useful point of additional analysis, whereby this could facilitate an answer as to whether a cooler climate impacts perceived consumption volumes and overall accumulation of fluid intake knowledge and understanding.

Finally, the follow-up data collection point was collected 5-months after the initial post-water data collection point. This subsequently meant that additional external variables, such as: a new teacher (who wouldn't have delivered the water week) and a new learning environment could have impacted what level of knowledge and drinking habits the children retained. As Howells and Coppinger (2020) suggest, the level of pedagogical practices, in relation to fluid intake support, varies greatly between individual teachers, whereby some teachers (who didn't deliver

the version 2 water week) may facilitate a greater or lesser level of access to fluids in the classroom than the EYFS teachers (who did deliver the version 2 water week). As such, due to November 2022 follow-up data collection time frame, the children would have already been in their new year group for 2-months (as the start of the UK school year is in September). Consequently, offering a chance for augmentation of the data in the follow-up collection point due to possible differences in pedagogical support from teachers who had not delivered the water week previously. As such, in study 3, the researcher should seek to complete all three-phases of data collection within the same academic calendar year to eliminate the uncontrollable variable of additional teachers (who have not delivered the HEP) possibly impacting consumption habits and knowledge of fluid intake data.

4.14 - Creation, Modification i, Implementation i, Assessment of Efficacy i and Modification ii Conclusion

To provide a conclusion of the discussed modifications to the HEP following study 2, below is an in-depth summary of what changes have been made and why they have been actioned to create the version 3 HEP. The practical resources can be found in appendix 16 and 17.

Whiteboard Animation Video Series: The teachers used the WAV series to help facilitate the successful completion of the HEPs lesson objectives to increase knowledge and understanding of fluid intake. In the teacher's post-water week interviews in study 2, it was stated that this resource also supported the teacher's subject knowledge to know what, when, why and how much children need to drink, as well as aid themselves to support their pupils' drinking. The created WAVs provided opportunities for teachers to pause and play the videos to substantiate points made by the WAVs. They also provided teachers with the content they needed to know to successfully support children's fluid intake and scaffold the vocabulary specific to fluid

intake (such as to be hydrated or not to be dehydrated), as the children could hear the new vocabulary and see the new words featured in the WAVs, through the digitised pen drawing what was vocalised by the narrator. Hence offering a multi-sensory resource to form concrete learning opportunities and reinforce children's knowledge and understanding of fluid intake.

In the teachers' post-water week questionnaire, in their EYFS setting, they suggested using the WAVs **after** classroom snack time as this resource was useful to support the physical act of drinking and learning about the different aspects of fluid intake. The teachers suggested that the discussion points provided (such as what types of things children do to lose body water and get dehydrated) were useful in the guidance to aid children's critical thinking of fluid intake and help teachers implement tuition of the ambiguous statutory area of knowing about fluid intake as part of a healthy diet – this remained in the teacher guidance and WAVs in version 3.

In one teacher's post-water week questionnaire, they commented that there was a typing error in the 2nd and 5th WAV - this was rectified. The same teacher used an example to encourage regular drinking, stating that "brains are like flowers and that you need to water it to make it grow". She used this analogy in the water week and felt that it could be a useful example for all teachers to implement, because she felt that this is terminology that most children of EYFS age should understand (as it is part of the EYFS framework to learn about and make observations about plants) (DfE, 2021, p.14.), therefore KS1 children should also be able to relate. This was subsequently included in the version 3 WAVs. Furthermore, according to the teachers, a snippet of the water song as the theme song supported children's eagerness and excitement to learn about fluid intake in the WAVs, as it was a song the children recognised due to the full song being played during snack time in study 2. The water song as a theme tune remained in version 3 of the WAVs.

The Water Song: This was used to engage and excite the children about drinking more, to develop regular consumption habits to enhance knowledge through singing and mimicking of the lyrics to support fluid consumption habits. The evidence in the teacher's post-water week questionnaire clearly shows that they observed the children regularly drinking water from their bottles whilst the water song played and singing along with it by the end of the week, supporting future use. The teachers suggested that the water song should also be played **during** classroom snack time to reinforce the physical action of drinking fluids with the mental stimulation of the music; triggering their memory that they need to drink - this was added to the teacher's guidance.

Teacher's Guide: This was used as a pedagogic tool to provide an overview of the 5 sessions that needed to be taught in the water week to logistically implement the resources in the HEP, as well as a delivered CPD session. It also provided when, where and how teachers need to encourage and support children's fluid intake, such as encouraging drinking on the class carpet area after break time and lunchtime to support the creation of new drinking habits. As highlighted within the teachers' study 2 post-water week questionnaires, one teacher stated that she did not need the teacher's guide and used her experience along with the WAVs to guide the week; whereas the other teacher did need it; stating that it was essential to ensure a smooth running of the water week. As such, the teacher's guide remained in version 3 of the HEP for study 3 to support teacher's implementation of delivering the ambiguous curriculum area of children knowing about fluid intake as part of a healthy diet (DfE, 2019; 2021), albeit one teacher's guide for EYFS teachers and another for KS1 teachers, which will be summarised below.

The Water Tray Dehydration Activity: This was for the children to help them understand that exercise can induce a loss of fluid, and drinking fluids can replenish this lost fluid. The teaching experts suggested that if other activities are removed, then the time taken to complete an activity like this could make it more effective due to a greater allocation of teaching time given to it for EYFS teachers and children. It subsequently remained in both the version 3 EYFS and KS1 HEPs, unmodified.

Bling Your Bottle: This was for children to understand the size of a school water bottle as this is the minimum of what they need to be drinking during the day whilst at school. The teachers advised that although this activity was used in study 2, it wasn't entirely suitable for an EYFS audience due to the heavier influence of adult support needed for the children to appropriately complete independently and the children's dwindling concentration levels. The teaching professionals suggested in the post-water week questionnaires that this activity would be better suited for a KS1 setting as it was essentially a colouring activity for EYFS children due to fluid volumes not wholly being taught in the EYFS. Concluding that two packs should be made for study 3; an EYFS HEP and a KS1 HEP, where learning is more formalised and teacher-led in KS1, it was hoped that children will have a greater understanding of metric volumes to complete the task appropriately in KS1.

Healthy Drinks Sorting (Cut and Stick and Coloured Hoop (Physical) Sorting): This activity enriched the content of the HEP by scaffolding the learning of what types of drinks need to be consumed on a regular basis, as what fluid children drink is equally as important as how much children drink. Two variations were provided: a paper-based cut-and-stick activity and a coloured hoop sorting activity in study 2. The paper-based cut and stick activity, where the children could cut/glue pictures of drinks to where they believed the frequency of consumption

should be was provided, such as: water into green (drink all the time), coke cola into red (drink on special occasions) and concentrated fruit juice into orange (drink at mealtimes). The coloured hoop physical sorting is essentially the same activity but with green, orange and red hoops with larger laminated versions of the pictures in the cut and stick variant; this was intended to facilitate a level of differentiation so all children could access the intended teaching and learning.

The teachers reported in the post-water week questionnaire that they used both variants of the healthy drinks sorting activity, also highlighting that this could have been one of the more useful supporting activities to showcase to the teachers that the children understood that water was good for them. Highlighting that the resource was able to teach an important component of fluid intake. The teachers agreed that both variants were useful to support this understanding as it provided differentiation for all children to access one or the other, or both. However, it was stated that extra clarification of the health status of 'fizzy water' needed to be addressed, as many of the children held a misconception of carbonated water being unhealthy like coke cola. This misconception was also addressed in the content of the 4th WAV that discussed healthy and non-healthy fluid types and remained in both the EYFS and KS1 version 3 HEPs.

Story Book Drama Guide with The Extremely Thirsty Cricketer: This was designed for children to act out a teacher-read story to support the knowledge of the signs of dehydration and to recognise when the symptoms of dehydration materialise. However, this activity was not reported to have been delivered within the EYFS water week due to limited time, although the teachers suggested it could be useful if they did have time, especially if other activities were omitted in the future. That said, given that the advice provided by the EYFS teachers on the inclusion of the more practical activities and omission of the less practical activities would

be a useful idea for the future, a drama guide would certainly fit into the scope of ‘practical activity’ as the children would be acting out a story. Furthermore, due to the withdrawal of other activities in the EYFS HEP (bling your bottle and encourage people to drink poster creation), whilst considering the statement that the EYFS teachers did not have time to complete all the activities, this resource could therefore replace the time that was taken to deliver the less useful activities. Consequently, the researcher decided to include this supplementary activity in both the EYFS and KS1 version 3 HEP, unmodified.

Encourage People to Drink Poster Creation: This was designed to help children to support their peers and teachers to drink more fluids, in the expectation that if they know how to support other peoples’ consumption, this resource could enable them to regularly drink themselves. This activity was not implemented by the study 2 teachers because it was less practical (like the bling your bottle activity which was delivered), and that an adult was needed to support the children to sufficiently complete the encourage people to drink poster creation activity. This resource could be better suited to a KS1 water week (where learning is more formalised and teacher-led), and therefore the teachers in study 2 supported that this could be omitted from the EYFS HEP but remained unmodified in the version 3 KS1 HEP.

Drinking Tracker Chart: This was designed to allow the children to visually track how much fluid they have consumed each day during school, as well as allow the class teacher to track who has consumed at least one bottle and who has not. The teachers stated that this assisted them in supporting their pupils’ fluid intake throughout the school day, particularly after periods of exercise (such as after breaktimes or lunchtime). The teachers in the post-water week questionnaire stated that for some children this resource was too complex, but for others it worked ‘too well’. After the first two days in the water week, half the children in the two classes

were not using this resource because the children's names on the drinking tracker chart were too small for them to manipulate down to the "empty" space on the tracker; meaning they could not interact with the resource effectively. Although the teachers felt the resource could be redesigned by making the drinking tracker chart and children's names larger to allow all children to manipulate effectively. Concluding, that if the drinking tracker chart was larger (size A3 spread over three landscape pages (in version 3) rather than a single A3 portrait page (in version 2)) the children's names could also be larger and enable effective manipulation of their names – this was actioned and remained in the both the EYFS and KS1 version 3 HEP.

Reward System (Stickers, Sticker Chart and Hydration Driving Licence): This was designed to encourage the children to consume at least one bottle a day at school. Once the bottle was consumed, the children would receive a water bottle sticker to put next to their name on the water week sticker chart. At the end of the week, there was a reward of receiving a "hydration driving licence" to signify that they are all now "mini experts" in fluid intake and know/understand about their hydration. It was reported by the teachers in the post-water week research that they believed this extrinsic incentive had the biggest influence in altering consumption habits as the children did not want to miss out on a reward that their peers received. That said, the teachers expressed some ideas for modifications for the resources design and pedagogical implementation in the version 3 HEP:

1. The children struggled to physically track what day of the week it was on the sticker chart to subsequently place their sticker next to their name accurately, as the water week progressed. The teachers stated that by the middle of the week, many of the children struggled to correctly place their stickers, which indicated the need to modify the resource. The teachers suggested that if the sticker chart was vertically colour coded

each day, this could help children with the correct placement of their sticker, as the teachers can verbally direct the children to each coloured day, for example, “put your sticker on blue day” (Monday) or “put your sticker on green day” (Tuesday) - this was included in both the EYFS and KS1 version 3 HEPs.

2. The teachers also reported that some of the children were a little too enthusiastic with the placement of the stickers and wanted a sticker for each bottle they consumed during the school day, stating that the message of one sticker a day per child was not obvious enough within the teacher’s guidance. As the HEPs guidance is to drink at least one bottle a day at school and not consume 3,4 or 5 bottles over that one bottle guidance – a change of wording in the teacher’s guidance (and on the sticker chart) of one sticker a day, per child was reinforced within the EYFS and KS1 version 3 teacher’s guide and on the sticker chart.

Parent Fact Sheet: This was designed to allow the children’s parents to read about what the children were due to be taught in the water week; the sheet was provided to parents at the start of the water week. It was also designed to provide parents with the core knowledge to support their child’s consumption of fluids at home, while ensuring a consistent message was transmitted to children in both the home and school setting. The teachers did not comment on the effectiveness of this within the teachers’ post-water week research. However, as there was a non-significant increase in children stating that their parents encouraged their fluid consumption post-water week, it provides a rationale for its inclusion within version 3 of the HEP for both the EYFS and KS1 variants and was retained without modification in study 3.

Results and Discussion Part 2

4.15 - Step 6 and Step 7: Implementation ii and Assessment of Efficacy ii

This thesis has explored why a HEP should be produced and how each individual resource was created, modified, implemented and assessed for educational efficacy and impact to inform the creation of the finalised, version 3 HEP (step 1-5, figure 1). This final section of results and discussion chapter will establish what overall level of efficacy implementing the version 3 HEP (step 6, figure 1) had to impact knowledge and understanding of fluid intake (step 7, figure 1).

The efficacy of implementing the version 3 HEP in study 3 will be examined by the researcher presenting the children's results of study 3 (4.16), whereby the whole sample findings will then be triangulated with the statistical significance reported within the various individual demographics (such as: school year group, water week delivery/follow-up timing, and sex etc), coupled with previously published work in the area to inform part 2 of the results and discussion chapter. Consequently, the researcher will provide suggestions for the benefit of ongoing educational policy and teaching practice, in addition to informing future educational research within the topic area.

The structure of the results and discussion part 2 is as follows:

- Study 3 Children's Results
- Did the Water Week Impact Children's Perceived Fluid Intake?
- Did the Water Week Impact Children's Knowledge and Understanding of the Health Benefits of Drinking Water?
- Did the Water Week Impact Who Supports Children's Consumption?
- Did the Water Week Impact Children's Like for Drinking Water

- Did the Water Week Impact Children's Acknowledgement to Action their Thirst Response Before Play?
- What Knowledge did the Children Retain the Knowledge learnt 1-2 Months After the Initial Water Week Delivery?
- Implications for Future Teaching Practice and Educational Policy
- Implementation ii and Assessment of Efficacy and Impact ii Limitations and Implications for Future Research
- Thesis Conclusion

4.16 - Study 3 Children's Results

Children's perception of how much fluid they believed they drink a day, (more than 1 litre of water) from pre-water week, post water week and follow up – Study 3

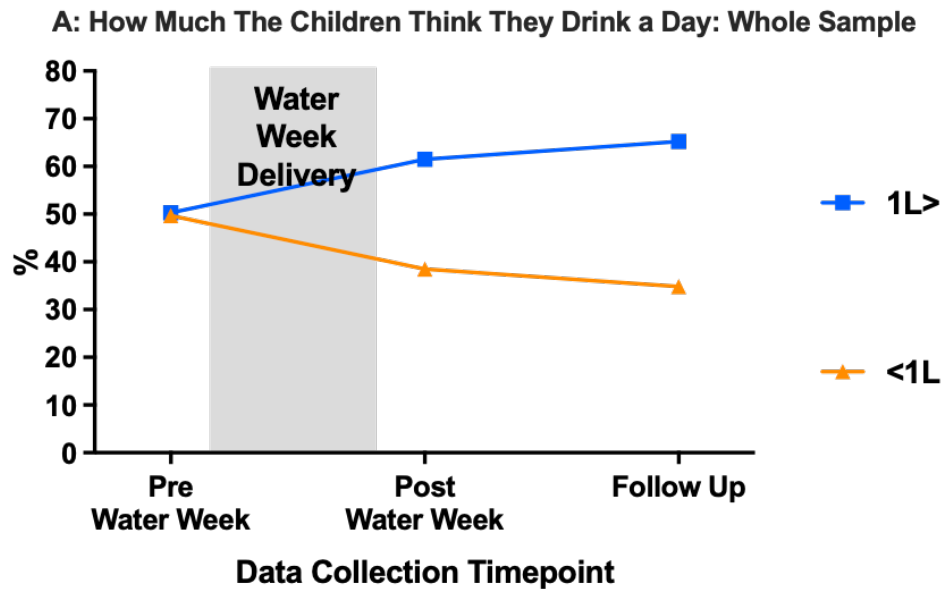


Figure 27a: How much fluid the children believed they drink over time, (more than 1 litre of water) from pre-water week, post water week and follow up – Study 3.

The results did not show any significant differences for how much fluid the children believed they consume at school in total, post-water week ($F=.015, p=.901$) or in the follow-up week ($F=.403, p=.526$). However, more children believed to be drinking to at least WHO (2004) guidelines (>1L) post-water week (61.5%, $n=99$) where they weren't pre-water week (50.3%, $n=81$). This impact on adequate consumption increased further in the follow-up week (65.2%, $n=105$).

B: Percentage of Children Believing to Drink 1L+ a Day: Delivery Timing

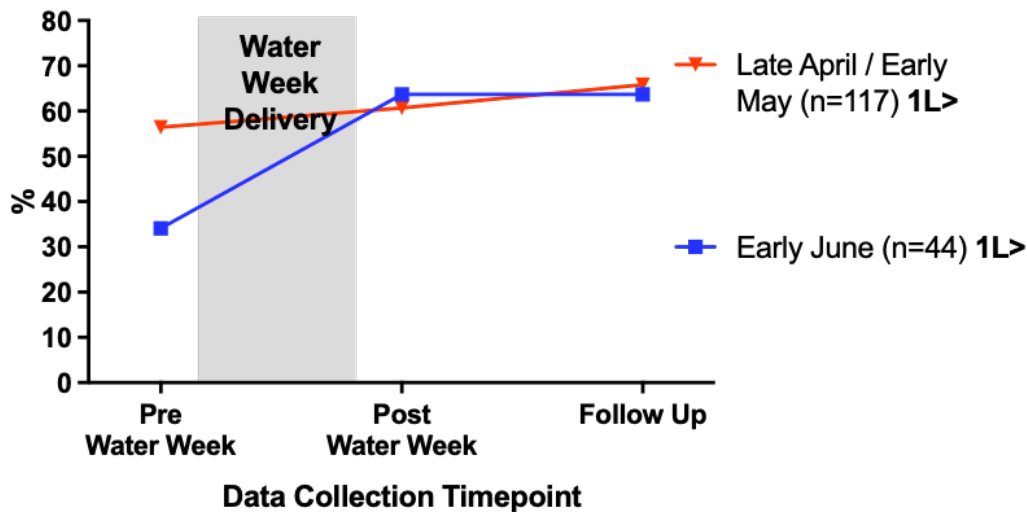


Figure 27b: How much fluid the children believed they drink a day, (more than 1 litre of water) from pre-water week, post water week and follow up – separated by water week delivery timing – Study 3

The results showed a significant difference for how much fluid the children believed they consume at school in total when separated by water week delivery timing ($F=10.395$, $p=.002$). Pre-water week, more children in the late April/early May delivery group (56.4%, $n=66$) believed to be drinking to at least WHO (2004) guidelines (>1L) than the early June delivery group (34.1%, $n=15$). Post-water week ($F=.1.715$, $p=.177$) and in the follow-up ($F=1.022$, $p=.313$) this difference was no longer significant.

Post-water week, fractionally more children in the early June delivery group (63.7%, $n=28$) believed to be drinking to at least WHO (2004) guidelines than the late April/early May group late April/early May group (60.7%, $n=71$). In the follow-up, the early June group did not change when compared to post-water week, whereas the late April/ early May group increased their perception of adequate consumption even further (65.8%, $n=77$).

C: Percentage of Children Believing to Drink 1L> a Day: School Year Group

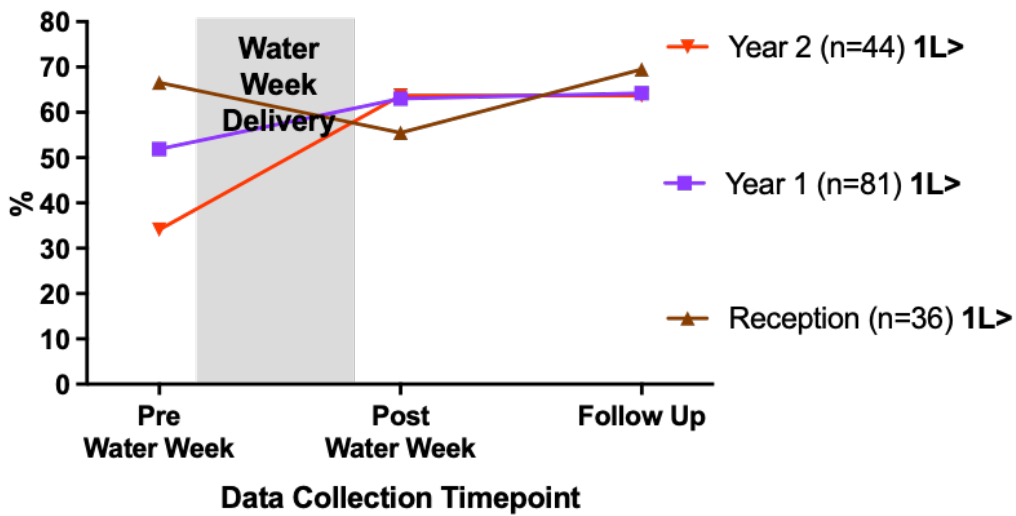


Figure 27c: How much fluid the children believed they drink a day, (more than 1 litre of water) from pre-water week, post water week and follow up – separated by school year group – Study 3

The results showed a significant difference for how much fluid the children believed they consume at school in total when separated by school year group ($F=7.675, p<.001$). Pre-water week, less children in year 2 (34.1%, $n=15$) believed to be drinking at least >1L a day than reception (66.6%, $n=25$) and year 1 (51.9%, $n=41$). Post-water week ($F=.965, p=.383$) and in the follow-up ($F=.835, p=.436$) this difference was no longer significant.

Post-water week, less children in the reception (55.5%, $n= 21$) believed to be drinking at least >1L than year 2 (63.7%, $n=28$) and year 1 (63%, $n=50$). In the follow-up, all three age groups remained or increased their proportion of children believing to be drinking at least >1L when compared to pre-water week findings (year 2: 63.7%, $n=28$) (year 1: 64.2%, $n=51$) (reception: 69.5%, $n=26$)

Health Reasons: Signs of Dehydration / Fluid Intake Vocabulary – Study 3

A: Health Reasons: Signs of Dehydration / Fluid Intake Vocabulary: Whole Sample

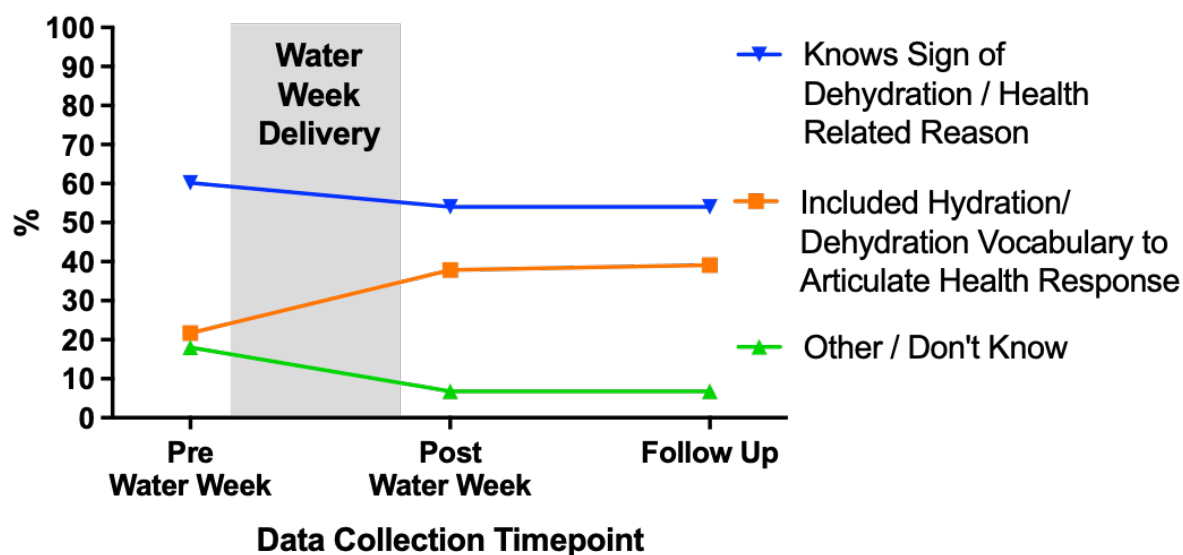


Figure 28a: Percentage values for the whole research sample for if the children knew they should drink water due to health reasons or reported to drink water due to health reasons – Study 3

There were significant differences for knowing that drinking water is beneficial for their health post-water week ($F=20.611$, $p<.001$) and in the follow-up week ($F=20.448$, $p<.001$). More children responded that drinking water was beneficial for health, or could articulate more hydration or dehydration vocabulary, post-water week (91.9%, $n=148$) and in the follow-up week (93.1%, $n=150$) than pre-water week (81.9%, $n=132$). Also, more children utilised “hydration” or “dehydration” to describe why drinking water was beneficial for health post-water week (37.9%, $n=61$) and in the follow-up week (39.1%, $n=63$) when compared to pre-water week (21.7%, $n=35$).

B: Included Hydration / Dehydration Vocabulary to Articulate Health Response: Gender

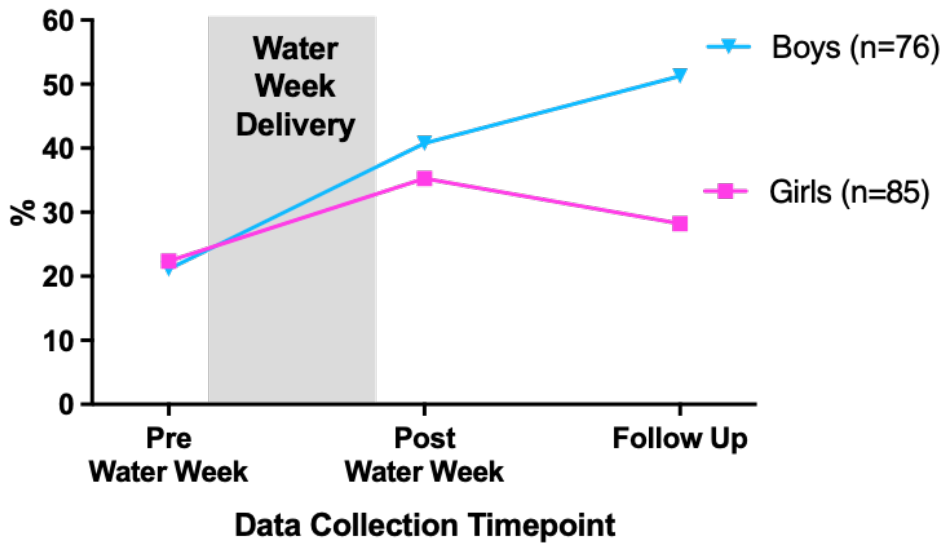


Figure 28b: Percentage values for if the children could articulate they should drink water due to health reasons or reported to drink water with fluid specific vocabulary - separated by sex – Study 3

The results showed a significant difference for knowing that drinking water is beneficial for their health when separated by sex in the follow-up week ($F=9.638, p=.002$). The boys in the follow-up utilised more hydration or dehydration vocabulary to describe that drinking water is beneficial for health (51.3%, $n=39$) than the girls (28.2%, $n=23$). This is compared to pre-water week, (boys: 22.4%, $n=19$) (girls: 21.4%, $n=16$) and post-water week (boys: 40.8%, $n=31$) (girls: 35.3%, $n=30$) who used fluid intake vocabulary.

C: Included Hydration / Dehydration Vocabulary to Articulate Health Response: School Year Group

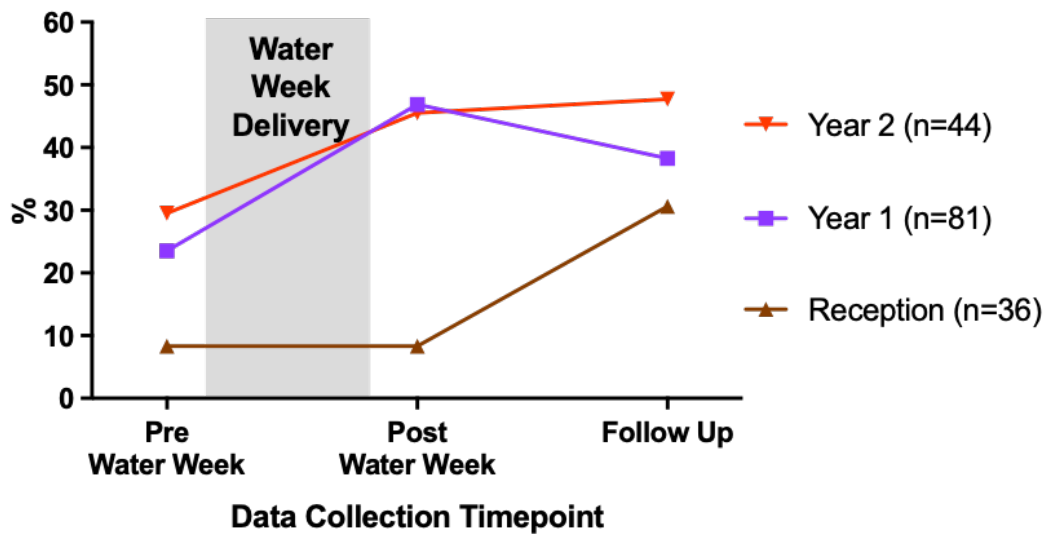


Figure 28c: Percentage values for if the children could articulate they should drink water due to health reasons or reported to drink water with fluid specific vocabulary - separated by school year group – Study 3

The results showed a significant difference for knowing that drinking water is beneficial for health when separated by school year group post-water week ($F=10.122, p<.001$). Post-water week, the children in year 1 (46.9%, n=38) and year 2 (45.5%, n=20) utilised more hydration or dehydration vocabulary to describe that water is beneficial for health than reception (8.3%, n=3)

Do The Children Believe Their Teacher Tells Them When To Drink? – Study 3

A: Do the Children Believe Their Teacher Tells Them When Drink? : Whole Sample

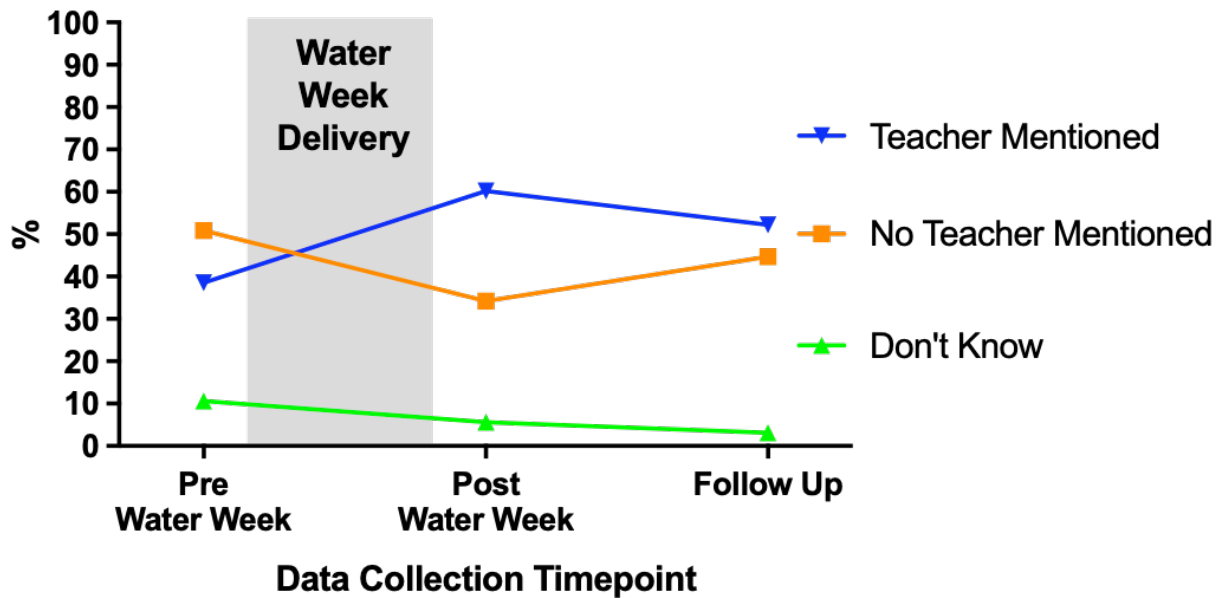


Figure 29a: Percentage values for the whole research sample for whether the children believed their teachers supported their consumption of fluids – Study 3

The results showed significant differences for whether the children believed their teacher supported their fluid intake ($F=.089$, $p=.035$). More children reported that their teacher supports their consumption of fluids post-water week (60.2%, $n=97$), when compared to pre-water week (38.5%, $n=62$). The post-water week proportion of perceived teacher support is also higher than that of the follow-up week (52.2%, $n=84$).

B: Children Mentioning That a Teacher Tells Them When to Drink : School Year Group

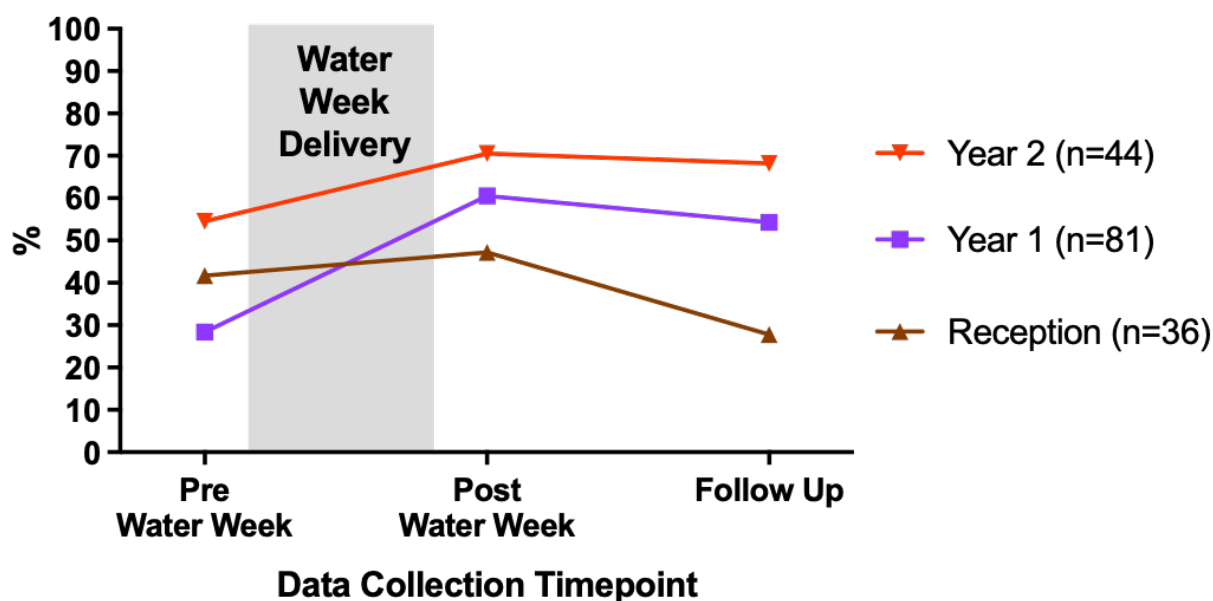


Figure 29b: Percentage values for whether the children believed their teachers supported their consumption of fluids – separated by school year group – Study 3

The results showed a significant difference for whether the children believe their teacher supported their fluid consumption when separated by school year group ($F=6.149$, $p=.003$). The children in year 1 more than doubled their proportion of replies to post-water week (60.5%, $n=50$) when compared to pre-water week (28.4%, $n=23$), in reporting that their teacher tells them when to drink. Also, more children in year 2 stated that their teacher supports their consumption post-water week (70.5%, $n=31$) compared to their pre-water week replies (54.5%, $n=24$). Reception observed a less significant impact of perceived teacher support post-water week (47.2%, $n=17$) compared to pre-water week (41.7%, $n=15$).

Do The Children Believe Their Parents Tell Them When To Drink? – Study 3

A: Do the Children Believe Their Parent(s) Tells Them When Drink? : Whole Sample

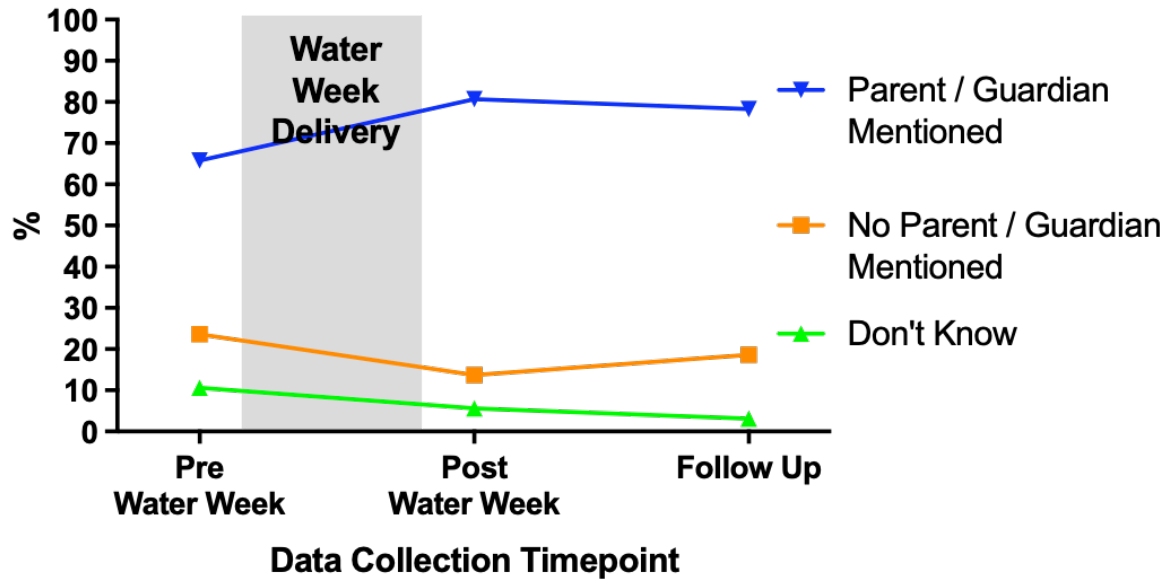


Figure 30a: Percentage values for the whole research sample for whether the children believed their parents supported their consumption of fluids - Study 3

The results did not show any significant differences for whether the children believed their parents support their consumption, post-water week ($F=.000$, $p=1.000$) or in the follow-up ($F=2.013$, $p=.158$). That said, more children reported that a parent supports their consumption of fluids post-water week (80.7%, $n=130$), and in the follow-up (78.2%, $n=126$), than pre-water week (65.8%, $n=106$).

B: Children Mentioning That a Parent Tells Them When to Drink : Age By Year Born

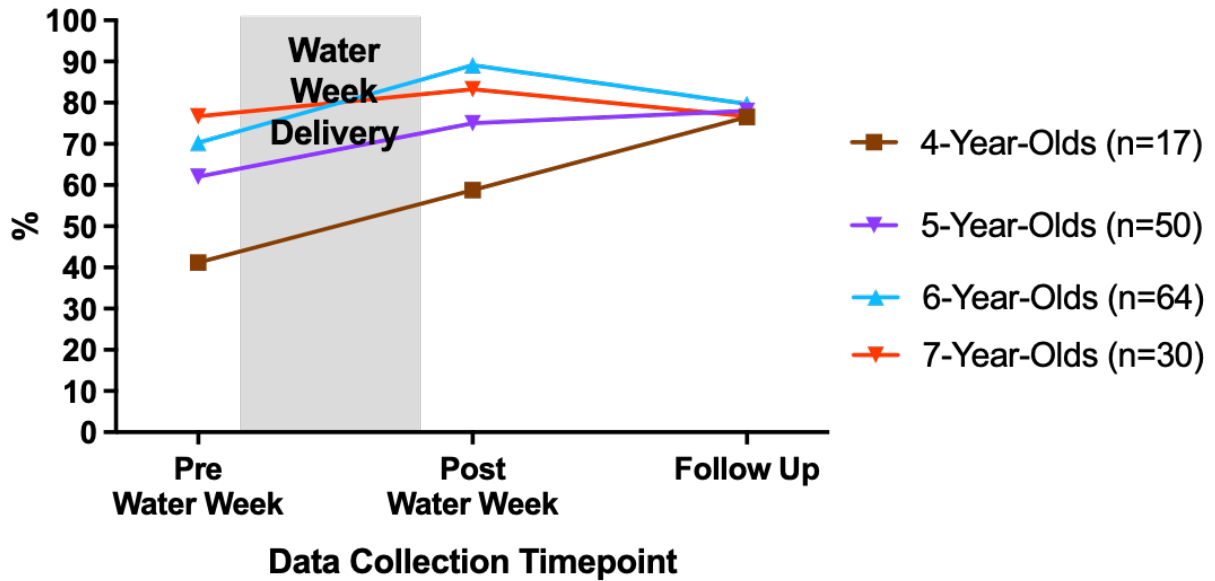


Figure 30b: Percentage values for the children believing their parents supported their consumption of fluids - separated by age by year born – Study 3

The results showed a significant difference for whether the children believed their parents support their consumption when separated by age by year ($F=3.210, p=.026$). Less 4-year-olds (41.2%, $n=7$) believed that their parents supported their consumption of fluids pre-water week, than 5-year-olds (62%, $n=31$), 6-year-olds (70.3%, $n=45$) and 7-year-olds (76.7%, $n=23$). All age groups reported an increase of parental support post-water week (4-year-olds: 58.8%, $n=10$) (5-year-olds: 75%, $n=38$) (6-year-olds: 89.1%, $n=57$) (7-year-olds: 83.3%, $n=25$).

When The Children Get Most Thirsty At School – Study 3

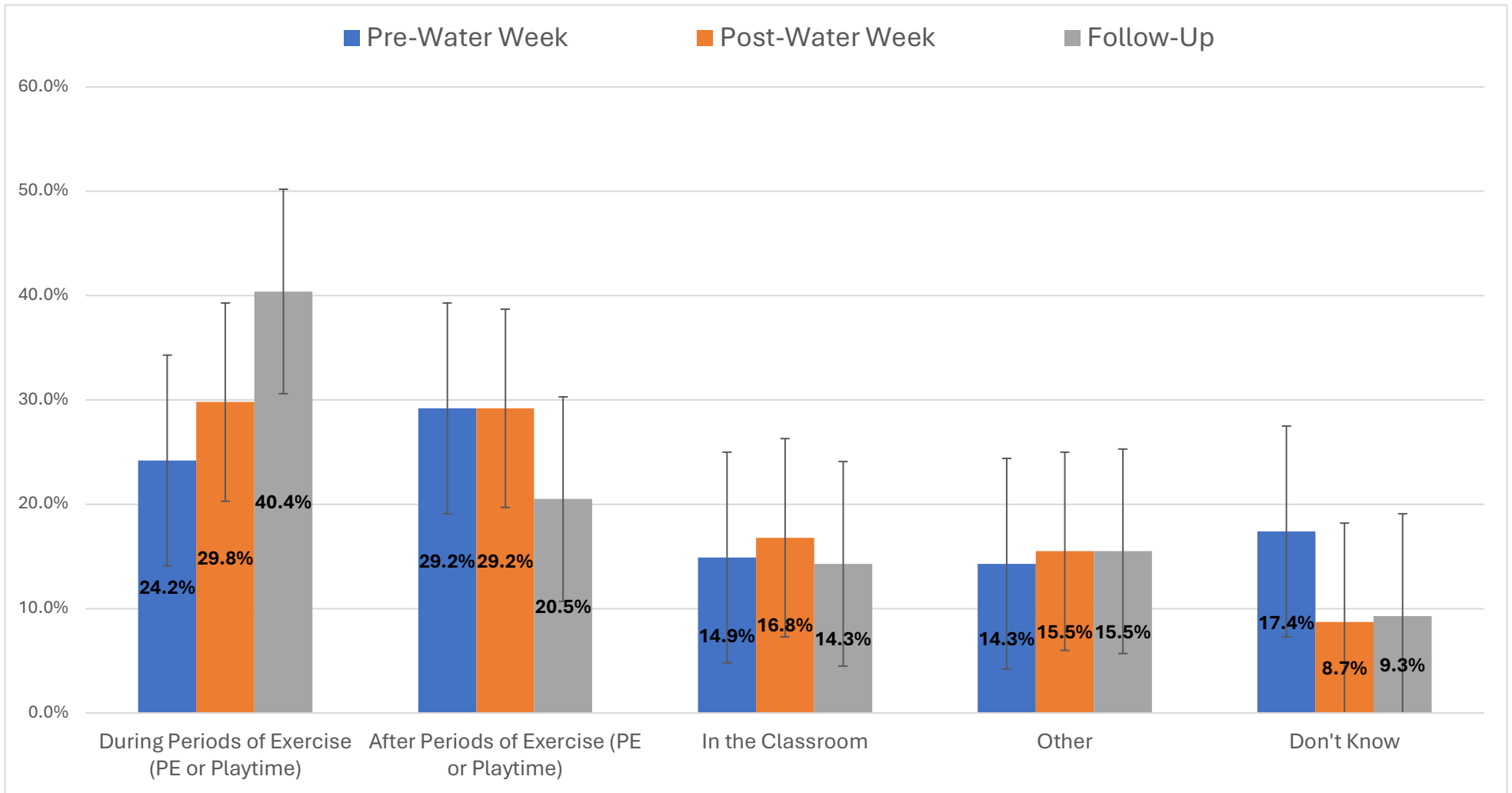


Figure 31: Percentage values for the whole research sample for when the children get most thirsty at school – Study 3

Figure 31: Percentage values for the whole research sample for when the children get most thirsty at school – Study 3

The results did not show any significant differences for when the children get most thirsty at school post-water week ($F=1.607$, $p=.207$) or in the follow-up ($F=0.022$, $p=.225$). Less children did not know any time they were most thirsty post-water week (8.7%, $n=14$) and in the follow-up (9.3%, $n=15$) when compared to pre-water week (17.4%, $n=28$).

More children reported to be most thirsty during periods of exercise or after exercise, post-water week (59%, $n=95$) and in the follow-up (60.9%, $n=98$) when compared to pre-water week (53.4%, $n=86$).

Do The Children Think They Are Allowed To Drink At The Time They Are Most Thirsty? – Study 3

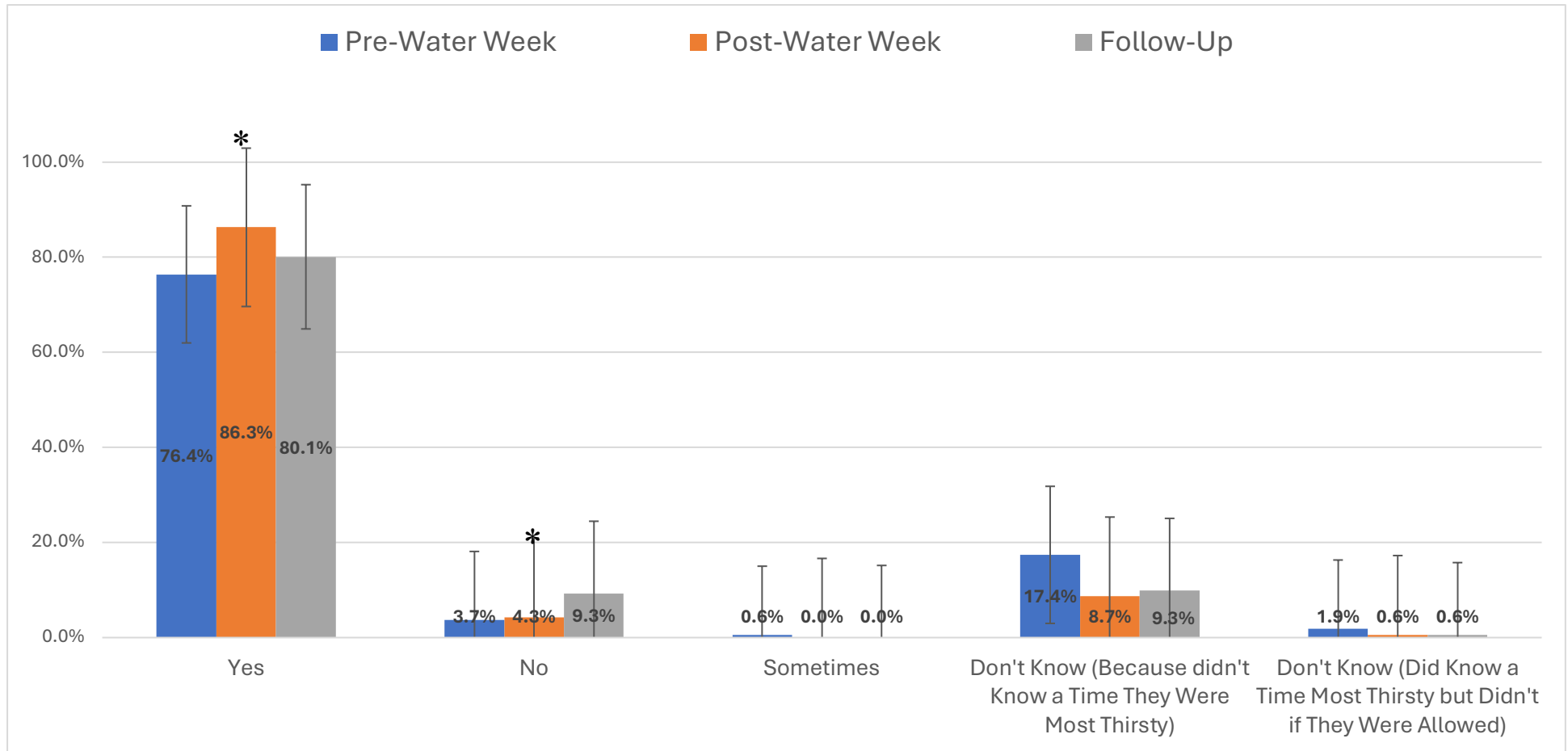


Figure 32: Percentage values for the whole research sample for whether the children believed they were allowed to drink during the time they get most thirsty at school – Study 3

Figure 32: Percentage values for the whole research sample for whether the children believed they were allowed to drink during the time they get most thirsty at school – Study 3

There were significant differences for whether the children believed they were allowed to drink at the time they were most thirsty, post-water week ($F=6.441, p=.012$) and in the follow-up ($F=6.355, p=.013$). More children replied that they were allowed to drink at the time they stated they were most thirsty post-water week (86.3%, $n=138$) and in the follow-up (80.1%, $n=129$) when compared to pre-water week (76.4%, $n=123$).

More children believed they were not allowed to drink at the time they are most thirsty in the follow-up (9.3%, $n=15$), when compared to pre-water week (3.7%, $n=6$) and post-water week (4.3%, $n=7$).

Do The Children Believe There Is Ever A Time When They Can't Drink At School? – Study 3

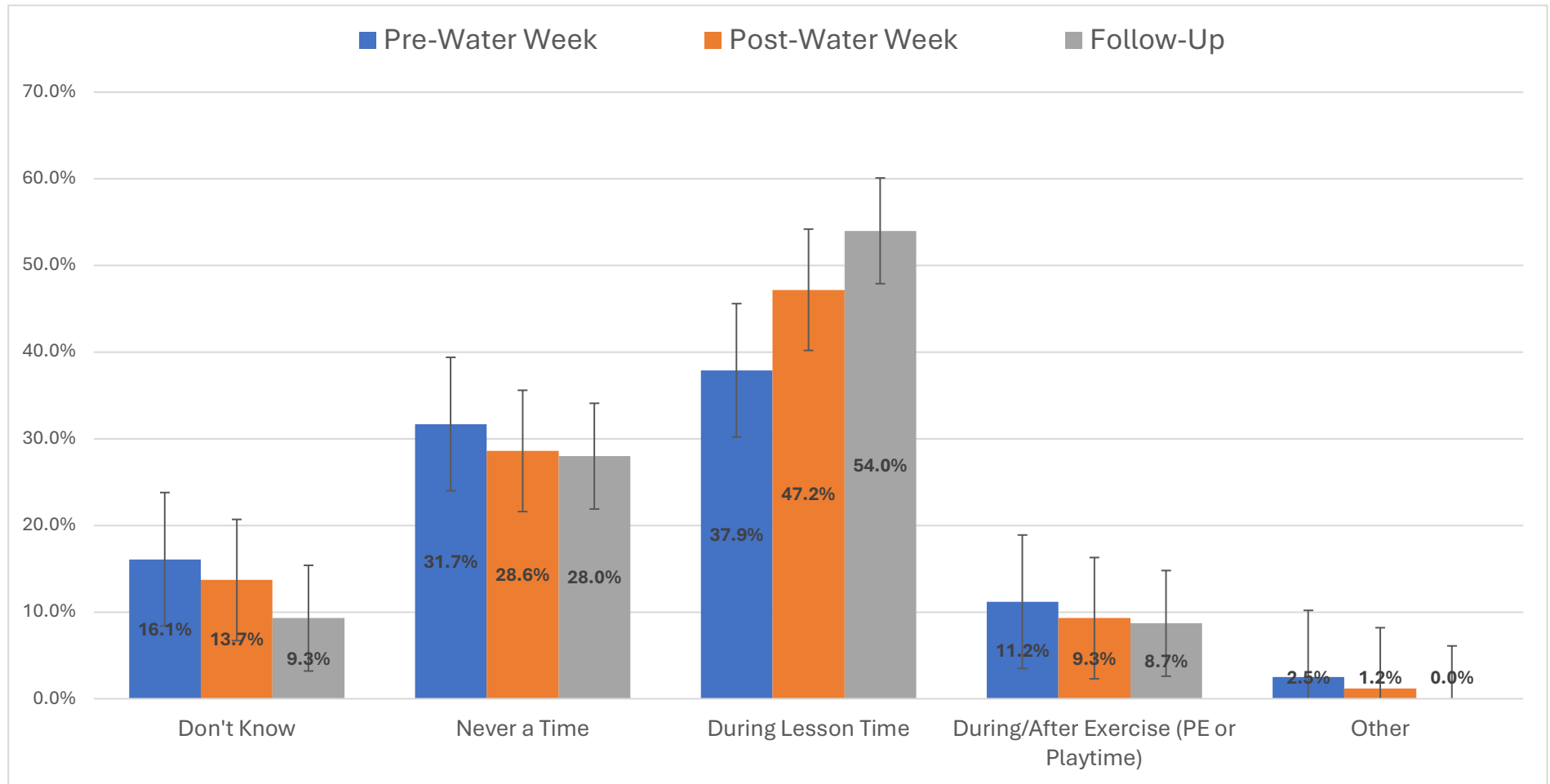


Figure 33: Percentage values for the whole research sample for whether the children believed there was ever a time they could not drink at school – Study 3

Figure 33: Percentage values for the whole research sample for whether the children believed there was ever a time they could not drink at school – Study 3

There were no significant changes in whether the children believed there were any times in which they were not allowed to drink at school post-water week ($F=0.198$, $p=.656$) or in the follow-up week ($F=1.648$, $p=.201$). That said, more children believed they were not permitted to drink during lesson time post-water week (47.2%, $n=76$) and in the follow-up week (54%, $n=87$) when compared to pre-water week (37.9%, $n=61$).

Additionally, less children did not know times in which they could not drink at school post-water week (13.7%, $n=22$) and in the follow-up week (9.3%, $n=15$) when compared to pre-water week (16.1%, $n=26$).

Frequencies of Reply For "Who Tells You When To Drink?" – Study 3

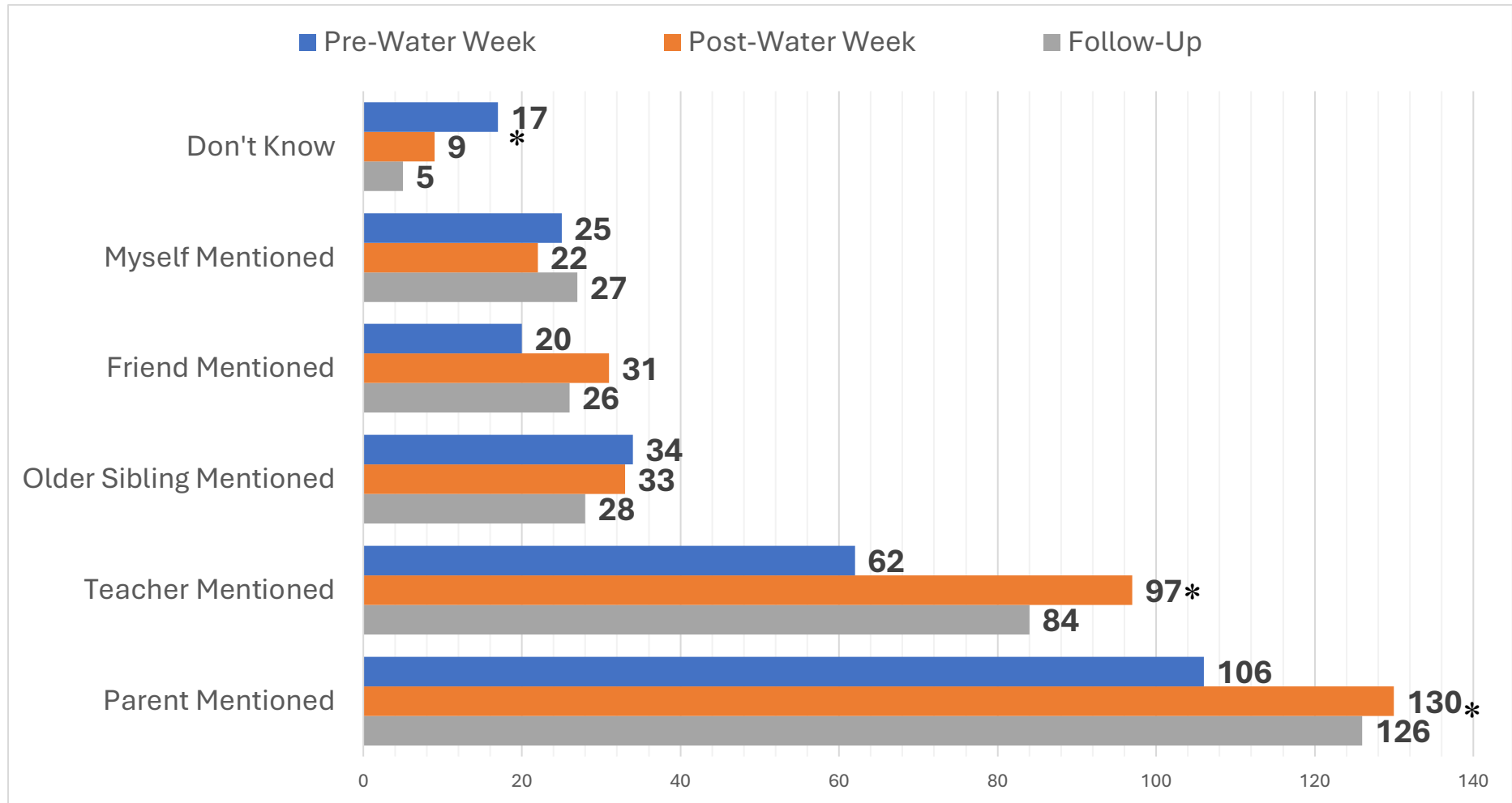


Figure 34: Frequencies for who tells the children to consume fluids – Study 3

Figure 34: Frequencies for who tells the children to consume fluids – Study 3

The results indicate that there were more children who believed their parents tell them when to consume fluids post-water week (80.7%, n=130) when compared to pre-water week, (65.8%, n=106), this increase was mostly sustained in the follow-up (78.2%, n=126).

The results also indicate that more children believed that their teacher supports their consumption post-water week (60.2%, n=97) when compared to pre-water week (38.5%, n=62). There was a slight drop-off of teacher perception of fluid support in the follow-up (52.2%, n=84).

The frequency of children not knowing anyone who supports their consumption reduced post-water (5.5%, n=9) when compared to pre-water week (10.6%, n=17). There was a further reduction of complete unawareness in the follow-up (3.1%, n=5).

Do the Children Like Drinking Water? – Study 3

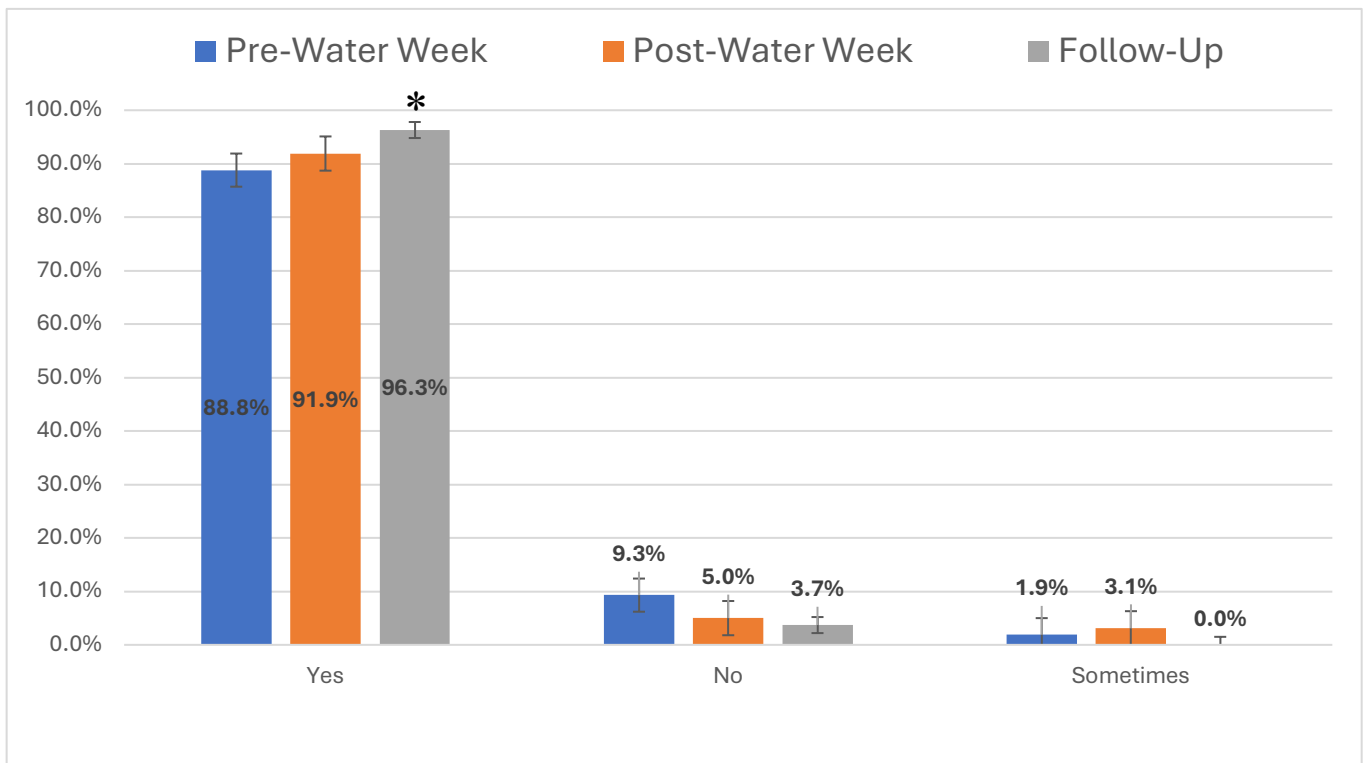


Figure 35a: Percentage values for the whole research sample for if the children liked drinking water – Study 3

The results showed a significant difference for liking water ($F=10.349$, $p=.002$), with more children in the whole sample responding yes to liking water in the follow-up (96.3%, $n=155$) compared to pre-water week (88.8%, $n=143$) and post-water week (91.9%, $n=148$).

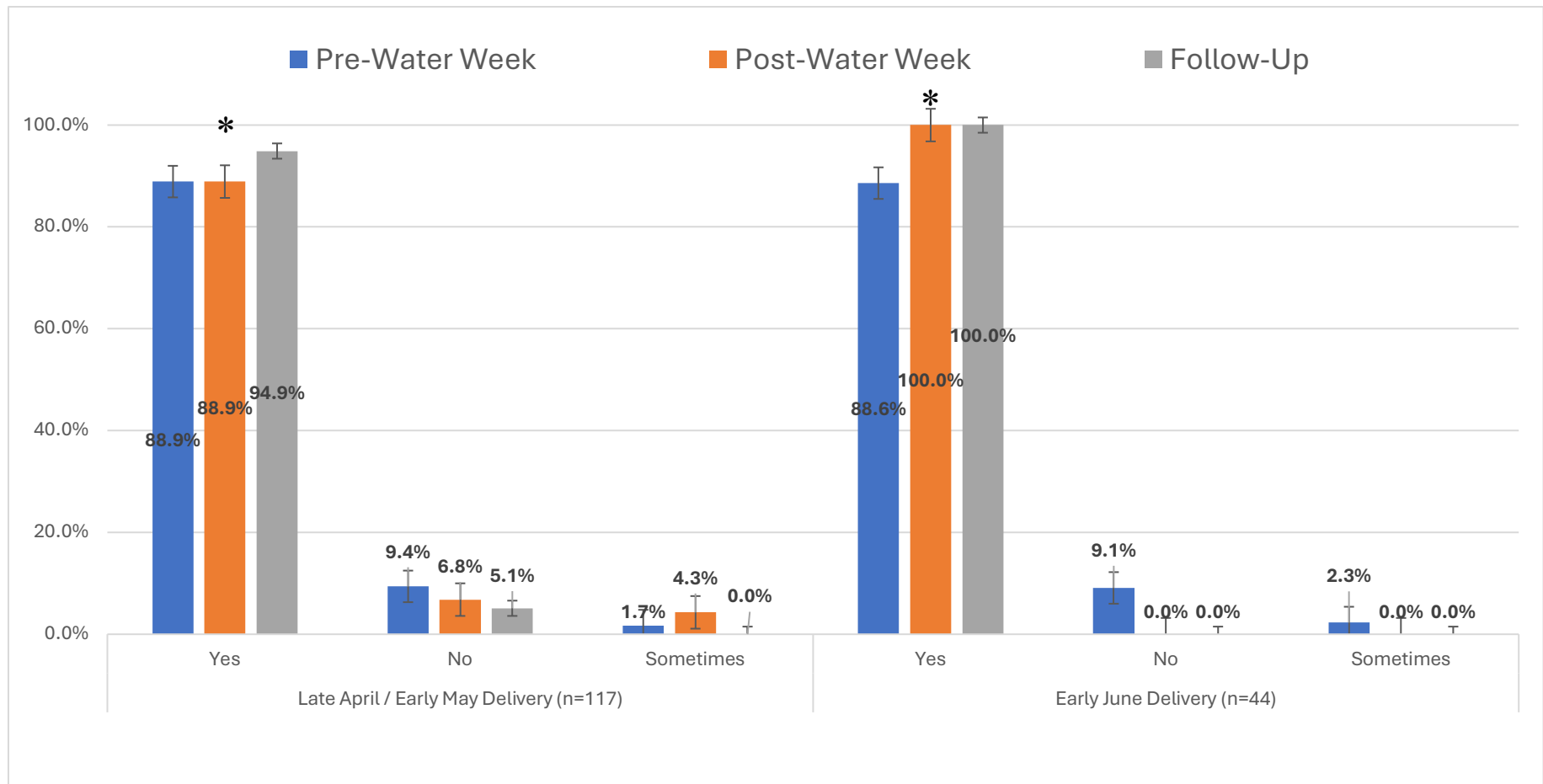


Figure 35b: Percentage values for the whole research sample for if the children liked drinking water, separated by water week delivery timing – Study 3

Figure 35b: Percentage values for the whole research sample for if the children liked drinking water, separated by water week delivery timing – Study 3

The results showed a significant difference for liking water when separated by water week delivery timing ($F=4.769, p=.030$). The children who were taught the water week in early June responded yes to liking water more post water week (100%, $n=44$), compared to the children who were taught the water week in late April/early May (88.9%, $n=104$).

If Thirsty, Would The Children Drink First, or Play First to Get More Time? – Study 3

A: If Thirsty, would the Children Drink First, or Play First to Get More Time? : Whole Sample

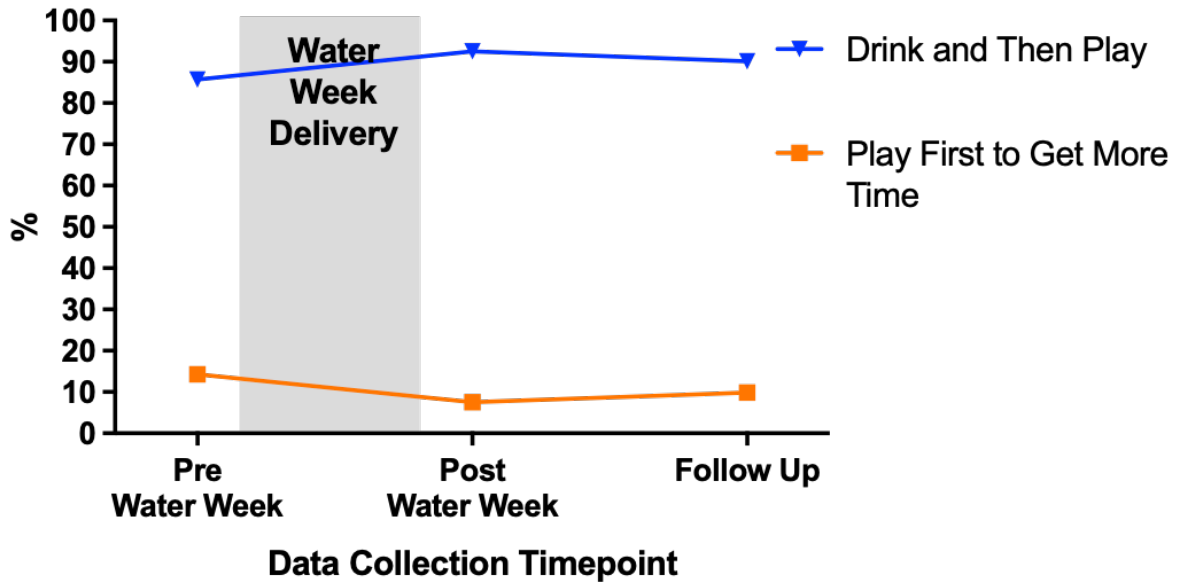


Figure 36a: Percentage values for the whole research sample for whether the children would drink before play or play first if they were thirsty – Study 3

There were significant differences for whether the children would play first to accrue more time or drink first if they thought they were thirsty ($F=.6.589, p=.011$). More children stated they would drink before play if they needed fluid post-water week (92.5%, n=149) when compared to pre-water week (85.7%, n=138). This increase of reply to post-water week was mostly sustained in the follow-up week (90.1%, n=145).

B: The Children Reporting to Drink Before Play If They Were Thirsty: School Year Group

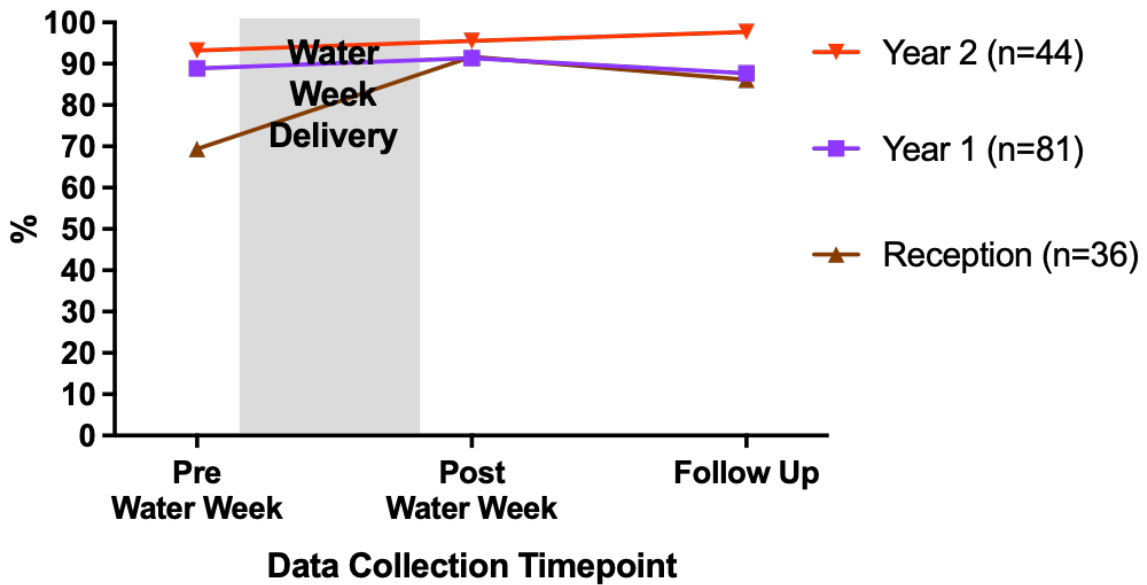


Figure 36b: Percentage values for whether the children would drink before play or play first if they were thirsty – separated by school year group – Study 3

The results showed a significant difference for whether the children would play first to accrue more time or drink first if they were thirsty, separated by school year group ($F=5.485, p=.005$). More children in reception would elect to drink before play if they thought they were thirsty post-water week (91.7%, $n=33$) compared to pre-water week (69.4%, $n=25$).

	Boys (n=76)			Girls (n=85)		
	<i>Pre-Water Week</i>	<i>Post-Water Week</i>	<i>Follow-Up</i>	<i>Pre-Water Week</i>	<i>Post-Water Week</i>	<i>Follow-Up</i>
No Friend Mentioned	80.3% (n=61)	77.6% (n=59)	81.6% (n=62)	74.1% (n=63)	72.9% (n=62)	80% (n=68)
Friend Mentioned*	11.8% (n=9)	17.1% (n=13)	17.1% (n=13)	12.9% (n=11)	21.2% (n=18)	15.2% (n=13)
Don't Know	7.9% (n=2)	5.3% (n=4)	1.3% (n=1)	12.9% (n=11)	5.9% (n=5)	4.7% (n=4)

Table 6: Percentage values for whether sex impacted the children's perceptions of their friends supporting their consumption of fluids (pre-water week, post-water week and follow-up) – Study 3

The results did not show a significant difference on whether friends impacted fluid consumption at school, separated by sex, pre-water week ($F=1.576, p=.276$), post-water week ($F=.470, p=.620$) or follow-up ($F=4.500, p=.391$). More boys (17.1%, n=13) and girls (21.2%, n=18) stated that a friend supported fluid consumption post-water week when compared to pre-water week (boys: 11.8%, n=9) (girls: 12.9%, n=11). However, the girls (15.2%, n=13) reduced their peer support reply in the follow-up when compared to post-water week, whereas the boys sustained their proportion of peer fluid support in the follow-up when compared to post-water week (17.1%, n=13).

4.17 - Did the Water Week Impact Children's Perceived Fluid Intake?

Howells (2012) supported that primary aged children need to learn about healthy habits and start the lifelong action of those healthy habits. As such, the examination of whether the HEP was able to initiate this process in relation to habit formation and understanding of drinking an adequate amount of fluid should be addressed to help assess efficacy and impact of the HEP.

Although a non-significant finding, pre-water week, figure 27a ($p>0.05$) shows that 50.3% ($n=81$) of the children, pre-water week, reported that they consumed 1L of water or more a day in total. Consequently, 49.7% ($n=80$) of the children believed they consumed under the fluid consumption guidelines issued by WHO (2004). This is concurrent with Williamson and Howells' (2019) and Coppinger and Howells (2019). Therefore, this could substantiate that even though the pre-water findings were non-significant (figure 27a), this supports that the perception of adequate consumption pre-water week could have been an accurate representation of the young children's pre-water week consumption habits in study 3, and therefore further supports the need for the HEP resources to help children form healthy habits in the primary classroom, which Howells (2012) states is crucial for lifelong action of those habits.

Figure 27a also shows that post-water week, there was a 11.2% ($n=17$) reduction of children reporting to be drinking under WHO (2004) guidelines. Whereby, post-water week, 61.5% ($n=99$) stated that they consumed 1L of water or more a day in total at school. Furthermore, in the 1-or-2 month follow-up, there was a continuation of perceived adequate consumption; figure 27a shows that 65.2% ($n=105$) of the children reported to be consuming 1L or more a day in total. Resulting in one-third of children reporting to be drinking under WHO (2004) guidelines in the follow-up, where before the water week was delivered, it was near 50% of

children perceiving they are under-consuming. Consequently, as there was a secondary rise from post-water week to the follow-up (where no formal tuition of fluid intake was delivered), this implies that other contributing factors could have influenced the children's perception of adequate consumption, which will be further explored below.

The interaction effects of the timing of the water week delivery and school year group were statistically significant on adequate consumption perception ($p < 0.05$). This could be the catalyst(s) for why the habit change perception increased in the follow-up. As highlighted by figure 27c, pre-water week, only 34.1% ($n=15$) of school year group 2 reported levels of consumption sufficient to meet WHO (2004) guidelines. This is considerably lower than both reception (66.6%, $n=25$) and school year group 1's (51.9%, $n=41$) report of adequate consumption pre-water week. Indicating that the oldest age group in this study potentially required the tuition from the HEP more than the two younger year groups. Supporting this statement is the recorded temperatures during the pre-water week data collection and during delivery of the water week (timeanddate, 2023a; 2023b) (appendix 23). School year group 2 were delivered the hydration resources in early June, as opposed to late April / early May for the two younger cohorts, and hence school year group 2 observed warmer temperatures during their delivery of the HEP. In his seminal work, Severs (1979) reported that when external heat temperature is warmer, this should also result in a greater level of homeostatic fluid consumption (i.e. autonomous consumption), and thus, the opportunity to drink a greater volume of fluid is implied because less external support should be required to drink, even if the quality of children's thirst response is debated (Benelam, 2010; Shaw, 2010). As such, because school year group 2's pre-water week data was collected in early June 2023 (average high temperature (AHT): 14.5°C) (timeanddate, 2023b) (appendix 23), this was greater than the average high temperatures of reception and school year group 1's pre-water week data

collection periods (AHT: 9.9°C) (timeanddate, 2023b) (appendix 23). Therefore, due to the theoretical understanding that the warmer it is, the more one is inclined to drink fluids of their own accord (Severs, 1979), the higher temperatures experienced by school year group 2 during their pre-water week data collection should have also recorded a greater level of adequate fluid consumption perception than the earlier delivery group within their pre-water week data collection. Yet, the data suggests this did not happen. As such, indicating that school year group 2 who possessed the least amount of knowledge and understanding of how much fluid they need to drink pre-water week, has provided evidence that any impact on adequate fluid consumption post-water week/follow-up, are likely to have stemmed from the HEP resources themselves, rather than an additional external factor, such as temperature.

To support the significant impact of how the water week resources developed the children's knowledge and understanding of how much fluid they need to drink, as shown by figure 27c, post-water week, 63.7% (n=28) of the children in school year group 2 reported to be drinking to at least the guidelines issued by WHO (2004). This is a 29.6% (n=13) increase of children reporting to be drinking at recommended levels post-water week, compared to school year group 2's pre-water week data. Figure 27c also indicates that school year group 1 reported an increase of children perceiving to be drinking to at least WHO guidelines post-water week (63%, n=50) when compared to their pre-water week data; however, there was a decrease of reception children (55.5%, n=21) drinking to recommended levels (when compared to their pre-water week data). This implies that the resources within the HEP may have had a negative impact on the youngest of the three age groups in relation to changing a perception of adequate consumption. Thus, questioning the necessity of the water week delivery for the EYFS age group due to its negative impact on fluid consumption habit change and fluid requirement awareness.

To justify the HEPs influence post-water week, on the children's perceived adequate fluid consumption, appendix 23 indicates that the external heat temperatures were 6.5°C warmer on average for reception/school group 1 (compared to pre-water week), and 7.5°C higher for school year group 2 (timeanddate, 2023a; 2023b); suggesting that all year groups should have increased their perception of adequate fluid intake due to the theory of homeostatic consumption (Severs, 1979), if heat was a serious factor in adequate consumption perception. Moreover, if external heat was a significant factor to influence an increased level of children's adequate fluid consumption perception, school year group 2 should have reported a higher level of adequate consumption than reception/year 1 in the pre-water week data collection phase (due to higher pre-water week temperatures), and reception should have reported an increase in adequate fluid consumption post-water week. Therefore, this suggests the delivery of the water week resources had a significantly positive level of efficacy and impact on school group 1 and 2's (KS1/5-7-year-olds) perception of adequate consumption and hence aided in their development of the 'how much children need to drink' area of fluid intake knowledge and understanding. That said, school year group 2 were delivered the HEP over 5 days (as prescribed), rather than the full-breadth of content over a 4-day delivery schedule which reception/school year group 1 had (due to teacher strikes and bank holidays). Therefore, this supports that although there is a strong likelihood that the resources in the HEP were attributable to the difference in reported adequate consumption perception, rather than the causation of drinking a greater volume of fluid because of warmer external heat, the water week needs to be delivered over 5 days as designed, not 4 days, to observe the greatest impact.

The question of what resources caused the reported change in adequate consumption perception should be addressed. Wiseman (2012) trialled the learning potential of WAVs, which as

previously stated were one of the core resources in the water week HEP to form concrete learning of new knowledge and understanding of fluid intake. He found that the use of WAVs was 15% more effective in enabling learners to retain information than a talking head video. Hence, as figure 27c demonstrates a significantly positive reaction to the year 2 children's perceptions of drinking an adequate level of fluid, this could be because they were able to retain a good level of awareness of how much they need to drink due to the WAVs dissemination of information and understood how to action this knowledge and understanding accordingly. Therefore, this suggests that the water week (and WAVs) were most effective for children who were already drinking inadequate levels of fluid. As such, the introduction of the water week resources should be targeted to school year groups 1 and 2 (KS1/5-7-year-olds) in June; at the start of the health education statutory guidance age phase (DfE, 2019), when impact of adequate consumption volumes were reported to be positive and does not risk impacting younger children (reception/EYFS/4-5-year-olds) who previously reported the greatest level of adequate consumption pre-water week (figure 27c). Alternatively, further modification of the EYFS HEP could be considered. Although further data points will be evaluated in this results and discussion section to confirm these recommendations.

Interestingly, in the 1 or 2 months after the initial delivery, at the follow-up data collection phase (in July 2023), all three age phases remained at, or exceeded, their pre-water week levels of consumption, with school year group 2 specifically reporting an identical retention of reported consumption when compared to their post-water week replies (figure 27c). This suggests that the knowledge learnt by engaging with the HEP was effective in altering inadequate fluid consumption habits and was retained in the medium-term even without the explicit delivery of HEP. Using anecdotal evidence, the researcher observed that when he returned for the follow-up data collection period, all classes still had their drinking tracker chart

on display and at an assessable height where the children could continue to visually track how much fluid they consumed at school. Therefore, this can further explain how the resources impacted the children's perception of adequate consumption in the follow-up as they were continually reminded to drink through using the visual resource. Suggesting that the drinking tracker chart, which was intended to be used as an ongoing fluid intake learning tool, was also effective in impacting children to learn how much fluid they need to drink and support them in the action of that healthy habit knowledge and understanding and should be included in any future delivery of the HEP.

To conclude this section, due to the reduction of adequate consumption levels reported by the reception children post-water week when compared to pre-water week (figure 27c), and their subsequent rebound of reported consumption estimation in the follow-up, even though there was no dedicated fluid intake teaching known to have been delivered in the 1-2 months between the post-water week and follow-up data collection points, apart from the use of the drinking tracker chart. It begs the question as to whether the delivery of the HEP was entirely necessary for the youngest age phase (reception/EYFS/4-5-year-olds). As such, due to the significant improvement reported by the year 2 children (and non-significant improvement by the year 1s) post-water week, and retention/increase of this volume of drinking in the follow-up, three recommendations should be made:

1. That the HEP is more suited to the old age range (KS1/5-7-year-olds) and that the possibility of withdrawing / further modifying the HEP for the EYFS children should be considered (pending further discussion within this part 2 results and discussion chapter, when analysing other data points).
2. That the ideal timing and age group to deliver the water week could be to years 1 and 2, during early June, over 5 days.

3. That the drinking tracker chart and WAVs achieved a high level of efficacy and impact and should remain in the HEP for any future delivery.

4.18 - Did the Water Week Impact Children's Knowledge and Understanding of the Health Benefits of Drinking Water?

Another of the 5 fluid intake topics related to why children need to drink and hence the researcher needed to assess if the implementation of the HEP could develop this knowledge and understanding. As previously discussed, Joshi (2005) supports the idea that development of new vocabulary, and the appropriate use of it, is one core indicator that learning has materialised. As such, the researcher will evaluate whether such vocabulary development, in relation to fluid intake knowledge and understanding, emerged following the delivery of the version 3 HEP.

As a whole sample, in the children's justification for why they drink water or in their rationale for why they should drink water, figure 28a demonstrates that 81.9% (n=132) of the children knew that they should drink water due to health or reported to consume water due to health benefits, pre-water week. Whereby, 21.7% (n=35) (of the 81.9% (n=132)) articulated this awareness by using vocabulary such as to be "hydrated" or to avoid "dehydration", pre-water week. This indicates that although there was a strong level of knowledge and understanding that water was beneficial for health pre-water week, this however was not a universal understanding, as one fifth of the children did not know that water was good for their health before the implementation of the HEP. When the post-water week and pre-water week replies were compared, the finding was statistically significant ($p < 0.05$). Post-water week, 91.9% (n=148) of the children reported that they knew water was beneficial for health, whereby 37.9% (n=61) (of the 91.9% (n=148)) of children could articulate their responses using fluid intake

specific vocabulary. This represents not only a 10% (n=16) increase in general awareness of fluid intake health benefits, but a 16.2% (n=26) rise in the use of specific fluid intake vocabulary post-water week, when compared to pre-water week. As such, it could be reasonable to deduce that the statistically significant 10% increase of knowledge accumulation (that water is beneficial to health), could be related to the near 10% increase of estimated adequate consumption as shown by figure 27a. Justifying this correlation, in a synopsis of the work by Howells (2012), she outlines that knowledge of healthy habits leads to action of healthy habits, because one cannot form habits if they do not know they exist. Therefore, as there was a near 10% non-significant increase in adequate consumption (figure 27a), it is a fair conclusion that one reason for why this may have materialised was due to the 10% increase of fluid intake health knowledge and understanding. Hence, the children may have wanted to drink to an adequate level, because they developed awareness that drinking an adequate amount of fluid is beneficial to their health. Supporting this claim, because teachers have been shown to be less optimal in their support of fluid intake (Howells and Coppinger, 2020) and some, outright reluctant to support fluid intake in the classroom due to perceived pedagogical implications of fluid consumption (Johnston Molloy et al., 2008), this supports the conclusion that the water week resources, such as the WAVs and water song, were a catalyst to the development of previously vacant knowledge of fluid intake. This is because those two resources were the only two learning tools where the researcher can be sure health benefits and fluid intake vocabulary could be audibly heard by the children without the input of teachers themselves (table 5). As such, due to the small time-lapse between the pre-water week and post-water week data collection points, it must be concluded that the fluid intake knowledge and understanding development was substantiated by the WAVs and water song and should remain in the HEP for any future delivery.

4.18.1 - Was there a difference in learnt fluid intake knowledge according to school year group?

Interestingly, the data suggests that this development of fluid intake knowledge was, again, more effective with older children (school year group 1 and 2) ($p < 0.05$). As demonstrated by figure 28c, pre-water week, only 8.3% ($n=3$) of the reception class children could articulate a health-related response using hydration or dehydration vocabulary to describe why they drink water and/or should drink water. This is considerably lower than both school year group 1 (23.5%, $n=19$) and school year group 2 (29.5%, $n=13$). In comparison, the pre-water week to post-water week replies were statistically significant ($p < 0.05$). The level of the reception children's use of fluid vocabulary development did not change from 8.3% ($n=3$) post-water week, suggesting that the HEP was, again, ineffective with the youngest cohort in this study (figure 28c). Whereas, school year group 1 reported a 100% increase over their pre-water week replies to 45.5% ($n=20$), whereby school year group 2 reported a 50% rise to 46.9% ($n=38$) of children who utilised hydration or dehydration vocabulary post-water week (figure 28c). As such, due to the reception children's reduction of adequate consumption perception post-water week (figure 27c) and the nil-effect in fluid intake vocabulary development post-water week (figure 28c), this results in the reaffirmation of the prior provisional recommendation, that the resources in the HEP should be delivered to children in schools year groups year 1 and 2 in KS1, rather than reception children in the EYFS. This is because the HEP has not shown evidence in impacting two of the five indicators of fluid intake knowledge, understanding and habit creation (how much to drink and why children need to drink) for EYFS children, therefore the previously provisional recommendation (EYFS HEP withdrawal/adaptation) will now be accepted. That said, as the researcher did not wish to suggest ideas for further EYFS HEP modification that may also be ineffective, the researcher should seek further insight from EYFS practitioners on how the version 3 EYFS HEP could be further adapted to be more suitable, to facilitate future delivery.

4.18.2 - Was there a difference in learnt fluid intake knowledge according to sex?

There were further interaction effects for why the children drink water and/or should drink water, according to sex in the follow-up. As highlighted by figure 28b, pre-water week, 22.4% (n=19) of the girls, and 21.4% (n=16) of the boys, could articulate their understanding that water was beneficial for health described with “hydration” or “dehydration” vocabulary. Representing a similar base level of pre-water week fluid health knowledge and vocabulary usage between sexes. Although not statistically significant ($p>0.05$), the post-water week replies reported an increase of trend for both boys (40.8%, n=31) and girls (35.3%, n=30). Due to the short timeframe between the pre-water week and post-water week data collection points, this could support the notion that for both demographics, the resources within the HEP may have been effective in initially developing knowledge and understanding of fluid intake and the associated vocabulary. That said, the development of fluid intake vocabulary and fluid health knowledge in the follow-up was statistically significant ($p<0.05$). When compared to the post-water week data collection point, figure 28b highlights that there was a 7.1% (n= 7) decrease in girls using fluid specific vocabulary to describe health related benefits of drinking water (when compared to post-water week), whereby 28.2% (n=23) of the girls could remember fluid specific vocabulary in the 1–2-month follow-up. This is in complete contrast to the 10.5% (n=7) increase of the boys (51.3%, n=39) using learnt fluid intake vocabulary in the follow-up when compared to post-water week, representing a significant disparity of 23.1% (n=16) in fluid specific vocabulary usage between the two sexes in the 1-2-months after water week delivery. This could be due to the reaffirmation of the previous claim that there was an effective level of use of the drinking tracker chart, and hence provided children further opportunities to drink adequate amounts of fluid and talk about fluid intake with their peers by reminding them to use the chart and prompt fluid consumption. However, as both sexes were provided equal access to the drinking tracker chart and support, one would expect a comparable

rise of the girls also utilising the fluid specific vocabulary in the follow-up, not the reduction as figure 28b shows. Therefore, other external influences must have contributed to this differential.

One explanation could be that boys tend to spend more time being moderately or vigorously active during playtimes, compared to girls. Howells (2018) highlighted in her conference paper for the Journal of Physical Activity and Health, that boys spend 20% more time in moderate to high intensity levels of exercise when compared to girls. Consequently, as the follow-up data collection point was reported to be the warmest of all the data collection points (timeanddate, 2023a, 2023b) (appendix 23), this therefore could have resulted in greater levels of sweating by the boys during playtimes and lunchtime, due to possibly being more physically active in the summer term in warmer heat (Sawka et al., 2007). Consequently, this could have allowed the boys to utilise the learnt fluid specific vocabulary (hydration/avoid dehydration) in conversations with same-sex peers to a greater degree than the girls, following the delivery of the HEP in the timespan between the post-water week and the follow-up data collection points (figure 28b). Thereby, substantiating one rationale for why the boys retained and enhanced their fluid specific vocabulary development 1-2-months after the initial water week delivery, yet the girls regressed. This could be justified by the statistics presented within table 6, whereby the increased rates of boys stating their friends supported consumption post-water week (17.1%, n=13) (when compared to pre-water week) did not regress in the follow-up (17.1%, n=13); suggesting that boys continued their fluid support of their peers, in the timespan between post-water week and the follow-up. Whereas the girls reported a small reduction of peer support in the follow-up (15.2%, n=13) when compared to post-water week (21.2%, n=18). That said, the statistical significance of both sexes influencing peer fluid intake support was not statistically significant ($p>0.05$) (table 6) and was simply a deduction made by the

researcher using previous literature, however this does provide an avenue for future research. Therefore, a study pertaining to the enquiry of what impact a greater intensity level of exercise has on the natural consumption of fluids of boys and girls, could be useful to answer the question as to why the boys reported a greater level of fluid intake knowledge and understanding development retention, whereas the girls observed a small-negative impact in the medium-term. Which could consequently inform how the HEP could be additionally targeted to specific demographics, for even greater efficacy and impact gains of the implemented resources, whilst helping extend the children's knowledge and understanding of different settings, for example, the impact on fluid intake of exercise and movement during breaktimes and PE lessons.

4.19 - Did the Water Week Impact Who Supports Children's Consumption? – Introduction

This next section will explore if the HEP assisted with teachers' and parents' ability to support the children in the previously mentioned change of drinking habits and development of new knowledge and understanding.

4.19.1 - Did the Water Week Impact Teacher Support of Children's Consumption?

In relation to one objective of the thesis, it was important to consider whether the HEP was able to impact the level of support the children perceived they received following the delivery of the water week, as this is one indicator whether the resources have also developed teachers' fluid intake knowledge and understanding. As previously outlined, internationally and in the UK, only 11% of teachers self-admittedly actively encourage fluid consumption in the classroom (Coppinger and Howells, 2020), therefore the researcher needed to evaluate if the HEP could aid teachers in supporting children to drink fluids in the classroom. When the children were asked an open question to name as many people as possible whom they believed

told them when to drink pre-water week, figure 29a shows that 38.5% (n=62) of the children stated that their teacher supported their consumption of fluids. Although considerably higher than Howells and Coppinger's (2020) findings, figure 29a still shows that 50.9% (n=82) of the children knew who supported their consumption but neglected to mention their teacher as a fluid intake supporter pre-water week. This does not include the 10.6% (n=17) of children who replied, "don't know". This in turn means that over half of the children in study 3 believed their teacher did not assist their consumption in the classroom, or at best, was not an active supporter before the introduction of the water week, or did not know at all who supports them to drink. Furthermore, the percentage of children not believing that their teacher supports their consumption pre-water week is similar to the 49.7% (n=80) of children also reporting to be drinking under WHO (2004) guidelines as highlighted by figure 27a, implying that a possible correlation is feasible of a perception of recognised teacher support equating to a perception of drinking adequately at school. This will be explored below.

After comparing the post-water week replies with the pre-water week data collection point (figure 29a), the difference was statistically significant ($p < 0.05$). There was an increase of child perceived teacher support to 60.2% (n=97) of the children stating that their teacher tells them when to drink fluids at school post-water week. This is an increase of 21.7% (n=35) of children believing that their teacher helps them to drink fluids in the classroom where they did not previously believe this pre-water week. Furthermore, figure 29a shows that 34.2% (n=55) of the children actively did not mention their teacher as a drinking supporter, even though they reported other individuals, post-water week. This is lower than the pre-water week replies (50.9%, n=82), suggesting that the HEP was able to alter children's perceptions of whether their teacher supported their consumption at school. The percentage of children reporting that their teacher was a drinking supporter post-water week (60.2%, n=97), is comparable to the

percentage of children drinking to at least WHO (2004) guidelines post-water week (61.5%, n=99) (figure 27a). Suggesting that the HEP was effective in aiding teacher support, whereby this also supports the interpretation that awareness of adequate support in the classroom correlates with an awareness of adequate consumption, due to similar pre-water week data and comparable rise post-water week (figure 27a and figure 29a), as perhaps more children have been prompted to drink; thereby increasing the volume they consume. Supporting this claim is the work by Howells (2012), that for children to understand and action healthy habits, they must first know and be aware of what these habits are. Therefore, it is reasonable to deduce that the correlation of child perceived teacher support could be directly accountable for the improved rates of adequate consumption, due to an increased rate of children perceiving that teachers are supporting the formation of new drinking habits (figure 29a). Further, substantiating that the HEP was able to impact another of the previously outlined fluid intake efficacy and impact criteria (who supports the children to drink).

To explain the correlation between a perception of teacher support and drinking adequately, the researcher assessed if the HEP implementation developed knowledge and understanding of when the children were most thirsty and if their teacher allowed them to drink and supported them during the time they are most thirsty, because if children aren't allowed to drink at the time they are most thirsty this could impact a perception of teacher support and adequate consumption. Figure 31 highlights that, pre-water week, 53.4% (n=86) of the children believed they were most thirsty during or after periods of exercise (either in PE lessons or whilst participating in activities on the playground), which is a time they should be thirsty due to an increased possibility of fluid loss through sweating (Severs, 1979; Sawka et al., 2007). Whereby, 17.4% (n=28) could not name a time they are most thirsty at all. In laymen's terms, this means that over half the sample could recognise that they need to rehydrate during or after

exercise, however; just under a fifth of the children could not. Therefore, this implies that a sizeable proportion of study 3's sample would benefit from teacher support to rehydrate during or after periods of exercise at school. Hence, this supports the future delivery of the water week to counter this omission of understanding and help teachers to support children's fluid consumption in the classroom, which the data suggests the implementation of the version 3 HEP achieved (figure 29a).

Moreover, figure 32 demonstrates that, pre-water week, 76.4% (n=123) of the children believed they were allowed to drink at the time they were most thirsty. Consequently, suggesting that even though over half the children could recognise that the time they are/should be most thirsty is during/after exercise (figure 31), and three-quarters believing they were allowed to drink around the time they are most thirsty (figure 32), this presents a barrier to adequate fluid consumption for the remaining one-quarter of children, if no further action was implemented, due to an unawareness of being allowed to drink when they are most thirsty, or simply did not think they were allowed to drink at the time they were most thirsty; thus preventing rehydration, adequate consumption and formation of effective drinking habits.

The comparison of the whole sample pre-water week and post-water week data was statistically significant ($p < 0.05$), for being allowed to drink when the children are most thirsty. As demonstrated by figure 32, post-water week, 86.3% (n=138) of the children believed they were permitted to drink during the time in which they were most thirsty. This represents a near 10% increase over the pre-water week replies on whether the children could drink at the time in which they are most thirsty; suggesting that the delivery of the HEP, post-water week, could have developed the children's perception. Moreover, due to the 10% increase of reported adequate consumption (figure 27a), and 10% increase of knowledge development that drinking

adequate fluid is beneficial for health (figure 28a), this 10% improvement of new founded awareness of being allowed to drink at the time the children are most thirsty (figure 32), could justify as to how the HEP resources were effective in developing that fluid intake health knowledge development and habit change, as it was able to reduce a barrier to consumption. Subsequently, this level of fluid intake knowledge and understanding development meets the ambiguous fluid intake aims of the health education statutory guidance (DfE, 2019; 2021), therefore supporting a recommendation for future rollout of the HEP water week nationally.

As the data supports that the children believed teachers were more proactive in their fluid intake support following the water week delivery (figure 29a) and were allowed to drink at the time they were most thirsty (figure 32), this discussion will now address whether the children believed there were any barriers created by their teachers in relation to when they thought they weren't allowed to drink at school ($p>0.05$), and did not simply ask if they were allowed to drink at the time they were most thirsty. As figure 33 highlights, it was found that when post-water week/follow-up were compared with the pre-water week replies, there was a non-significant increase of awareness that lesson times were a period of the school day where the children believed they were not allowed to consume fluids. This could be conceived as contradictory to the previous paragraph's conclusions as to the observed HEPs efficacy and impact, and thus must be discussed. Pre-water week, it was reported that 37.9% ($n=61$) of the children believed lesson times as a period in the day that they could not drink fluids. Post-water week, there was a non-significant increase to 47.2% ($n=76$) ($p>0.05$) of children reporting the same; with a secondary non-significant rise of trend in the 1–2-month follow-up (54%, $n=87$) ($p>0.05$). Evidently, one of the core purposes of children going to school is to attend lessons in which they learn (DfE, 2019; 2021), and thus spend most of their school day in lessons. Hence, any perception of the children believing they are not allowed to drink during lesson

times, could therefore limit the number of opportunities to consume adequate fluids whilst at school. However, when considering a supplementary statistic as shown by figure 33, showing that there was also a downward non-significant trend (from pre-water week (16.1%, n=26) to post-water week (13.7%, n=22), to the follow-up (9.3%, n=15)) of children not knowing a time at all when they are not allowed to drink at school (i.e. replying “don’t know”). This thereby implies that although teachers could have been more active in their support of consumption in school (figure 29a), there has also possibly been a greater degree of children knowing where and when they are not allowed to consume fluids at school. Hence, possibly resulting in children drinking around the times they are permitted to drink to meet hydration requirements, as evidenced by data which shows the increased percentage of children drinking an adequate quantity of fluid post-water week (figure 27a). Thus, the theory of knowledge of healthy habits resulting in action of healthy habits (Howells, 2012), could relate to knowledge of permitted drinking times equating to drinking during those permitted times, and perhaps were already hydrated when lessons were happening as shown by when children were most thirsty and being allowed to drink at the time they are most thirsty (figure 31 and figure 32). This justifies why there was an uplift of children believing they could not drink during lesson time as they possibly didn’t need to. As such, by teachers delivering the HEP resources there has been an increased awareness of when the children who believed they could not drink (during lesson times); it has at least allowed the teachers to objectify their fluid intake support and made what support they do provide more implicit for children to comprehend more easily. Thereby, there is a strong case to be made that: (1) the advice in the HEPs teacher’s guide on how the teachers can support their pupils to consume fluids was effective, (2) the CPD provided by the researcher to the teachers before the commencement of the water week on how to deliver the resources was effective, (3) as well as the prescribed tuition within the WAVs (and encourage people to drink poster creation activity) when it discussed how everyone can support each other

to drink enough water, could be strongly accountable for the efficacy and impact in teacher support. Therefore, this provides evidence that the resources should remain in the HEP for future delivery.

That said, this does lend itself to the question as to what efficacy and impact the HEP could have had on fluid intake knowledge and understanding development, if teachers were to allow unlimited access to fluids during lesson time and all times in the school day. Which not only should increase adequate consumption in schools, but potentially also provide additive benefits of increasing overall happiness (Edmonds and Jeffes, 2009) and increase children's cognitive capacity to learn effectively (Edmonds and Burford, 2009), as outlined in the literature review. As such, one recommendation for future teaching practice must be to include the teacher support guidance that was supplied within the HEP, within statutory documentation (DfE, 2019; 2021). This will aid all teachers to lessen barriers to consumption as much as possible, and ideally 100% of the time. The guidance should include: allowing rehydration after breaktimes and lunchtime, teachers' drinking together with the children in the classroom to model effective drinking practices, remind pupils to drink when they arrive at school in the morning and allow the children to track their consumption. Another potential way to encourage this could be via delivering the water week (and the included pedagogical advice) to trainee teachers as part of initial teacher training pathways. Many experienced teachers have already reported that they are against a proactive approach to fluid consumption in the classroom due to a perception of causing a disruption to learning (Johnston Malloy et al., 2008), thus it could be difficult to alter established teachers' pedagogical approaches, which as figure 33 has demonstrated could have been the case in relation to the increase of qualified teachers not allowing fluid intake during lesson time as part of their HEP delivery. Thereby, the advice explored in the literature review by Speller et al., (2010) should be accepted by this thesis.

Which stated that upskilling trainee teachers in health education topics is useful, as this approach can equip pre-early career teachers with the tools to effectively teach children about healthy habits, rather than instil their pupils with potentially poor habits. Consequently, methods in which to distribute the HEP with initial teacher training providers should be explored in addition to the previously mentioned advice for qualified teachers in this section.

4.19.2 - Did School Year Group and Timing of the Water Week Delivery Impact Teacher Support of Children's Consumption?

The delivery of the HEP has aided in assisting teachers to support their pupils' consumption of fluid and has highlighted to children as to when they believe they are allowed and not allowed to consume fluids during school hours, which could have increased a perception of drinking adequately. However, as highlighted by figure 29b, the age of when these resources should be delivered to children has again been placed into question, as there was a difference in the level of reported teacher support according to school year group ($p < 0.05$). Pre-water week, 28.4% ($n=23$) of the children in school year group 1 reported that their teacher tells them when to consume fluids. This indicates a lower percentage of reported teacher support, pre-water week, compared to reception children (41.7%, $n=15$) and school year group 2 (54.5%, $n=24$), representing a greater level of perceived support from teachers by the youngest and oldest ages in study 3's sample cohort pre-water week delivery. As shown by figure 29b, post-water week ($p < 0.05$), the percentage of children in school year group 1 who stated that their teacher supported their consumption more than doubled post-water week (60.5%, $n=50$), when compared to their pre-water week replies (28.4%, $n=23$). Additionally, the children in school year group 2 (70.5%, $n=31$) also reported an improvement of teacher support to consume fluids, post-water week when compared to pre-water week. The children in reception also reported an improvement of teacher support post-water week (47.2%, $n=17$), however the rate of this

improved level of teacher support is considerably less than the improvement reported by school year groups 1 and 2.

This suggests that the impact of reported fluid intake support developed by the delivery of the water week is more apparent in the KS1 classes (school year group 1 and 2) than the EYFS (reception) cohort. Therefore, due to the significant rise in the two older classes' perception of teacher support, post-water week, when compared to their pre-water week beliefs, this does support the notion that the previously discussed resources in the HEP (teacher's guide, supporting activities, WAVs, drinking tracker chart, reward system) assisted teachers to aid more children in consuming adequate fluids at school. However, considering the limited impact of reported change of reception children's drinking habits (figure 27c) and development of fluid intake health knowledge (figure 28c), this again supports the conclusion that for any future delivery of the HEP, this should be timetabled within KS1 classes (year 1 and year 2), rather than in the EYFS, which the EYFS HEP requires further modification guidance from early years practitioners as previously outlined.

4.19.3 - Did the Water Week Impact Parents to Support Children's Consumption?

As the parent fluid fact sheet was the only resource within the HEP that involved parental guardians, it can thereby be concluded that any reported impact of child perceived fluid intake support from parents must have stemmed from that resource. As figure 30a highlights, pre-water week, 65.8% (n=106) of the children believed at least one parent (mother, father or legal guardian) told them when to drink fluids. As shown by figure 34, when compared to all other fluid influencers, this indicates that parents had the strongest perceived influence over the children's consumption of fluids; hence vindicating the need for the parent fact sheet to ensure that any misconceptions held by parents are corrected. When the pre-water week and post-

water week replies were compared ($p>0.05$), there was a 14.9% total rise (80.7%, $n=130$) in the number of children reporting that a parent supports their fluid consumption post-water week, however this was not significant (figure 30a). Additionally, in the 1-2-month follow-up ($p>0.05$), there was a small reduction of perceived parental support (78.2%, $n=126$). Indicating that, although not significant, 12.4% ($n=20$) of children believed they were receiving a noticeable difference of home support where they were not before the introduction of the water week and may have continued this support in the medium-term. Concluding that the parent fact sheet should remain in the HEP for future implementation due to possibly further impacting the development of knowledge and understanding of who supports the children to drink.

It is however important to explore why there was a non-significant rise in perceived whole-sample home fluid intake support post-water week. As shown by figure 30b, it highlights a statistically significant finding of perceived home fluid intake support separated by age by year ($p<0.05$). It shows that pre-water week, 41.2% ($n=7$) of 4-year-olds believed that a parent told them when to drink fluids. This is considerably lower than the oldest age group: 7-year-olds (76.7%, $n=23$), pre-water week. However, post-water week, 58.8% ($n=10$) of the 4-year-olds believed a parent told them when to consume fluids at home; this is a 17.6% ($n=3$) rise compared to pre-water week. This is opposed to the smaller, 6.6% ($n=2$) rise of parental support that was reported by the 7-year-olds' post-water week. It can be the case that the younger the child is, the more impressionable they can be when developing knowledge of the world (Beshel et al., 2022). Thus, because the 4-year-olds would have only been in their first year of formal schooling when the water week was delivered (as opposed to the third year for the 7-year-olds), their memory of learning at home in their pre-school years could be potentially more profound. Hence, possibly possessed a stronger association that home is also a place of learning. Perhaps resulting in the younger children recognising the change of parental support (from pre-water

week to post-water week) to a greater degree than their 7-year-old counterparts. This potentially explains the significant difference in percentage rise of perceived parental support, post-water week. That said, over three-quarters of 7-year-olds reported parental home fluid intake support pre-water week, further supporting the prior recommendation to withdraw/further modify the EYFS HEP because the poorer collective perception of EYFS home support pre-water week, appears to partially rectify itself in the intervening years from 4 to 7-years-of-age without any input of a HEP. Consequently, as the 7-year-olds still reported an increase of the parental support post-water week, and during the follow-up, when compared to pre-water week (figure 30b), the parent fact sheet should be included in the HEP for any future KS1 delivery. Moreover, in relation to next steps, due to the number of families who are EAL (English as an additional language) within the UK (ONS, 2020), if schools need to translate the written language of the parent fact sheet to ensure all parents can comprehend the information effectively, that is recommended to ensure inclusivity is observed.

4.20 - Did the Water Week Impact Children's Like for Drinking Water

As many primary schools in the UK do not allow any beverage other than plain water to be consumed in the classroom (Hunter et al., 2004), where in fact the only requirement for schools is to provide free access to plain still water (DfE, 2021), this therefore mandated the researcher to attempt to change any established dislike of drinking water (Van Belzen, Postma and Boesveldt, 2017). As this clearly is one barrier to drinking an adequate amount of fluid. As discussed in an earlier chapter (4.11), the use of a reward system (stickers, sticker chart and hydration driving licences) was intended to encourage an alteration of any established dislike of drinking water. As shown by figure 35a, pre-water week, 88.8% (n=143) of the children stated that they liked drinking water, with 9.3% (n=15) stating they do not like drinking water, and a small percentage (1.9%, n=3) of children stating they “sometimes” like drinking water.

This therefore suggests that approximately 10% of all the children were already at a disadvantage of developing fluid intake habit change to enable action of drinking adequate fluids, due to a pre-established dislike/intermittent like of drinking water (Van Belzen, Postma and Boesveldt, 2017). When the researcher compared the pre-water week and post-water week data collection points ($p>0.05$), there was a slight non-significant improvement of children stating they liked drinking water (91.9%, $n=148$), with a smaller percentage of children stating they do not like drinking water (5%, $n=8$) (figure 35a). Therefore, possibly providing evidence that the HEP was able to alter established perceptions of physically drinking water; thus, potentially reducing an important barrier to consuming an adequate amount, which could be due to the reward system incentivising adequate consumption as the children were required to drink adequately to attain the rewards; possibly enabling the children realise they like drinking water in the process. More interestingly, figure 35a also demonstrates that when the post-water week and 1-2-month follow-up were compared, this did produce a statistically significant result ($p<0.05$). In the follow-up, 96.3% ($n=155$) of the children stated that they liked drinking water, with only 3.7% ($n=6$) still stating that they do not like drinking water. It is possible that this change to liking water was caused by the reward system rather than an actual shift of no longer disliking plain fluid (Horne et al., 2004). Although, if this was the case, there would have been a return to pre-water week levels in the 1-2 month follow-up because the stickers were no longer supplied to the children after the initial delivery of the water week, not the rise of a reported like for water, which figure 35a shows. As such, there could be another catalyst for why more children reported to like water in the follow-up when compared to post-water week.

As supported by Sichieri et al., (2009), they found that a visual resource in the classroom helped contribute to the children's increased water intake. Moreover, Pyszczynski, Greenberg and Solomon (1997), previously supported that incorporating competition is useful for encouraging

the action of healthy habits. Thus, due to the adaptations of classroom surroundings caused by the drinking tracker chart, which likely supported increased adequate consumption (figure 27a), this could have been the rationale for why there was a continuation of children liking to drink water in the 1-2 months after delivery, as they were possibly participating in informal competitions with each other, which teacher 3 suggested within study 1 could happen when the researcher initially modified the resources. Consequently, it is possible the children initially enjoyed the rewards provided by the teachers during the implementation of the HEP, to firstly support the children to form a positive opinion of drinking water. Whereby, the like of fluid developed during the water week was subsequently scaffolded by the continued use of the drinking tracker chart, between post-water week and the follow-up, as they potentially enjoyed the tracking/competitive element of that resources, even though they no longer received rewards for adequate consumption; hence providing one rationale for why there was an increased opinion of liking/disliking water in the follow-up. As such, since the researcher was not aware of any dedicated fluid intake teaching in the intervening months between the post-water week and the follow-up data collection points, other than the teachers encouraging use of the drinking tracker chart in the months post-water week. This supports that the reward system and drinking tracker chart initially impacted the established dislike of drinking water, post-water week, whereby the continued use of the drinking tracker chart consolidated and improved the children's report of liking water in the follow-up. Hence, these resources should be included in any future delivery of the water week as this provides evidence of impacting knowledge and understanding of what children need to drink and actioning healthy habits.

Furthermore, the statically significant ($p < 0.05$) difference when the data set was separated by the timing of the water week delivery needs to be accounted for. As shown by figure 35b, pre-water week, there was a near identical perception for liking to drink water between the late

April/early May (88.9%, n=104) and early June (88.6%, n=39) delivery groups. Suggesting that the difference in delivery timings was not originally a factor due to a near identical level of opinion of drinking water before the introduction of the water week resources. Post-water week ($p<0.05$), the early June delivery group replied with a unanimous (100%, n=44) rate of liking to drink water, yet the late April/early May delivery group reported nil-effect (88.9%, n=104) (figure 35b). Therefore, implying that the timing of the water week was an important factor as to the question of how impactful the HEP resources were in relation to altering a dislike of drinking water, and thereby support adequate consumption (Van Belzen, Postma and Boesveldt, 2017). As such, because external temperatures previously did not impact the development of health knowledge and understanding (figure 28c) and impact the pre-water week report of liking to drink water (figure 35b) (as early June was warmer than late April/early May) (appendix 23), this supports that temperature likely did not significantly impact development of knowledge and understanding of fluid intake. Therefore, because the main difference between the two delivery groups was whether they taught the full HEP over 5-days (early June) or 4-days (late April/early May), the researcher can reaffirm the recommendation made previously that the HEP should be taught over the 5-days as designed, in the month of June. This is also at the beginning of the final school term in the United Kingdom's academic year, therefore avoiding the May SATs which school year group 2 undertake annually (Standards and Testing Agency, 2021), whereby this is also when the Healthy Schools Week (British Nutrition Foundation, 2023) is timetabled in the UK. There is already a "stay hydrated" recommendation within their week-long programme, however, other than informational posters, it does not appear to explicitly teach children how, when and why the process of being hydrated needs to be actioned for the benefit of their health and wellbeing. Hence, a discussion should be held with the administrators of this initiative, on how the HEP could be included within Healthy Schools Week, or act as a supplementary aspect to it. Alternatively, another

high-profile nutrition/health education resources distributor would be sufficient to meet the same goal.

4.21 - Did the Water Week Impact Children's Acknowledgement to Action their Thirst Response Before Play?

To strengthen the assessment of efficacy and impact of the HEP, the researcher asked the children for their opinion of whether they would consume fluids before play if they wanted a drink or play without hydration. It was previously found that a third of children aged 4–5-year-olds would ignore the signs of thirst and play without the uptake of fluids (Williamson and Howells, 2019). Hence, due to that paper also being an ancestor of this thesis, it was important to ascertain whether the HEP was able to develop knowledge in a previously established deficiency in fluid intake knowledge and understanding.

Pre-water week, figure 36a shows that 85.7% (n=138) of the children would drink before play if they believed they required additional fluids. Resulting in 14.3% (n=23) of children electing to hypothetically ignore signs of thirst for the reward of more time playing pre-water week. Figure 36a demonstrates a statistically significant difference when post-water week was compared to the pre-water week replies ($p < 0.05$), as 92.5% (n=149) of the children would hypothetically drink before play if they were thirsty, post-water week. Resulting in 11 children (6.8%) reporting a change in their drinking habits, which suggests that children could have developed knowledge and understanding, post-water week, that drinking is important, and the maintenance of hydration should be actioned. Therefore, through the delivery of the HEP, the children have learnt that taking 30-60 seconds to rehydrate before play is beneficial for their health, which is a further rationale for why there was a difference in adequate consumption (figure 27a) and development of fluid intake health awareness (figure 28a), as more children

have hypothetically reported to allow themselves more time to drink adequate levels of fluids. Further supporting that the children have learnt why and when they need to drink.

To justify the significance of the water week, on children learning the importance of why/when to drink and maintain hydration, figure 36b shows a statistical significance in relation to school year group ($p < 0.05$). Pre-water week, 69.4% ($n=25$) of the reception children would drink before play if they were thirsty, which was lower than the children in school year group 1 (88.9%, $n=72$) and school year group 2 (93.2%, $n=41$) who would drink and then play. Meaning that nearly one-third of the children in reception (30.6%, $n=11$) would not acknowledge their thirst response, prior to play, before the introduction of the HEP. This concurs with Williamson and Howells' (2019) research; hence, boosting the reliability of the pre-water week data in this thesis. Figure 36b continues to demonstrate that post-water week, the statistical significance between school year group variables were no longer present ($p > 0.05$). Post-water week, 91.7% ($n=33$) of the reception children would choose to drink first and then play if they were thirsty. Additionally, there was also a slight increase of children reporting to drink first and then play in school year group 1 (91.4%, $n=76$) and school year group 2 (95.5%, $n=42$). Suggesting that due to the short time span between the pre-water week and post-water week data collection points, there is strong evidence that the HEP was able to teach children to know when to drink and maintain hydration.

That said, due to the increase of hypothetical opinion observed by all year groups post-water week, and nearly 9 in 10 of the children in school year groups 1 and 2 (KS1) reporting to hypothetically actioning a thirst response, pre-water week. This implies that for some reason the belief of reception children playing and not drinking before play if they were thirsty, is somehow naturally improved during the few months between reception and school year group

1. Bolstering the claim that the HEP is likely not required for an EYFS audience because it appears that once the children have reached KS1 age, the apparent deficiency of understanding to drink before play displayed by EYFS children (figure 36b), no longer needs significant intervention by the HEP. Further supporting that the researcher should seek further advice on how to modify the EYFS HEP to make the resources more effective for the younger audience. That said, the resources in the HEP still returned an improvement of hypothetically actioning a thirst response for the KS1 classes, therefore, this provides further evidence that the previous recommendation of withdrawing/further modifying EYFS HEP is required for the future teaching of the water week resources.

4.22 - What Knowledge and Understanding did the Children Retain 1-2 Months Following the Initial Water Week Delivery?

As previously discussed, to help inform what level of efficacy and impact the HEP held, it was important to examine what level of developed knowledge and understanding of fluid intake was retained in the 1-2-months after delivery, in the follow-up. The resources in the HEP likely have held efficacy and impact to develop awareness for more children to understand how much they need to drink to meet WHO guidelines (2004) post-water week (figure 27a). Whereby, it was discussed earlier (4.17) that there was a further reported increase of adequate consumption perception in the 1-2-month follow-up (figure 27a), probably due to continual use of the drinking tracker chart.

Moreover, in the 1-or-2-month follow-up ($p < 0.05$), 93.1% ($n = 150$) of the children stated they drink water due to health and/or knew this was one reason as to why they should drink fluids (figure 28a). The percentage increase of children articulating their health rationale response by utilising hydration or dehydration vocabulary, increased by 17.4% (when compared to pre-water week) to 39.1% ($n = 63$) in the follow-up. As such, due to no known dedicated fluid intake

tuition taught after the water week (other than the drinking tracker chart), one rationale for this could be the reported continuation of teacher support (figure 29a) or parental support (figure 30a) in the period between the post-water week and follow-up data collection points. This is justified by the belief that for one to learn new vocabulary, children must first hear and understand how to use it (Joshi, 2005). Therefore, for the small percentage rise of children using fluid intake vocabulary in the follow-up when compared to the post-water week data collection point, this implies that they must have heard those new words from either their teacher, parent or another fluid intake influencer in the timespan between the post-water week and follow-up data collection points. As such, this reaffirms the conclusions that the WAVs and water song were able to initially teach the children fluid health knowledge and vocabulary, whereby the teachers have consolidated this learning through the continual support in the medium-term, and parents have implemented suggestions from the fluid fact sheet. Justifying the efficacy and impact to deliver the water week those resources in the future.

4.22.1 - What Teacher Support Awareness did the Children Retain 1-2 Months Following the Initial Water Week Delivery?

Due to the increase of perceived adequate consumption in the 1-2 months follow-up (when compared to the post-water week data) (figure 27a), and fluid intake health awareness (figure 28a), this supports that other factors may have influenced this increase in knowledge, understanding and habit change. One of these factors could be the level of reported teacher support, as in the follow-up, 52.2% (n=84) of the children believed their teacher supported their consumption (figure 29a). When compared to post-water week data (60.2%, n=97), this demonstrated 8% (n=13) less children who reported that their teacher supported their drinking in the follow-up, which is still an increase of 13.7% (n=22) when compared to the pre-water week levels of teacher support (38.5%, n=62). Thereby, following the delivery of the resources in the HEP, the teachers have likely realised their efficacy and impact to actively support

children's consumption whilst at school (post-water week), and allowed them to continue the pedagogic changes in the medium-term (follow-up). Thus, justifying one of the reasons as to why the HEP was needed in the first place.

Moreover, after delivery of the HEP, there was an increase of the children reporting to not being allowed to drink during lesson time in the follow-up (54%, n=87) (figure 33), this could be interpreted as a possible barrier to the children's consumption. However, after the delivery of the HEP, less children were entirely unaware of forbidden drinking times. Therefore, this supports that the HEP has efficacy to impact children's knowledge and understanding to consume fluid around the times they are permitted to drink, as justified by the increase of adequate consumption perception (figure 27a).

4.22.2 – Did the Children Retain a Like for Drinking Water and Awareness to drink Autonomously in the 1-2 Months Following the Initial Water Week Delivery?

Finally, to encourage the autonomous uptake of fluids for lifelong action, and thereby meet one of the core ambiguous aims of the health education statutory guidance and EYFS (DfE, 2019; 2021), this section will assess the HEPs efficacy and impact to help retain the children's like of drinking water, which can impact adequate fluid consumption (Van Belzen, Postma and Boesveldt, 2017). More of the children stated that they liked drinking water in the follow-up (96.3%, n=155), when compared to post-water week (91.9%, n=148) (figure 35a). Therefore, as more of the children have stated they like drinking water, this thereby could have reduced one barrier to autonomously consuming fluids if they were thirsty (Van Belzen, Postma and Boesveldt, 2017). Figure 36a demonstrates, that 90.1% (n=145) of the children reported they would drink before play if they were thirsty in the follow-up. With 9.9% (n=16) stating they would play first to get more time playing and not drink. This represents a slight reduction of

reply when compared to the post-water week data (92.5%, n=149). However, this is still higher than the children's replies compared to pre-water week (85.7%, n=138). As such, implying that one cause for the uplifted report of adequate consumption volumes was the resources themselves and development of knowledge that it is important to stay hydrated and to avoid dehydration. Therefore, suggesting that the water week was able to not only alter opinions of liking to drink water, but also enable recognition that it is important to drink regularly and prioritise their consumption over and above participating in activities that may be preferable. Supporting that the future delivery of the HEP is advised due to this retention.

Consequently, as the data supports there was a development of: a perception of adequate fluid consumed (figure 27a); fluid health understanding and fluid specific vocabulary (figure 28a); teacher support (figure 29a); parental support (figure 30a); awareness of non-permitted drinking times (figure 33); a like for drinking water (figure 35a); and actioning a thirst response before play (figure 36a), these all contributed to the justification of the HEPs efficacy and impact to develop knowledge and understanding of fluid intake. Thereby, the HEP has shown that it holds efficacy to impact knowledge and understanding of how much the children need to drink, why they need to drink, when they need to drink, what they need to drink, who supports them to drink and a greater awareness of healthier fluid intake habits. Therefore, due to the developed knowledge and understanding, this ultimately meets the ambiguous fluid intake aims of the health education statutory guidance and EYFS (DfE, 2019; 2021). Consequently, the future delivery of the version 3 KS1 water week HEP, in June, is advised. Whereby, further consultation should be addressed by the researcher as to how the EYFS HEP can be further modified to make it effective. This will be summarised below.

4.23 - Implications for Future Teaching Practice and Educational Policy

As subscribed by the APPG on a Fit and Healthy Childhood (Howells, 2020), they recommended that the teaching and learning efficacy of an educational pack of hydration resources should be trialled, and the results disseminated to ascertain whether this can develop knowledge and understanding of fluid intake. Even though figure 27a shows that the delivery of the water week has possibly supported perceived consumption levels and increased the number of children drinking to adequate levels where they likely weren't previously. It appears that there needs to be a reaffirmed emphasis of asking teachers to allow lesson time consumption. This could increase the HEPs efficacy and impact on children's adequate consumption even further than what figure 27a indicated. This will maximise opportunities for children to drink, not just increase awareness of children drinking around permitted drinking times, which figure 33 suggests occurred. Thereby, this thesis will recommend that teachers should allow a greater level of opportunity to consume fluid in lesson time, ideally all the time. The researcher accepts that teachers facilitating unlimited access to water during lesson time is sometimes impractical (Johnston Malloy et al., 2008), and hence may not be easy for all teachers to implement; however if additional guidance was included within statutory documentation (DfE, 2019; 2021), this could help teachers know when and where to support children's fluid intake. This recommendation can be actioned by: the active encouragement of fluid consumption after playtimes and lunchtimes due to the increased possibility of fluid loss (Sawka et al., 2007), by teachers drinking themselves in-front of their children to support consumption through non-verbal modelling (Howells and Coppinger, 2020), and through the continued use of the drinking tracker chart and stickers/sticker chart to help with lesson time consumption and aid in the formation of healthy drinking habits.

In relation to the future delivery of the water week, it was previously recommended, that due to the significant difference in reported consumption and fluid intake knowledge accumulated between school group 2 (Key Stage 1) and reception (EYFS) (on how much fluid the children think they drink, fluid health understanding and teacher support), that KS1 children would academically benefit more from the future delivery of the HEP and should be the target age phase for the future delivery of the HEP. That said, the researcher should further consult early years practitioners on how to further modify the EYFS HEP to make it effective. A viable time in the school year to deliver the KS1 HEP resources is in early June, as this will remove timetable pressures for teachers due to avoiding the year 2 SATs which are held in May (Standards and Testing Agency, 2021), whilst avoiding the early May bank holiday, and subsequently enable the HEP to be delivered over 5-days, as designed. This also coincides with healthy schools' week (British Nutrition Foundation, 2023). Therefore, conversations should be held with the administrators of the initiative to assess whether resources in the HEP can form part of this (to substantiate the initiative's hydration guidance), or whether the water week should be delivered as its own entity, on an independent basis. This subsequently could also be one avenue of how to distribute the hydration resources nationally. Ultimately, the researcher should also seek advice from the APPG on a Fit and Healthy Childhood on how to rollout the HEP nationally, as the HEP holds efficacy and impact to develop knowledge and understanding of fluid intake. In the time since data analysis concluded, the All-Party Parliamentary Group has changed names to the Cross-Party Group on a Fit and Healthy Childhood (CPG), therefore the researcher will correspond with this newly titled group. As well as the newly appointed Minister for Children's Families and Wellbeing of the UK.

Finally, upskilling trainee teaching students on how to deliver health education could be useful to develop children's awareness of healthy behaviours (Speller et al., 2010). This could be

actioned by ITT institutions providing tuition to student teachers on supporting effective drinking practices in the classroom, and how to use the HEP resources. Therefore, the researcher should offer his expertise in the field of fluid intake to deliver a fluid intake focused seminar(s) to ITT students in UK universities and other ITT providers; whereby he will initially offer this to Canterbury Christ Church University, due to the researcher's association with that higher education institution.

In summary, the recommendations for future policy and teaching practice are:

1. Teachers need more dedicated guidance on fluid intake support within statutory documentation is recommended.
 - a. To support this, teachers need to continue the suggestions endorsed within the teacher's guide. This includes: the active encouragement of fluid consumption after playtimes and lunchtimes, and teachers need to drink in-front of their pupils to support consumption through non-verbal modelling, remind children to drink as they arrive at school in the morning and continue to encourage consumption tracking and rewarding adequate consumption.
 - b. Moreover, the advice from Speller et al., (2010) should be explored as to the feasibility of distributing the HEP within initial teacher education settings to assist trainee teachers, and other trainee education providers, in forming proactive fluid intake support techniques at the start of their teaching careers.
2. That the future delivery and rollout of the all the resources in the version 3 KS1 HEP is advised. Although this should be delivered to KS1 children in early June. This will avoid the early May bank holiday and the year 2 SATs tests, which will encourage schools to deliver the water week over 5-days, due to less timetable pressures. Also, this potentially can be coincided with healthy schools' week in June, or independently with another health education resource distributor. Moreover, the researcher should seek further guidance on how to further modify the EYFS HEP to enable the hydration resources to also be delivered to EYFS children.

4.24 – Implementation ii and Assessment of Efficacy and Impact ii - Limitations and Implications for Future Research

The Economic and Social Research Council (2015) suggest that it is imperative for a researcher to acknowledge any limitations that arose during the process of collecting data, so that any future research in the area can circumnavigate the previously unforeseen issues. Whilst collecting and analysing data in study 3 there were two limitations that materialised. This section will firstly outline what those limitations were, how they were, or could be, overcome and finally what recommendations for future research in the area should be.

1. Bank holidays and teacher strikes in early May caused an issue with teaching the water week over 5 days.
2. Children's estimation of fluid intake can be inaccurate and hence could be viewed as unreliable.

Limitation 1 relates to issues with teaching the water week over 5 days. Due to bank holidays and teacher strikes in late April / early May 2023, this necessitated reception and school year group 1 to deliver the full water week over 4 days, which was originally designed to be taught over 5 five days. Whereby, the limitation was two-fold. The first being that school year group 2 were taught the HEP over the 5 days, as originally designed, and thereby had an extra day of accessing the resources compared to the younger ages. The second issue potentially caused disruptions to the continuity of how the water week was delivered and what information was received. That said, the amount of content that all three-year-groups received did not differ, as the fifth day was primarily intended to function as a re-capping session, with no new content planned. The issues surrounding the bank holidays could be pre-planned as these dates were known in advance, hence the 4-day delivery cycle for the two younger ages was agreed. However, the problems the teacher strikes imposed were impossible to plan for, as the organisers of strikes legally must provide 14 days' notice to schools with their intention of

striking (Department for Business, 2017), whereby teachers individually must only provide 24 hours' notice to their headteacher with their individual intention of striking. This thereby resulted in a lack of control of how the water week was delivered in reception and school year group 1, as opposed to school year group 2, because in both cases the teachers delivered the summary quiz, which was planned on the 5th day, at the end of the 4th day. That said, schools are inherently chaotic places (Radford, 2006), and hence some level of differing water week delivery between the year groups can be tolerated due to this. However, this may also add further explanation as to why there was a more significant difference in what knowledge school year group 2 developed (who were delivered the full HEP as intended over five days in early June) as opposed to reception and school year group 1 (who were delivered the full HEP over four days in late April/early May). That said, as the researcher needed to collect 3 data collection points from 3-year groups, there was little choice other than to conduct an element of the research during a time in which there were possible disruptions to the continuity of the water week as there was only one data collector. However, this strengthens the argument that for the benefit of future delivery, the water week should be delivered in June and as prepared by the researcher; over 5-days. This not only will avoid the sole bank holiday that is traditionally situated during term-time in the UK (in early May) and avoids SATs, but as previously mentioned, due to the significant difference of reported development of fluid intake knowledge the early June delivery group presented, is academically the more advantageous time as well.

Finally, in relation to limitation 2, it was previously outlined by Coppinger and Howells (2019) that children can over or underestimate the quantity of fluid they believe they consume on a regular basis. This was previously reported by Kollé et al., (2009) in their research pertaining to children's self-estimation of their own physical activity levels. Therefore, resulting in a

possible limitation of the children hyper-inflating or deflating their estimation(s) of perceived fluid consumption. Whereby, Williamson and Howells (2019) later suggested that for a researcher to observe actual levels of classroom consumption could be a beneficial thing to conduct due to the greater level of assured accuracy that is coupled with that mode of data collection. However, as this study only had one researcher with a limited amount of time and was not solely intended to update prior findings, the previously used self-estimation of consumption method was used. Those previous papers (Coppinger and Howells, 2019; Williamson and Howells, 2019; 2021) were peer reviewed and hence was then sufficient to gauge children's current knowledge and understanding of fluid intake, and hence as this thesis utilised a near identical questionnaire to gauge fluid intake awareness to assess the HEPs teaching and learning efficacy and impact, this mode of data collection should also be adequate in this instance. As such, although perhaps estimation of fluid intake is not the most accurate method of measuring fluid intake consumption levels and is a limitation in that regard. Due to limited resources at the researcher's disposal and circumstances beyond realistic control, children's estimation of their fluid intake should be deemed as sufficient, it also allowed for the children's voice to be listened to within the study. That said, if a future study were to materialise and had the intention of updating the findings of this thesis and were to possess more time; human resources and financial resources to collect observation fluid consumption data, then physical observation of actual consumption levels (in addition to listening to the children's views) would be a worthwhile data collection method to assess children's fluid consumption levels.

In addition to these limitations and resulting recommendations for future research, below is a synopsis of this and the previously mentioned action points for further study.

- A future study with a greater level of human and financial resources available to it could be benefited from physically observing children's actual consumption of fluids as

opposed to relying on the children's perceived estimation, although this method utilised in the study was also previously used in published studies in the area.

- A study pertaining to the enquiry of what impact a greater intensity level of exercise has on the natural consumption of fluids of school children to help extend the children's knowledge and understanding of different settings, e.g. the impact of exercise and movement during breaktimes and PE lessons.

To aid future researchers in this area, specifically PhD students, the author has outlined below the key learning that he developed through conducting the research process of creating, modifying, implementing and assessing the HEP, and what logistical tips could be useful for future researchers working within this space.

1. Patience and perseverance.

A significant level of patience and perseverance was required during the HEP development stages and specifically, recruitment of participants. One example of this was during recruitment of the study 1 teachers, whereby 10 teachers were contacted, in which 3 teachers replied and accepted the invitation, 3 teachers replied and declined, and 4 teachers did not reply at all. As such, the researcher needed to be patient for replies to his email(s), persistent; by sending follow-up emails as teachers are usually busy professionals, and persevere; by not giving up on participant recruitment too easily. As such, by persevering and being patient, this resulted in the ability to collect initial modification data (step 2, figure 1), and facilitate the initial round of HEP implementation and assessment (steps 3-4, figure 1) with 2 of the previously recruited teachers. Moreover, through establishing a contact through the study 1 recruitment, the researcher was able to recruit additional teachers in study 3 who previously declined to participate in study 1. Therefore, the first tip for any future researcher in this area is to be patient, do not give up easily, and maintain communication with the participants as declining

once doesn't mean they will always refuse participation for subsequent studies. After all, Rome was not built in a day!

2. Resilience during data collection.

This second and final piece of key learning somewhat matches up with the first point, however this directly relates to the physical data collection of data. In addition to the 5 face-to-face teacher interviews in study 1 and 2, which all needed to be transcribed and analysed, the researcher conducted 634 individual face-to-face questionnaires with the children in study 2 and 3, during both study's pre-water week, post-water week and follow-up timepoints. As such, because the researcher essentially needed to repeat himself over 600 times, a strong level of resilience was required to maintain motivation and enthusiasm during data collection to ensure that the data he collected was of high quality to inform research outcomes. Therefore, for any future researcher working in this space, resilience during data collection is essential.

Thesis Conclusion

This thesis has provided evidence on how a hydration education pack (HEP) can be created, modified, and implemented in schools, and assessed for educational efficacy and impact. The HEP was created to develop and enhance children's and teachers' knowledge and understanding of fluid intake, help teachers to support children in their development of this knowledge, and aid children to form healthy fluid consumption habits, to meet ambiguous statutory aims in relation to fluid intake (DfE, 2019; 2021), whereby dedicated teacher support guidance is recommended to be supplied within the statutory documentation.

This original research has contributed to wider academic knowledge as it has answered the two overarching research questions, which were:

1. How can a hydration education pack (HEP) be created and logistically implemented in schools?
2. What level of educational efficacy does the created HEP hold to impact knowledge and understanding of fluid intake?

In answering research question 1. To create a HEP for implementation in schools, the researcher produced a 7-step HEP development process (figure 1) (adapted from Coyle et al., (2014)), that was facilitated through a three-study sequential study design (Creswell and Creswell, 2018). The version 1 HEP was initially created (step 1: creation, figure 1), following the findings of the literature review. The development of the resources were underpinned with Kolb's (1984) learning theory. Multiple learning styles (visual, audible, and kinaesthetic) were accommodated for all children to learn effectively, which enabled the children to develop their fluid intake knowledge and understanding through the 4-stage learning process (Kolb, 1984). The HEP resources introduced the core concepts related to fluid intake (concrete learning),

explained why it was useful to know (reflective observation), explored how the children could theoretically implement the knowledge and understanding developed (abstract conceptualisation), and offer opportunities for children to practically implement what they had learnt to form healthy drinking habits (active experimentation). Whereby, the researcher drew on the literature analysis to establish what resources needed to be created and what pedagogic strategies needed to be suggested to ensure they were age appropriate to meet young children's learning needs. This enabled the children to know and understand the various concepts of fluid intake, whereby, the HEP provided a variety of resources and pedagogical strategies that teachers could implement with the young children, to support them to know how much to drink, why they need to drink, when they need to drink, what they need to drink, who supports children to drink, as well as alter fluid consumption habits.

The version 1 HEP firstly introduced a whiteboard animation video series (WAVs) and a water song (Wheeler and Mama G, 2021), this was intended to spark the children's initial interest (via singing and moving to the lyrics, the water wizard and through visual and auditory stimulus). This was useful as WAVs can increase the amount of information learnt (Wiseman, 2012) and were useful to capture children's attention (Bartan, 2020). The WAVs provided a useful teaching and learning opportunity to facilitate the development of the children's fundamental knowledge to help them understand core concepts of fluid intake. Moreover, because the teachers could pause and play the WAVs, this allowed them the opportunity to question the children and prompt responses to assess their understanding (Aziza and Syafei, 2018) of the core fluid intake concepts shown in the videos. The videos were supported by supplementary learning activities. Kaufman-Shriqui et al., (2016), previously used activities to support their health education intervention, therefore the researcher included fluid intake specific activities such as: bling your bottle (inspired by the Bikeability Trust, 2021), a

dehydration activity (inspired by BBC Bitesize, 2022), an ‘encourage people to drink’ poster creation activity and healthy drinks sorting activity (inspired by Sichieri et al., 2009). These activities were used by the teachers to consolidate children’s learning of why fluid intake is essential for health, extend fluid intake vocabulary, how dehydration occurs, the signs of dehydration to know when to drink, visualise the volume of water they need to drink a day, what fluids are healthy to be consumed regularly and how they can support each other’s fluid consumption.

Moreover, the teachers were provided access to introduce a reward system (Cooke et al., 2011) and a drinking tracker chart (Coppinger and Howells, 2020). The drinking tracker chart and rewards system were useful as these aided teachers to support children to adequately consume fluids at school (a minimum of one bottle a day), as they could visually see (on the drinking tracker chart) who had and who had not consumed enough each day (to thereby prompt under-consumers) and provide a sticker for adequate consumers of fluid. Moreover, the teacher’s guide in the HEP offered teachers advice on how to logistically implement the HEP and apply the pedagogical guidance on how to support fluid intake at school. For example, teachers’ were recommended to drink in front of the children and encourage drinking after playtimes and lunchtimes. Finally, it was suggested that the mode to logistically implement the HEP should be via a water week. The DfE (2010) found that there was a greater level of adherence across UK schools who were more committed to delivering health education interventions in a week-long implementation, as more schools voluntarily selected a shorter delivery period (as opposed to one-day-a-week), therefore a water week was more logistically beneficial for HEP delivery.

Following the creation of the version 1 HEP, as part of the study 1 teacher interviews, expert teaching professionals provided ideas to initially modify the version 1 HEP to create the version 2 HEP (step 2: modification i, figure 1). One core study 1 finding confirmed the literature review's conclusions that the HEP should be implemented through a water week, whereby each lesson should start with a whiteboard animation video and scaffolded with learning activities, the drinking tracker chart and a reward system. New resources in the version 2 HEP included: a water tray dehydration activity to support children to know why and when to drink; a sticker chart in which to place the water bottle sticker, a hydration driving licence to celebrate the children successfully reaching the end of the water week (which the study 1 teachers believed would give an additional purpose to accumulate the stickers); and a fluid fact sheet was included to aid parents' support at home. The fluid fact sheet was intended to help parents also develop knowledge and understanding about the importance of fluid intake, and how they can support their children's fluid consumption at home to facilitate an additional level of support, to further embed children's knowledge and understanding of fluid intake (Franks et al., 2017).

The version 2 HEP was then implemented via the water week (step 3: implementation i, figure 1) and trialled in study 2 to assess each resource's initial efficacy and impact (through pre-water week/post-water week/follow-up assessments with the children) (step 4: assessment of efficacy and impact i, figure 1). Additionally, following delivery, the teachers evaluated the resources from a pedagogic viewpoint, which enabled the researcher to further modify the version 2 HEP, to create the version 3 HEP (step 5: modification ii, figure 1). The core study 2 findings were that the version 3 HEP should be separated into two packs: a EYFS HEP (4-5-year-olds) and a KS1 HEP (5-7-year-olds), to ensure all resources were age appropriate to most effectively develop knowledge and understanding of fluid intake for both age phases. Whereby, the bling your bottle and supporting friends to drink poster creation activities were removed in

the 4-5-year-olds' version 3 HEP, as those activities were more suited to the older age phase. Through steps 1-5 (figure 1) in the HEP development process, this has not only answered how a HEP can be created and logistically implemented in schools, but through adaptation of the process, this can help inform development of any package of educational resources. The finalised version 3 resources were:

- **The whiteboard animation video series and water song (WAVs).**
 - *To develop the core learning of the 5 fluid intake topics.*
- **The water tray dehydration activity.**
 - *To consolidate learning of why the children, need to drink and learn the signs of dehydration.*
- **The bling your bottle activity (KS1/5-7-year-olds only).**
 - *To consolidate learning of how much the children need to drink.*
- **The extremely thirsty cricketer story book drama activity.**
 - *To further consolidate learning of why the children, need to drink, when children need to drink and learn the signs of dehydration.*
- **The encourage people to drink poster creation activity (KS1/5-7-year-olds only).**
 - *To help children to learn who supports their fluid consumption.*
- **The healthy drinks sorting activity.**
 - *To help children learn what types of fluid they need to drink.*
- **The reward system.**
 - *To incentivise children to drink adequately and scaffold the action of healthy drinking habits through the teachers providing stickers to place onto a sticker chart, which enabled the children to attain a hydration driving licence at the end of the water week.*
- **The drinking tracker chart.**
 - *To allow the children to further visualise how much they need to drink, aid in the action of healthy drink habits and help teachers to support children's fluid consumption.*
- **The parents fluid fact sheet.**
 - *To help parents to know and understand about the importance of adequate fluid consumption and aid in their support of children's fluid consumption at home.*

- **The teacher's guide.**
 - *To provide the teachers with pedagogic guidance to effectively support children's fluid intake. This was also used to provide an overview of how to logistically implement the HEP.*

In answering research question 2, the finalised version 3 HEP was implemented as part of study 3 (step 6: implementation ii, figure 1), and assessed (step 7: assessment of efficacy and impact ii, figure 1) to establish what level of efficacy the HEP had to impact knowledge and understanding of fluid intake with a larger sample of EYFS children (4-5-year-olds) and KS1 children (5-7-year-olds),

The headline finding of study 3, supported that the version 3 HEP held a greater level of efficacy and impact, amongst KS1 children and this supports the future delivery of the KS1 HEP in schools, to fill the ambiguous health education statutory guidance areas in relation to fluid intake (DfE, 2019). That said, future insight should be collected to ascertain how the EYFS HEP could be further modified to make it effective. This finding was supported by:

Firstly, there was a 11.2% increase of children reporting to be drinking an adequate amount of fluid, according to World Health Organisation guidelines (2004), following the delivery of the HEP. This impact was more significant in children in school year group 2 ($p < 0.05$), where there was a 29.6% increase of adequate consumption perception post-water week. As such, this supports that the WAVs, bring your bottle, drinking tracker chart and reward system were more effective for the older age group (KS1), as a larger percentage of the children learnt the core knowledge of how much to drink, visualised the fluid volume required and actioned this knowledge and understanding accordingly. Whereas this is evidence that the reward system and drinking tracker chart helped teachers to prompt/support children to begin to action the knowledge learnt and form a healthy habit to drink adequately, as the children had to provide

themselves with enough opportunities to drink adequately, to subsequently move their name down the drinking tracker chart and attain rewards from their teachers. It is concluded that the HEP should be delivered to older children (5-7-year-olds) in the future and that WAVs, bring your bottle activity, drinking tracker chart and reward system resources should remain in the HEP for future delivery, as they successfully helped children to understand how much they needed to drink, and aided teachers to encourage adequate consumption.

Moreover, there was a 10% increase of children stating that they drink water due to health benefits or knew that drinking water was beneficial to their health after the delivery of the HEP, when compared to their pre-water week knowledge. This knowledge was consolidated and improved upon 1-2 months after the initial delivery, with a 11.2% increase of health fluid intake awareness, when compared to the pre-water week knowledge. Although again, the impact of developing fluid intake health knowledge was greater with the KS1 children, further supporting a targeted KS1 delivery in the future. Supporting the conclusion that the WAVs, the water song, water tray dehydration activity, story book drama guide activity and healthy drinks sorting had a level of short-term sustainability, and were more useful to develop and retain knowledge and understanding of fluid intake of KS1 children. As those resources effectively developed the core knowledge of why, when and what to drink, and allow the children to consolidate this learning to understand the importance of hydration and develop fluid intake vocabulary by watching the videos, communicating with peers and teachers by participating in the activities, and singing songs. As such, this further supports the inclusion of the WAVs, the water song, water tray dehydration activity, story book drama guide activity and healthy drinks sorting activity in the KS1 HEP for future delivery.

Furthermore, there was a 21.7% increase of children reporting that their teacher supports their consumption at school post-water week, when compared to their pre-water week replies. This increase of teacher support awareness coincided with a decrease of general unawareness of who supports fluid intake and unawareness of non-permitted drinking times, which subsequently informed the children to drink around those times. Although again, the impact of this was greater with KS1 children; further substantiating a future KS1 delivery only. These statistics supported that the fluid intake support guidance in the KS1 teacher's guide, drinking tracker chart and reward system were effective to objectivity fluid intake support, which made their support more obvious for children to comprehend, and thereby drink around non-permitted drinking times to meet hydration demands. As such, this further supports that the drinking tracker chart, reward system and teacher's guide, need to remain in the KS1 HEP for future delivery, as these helped the children understand who supports their consumption and helped teachers to support children's consumption.

There was also a 14.9% increase of children stating their parent(s) supported their consumption post-water week, whereby this increase was mostly sustained 1-2-months in the follow-up. As such, the fluid fact sheet could have made the support parents provide at home more apparent. Resulting in a greater level of holistic fluid consumption support, where fluid intake support continues after the end of the school day. Supporting that the parent fluid fact sheet should be included in the KS1 HEP for future delivery, as this further helped children to understand who supports their consumption.

Finally, there was a 7.5% increase of children reporting they liked drinking water post-water week, whereby there was a further increase of children reporting to like water in the 1-2-months after HEP delivery. Supporting this, is the increase to 92.5%, post-water week (from 85.7%

pre-water week), of the children reporting to hypothetically drink before play if they were thirsty. This suggests that the children have in practice hypothetically understood the importance of hydration and can prioritise their consumption over and above the accrual of extra time partaking in other activities. Consequently, supporting that resources in the HEP can help with the formation of healthy drinking habits. Whereby, through the teachers' implementing the resources in the HEP, which developed the 5 fluid intake topics as previously discussed in this conclusion, this probably caused the shift in reply to like drinking water and hypothetically prioritise drinking, thereby aiding children to form healthy drinking habits. This is because the children learnt that they needed to drink fluid for good health, developed vocabulary to enable them to explain why they need to drink to avoid the signs of dehydration, learnt how much and what they need to drink to avoid dehydration, which consequently aided more of the children to reportedly adequately consume fluids and developed healthy drinking habits as a result. As such, this further supports that all the resources in the KS1 HEP were effective and aided in the development of not only the 5 fluid intake topics, but also developed healthy fluid intake habits; meeting the ambiguous aims in the health education statutory guidance (DfE, 2021), to know and understand about fluid intake as part of a healthy diet.

In conclusion, through the creation, modification, implementation and assessment of efficacy/impact of the HEP, the researcher has not only demonstrated one method in which to logistically deliver this important element of health education in schools (water week), but also showed evidence that the resources and pedagogic strategies in the developed HEP hold efficacy to significantly impact KS1 children's and teachers' knowledge and understanding of fluid intake. Due to these findings and the discussions explored within this thesis, conversations need to be held with the APPG for a Fit and Healthy Childhood (now Cross-Party Group), the newly appointed Government ministers (and in particular the new Minister for Children's

Families and Wellbeing of the UK), the administrators of healthy school's week, or another health education resource provider, for advice on how the HEP can be rolled out on a national scale, to aid in the larger scale development of KS1 children and teachers' knowledge and understanding of fluid intake across the UK. In the interim, it is recommended that all qualified teachers need to be encouraged to minimise times in which their pupils are not allowed to consume fluids at school. This can be supported by actively encouraging children to drink before school, directly after playtimes and lunchtimes, and by teachers drinking themselves during lesson times to model effective fluid intake practices. Finally, as supported by Speller et al., (2010), further health education tuition is required for trainee teachers within teacher education settings and more time should be allocated to health education. Fluid intake support guidance should form part of their training, to try and entrench implementation of effective fluid intake pedagogic strategies at the start of their careers.

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Appendix 1: Study 1 Ethics Approval Confirmation



Mr Joshua Williamson

School of Psychology and Life Sciences

Faculty of Science, Engineering and Social Sciences

10th January 2022

Dear Joshua

Confirmation of ethics approval: Children's and Teachers' Understanding of Fluid Intake.

Your ethics application complies fully with the requirements for ethical and governance review, as set out in this University's Research Ethics and Governance Procedures, and has been approved.

You are reminded that it is your responsibility to follow, as appropriate, the policies and procedures set out in the [Research Governance Framework](#) and any relevant academic or professional guidelines.

Any significant change in the question, design or conduct of the study over its course will require an amendment application, and may require a new application for ethics approval.

It is a condition of approval that you **must** inform ethics@canterbury.ac.uk once your research has completed.

Wishing you every success with your research.

On behalf of

Faculty of Science, Engineering and Social Sciences Ethics Panel

ping.zheng@canterbury.ac.uk

Appendix 2: Initial Contact E-Mail

Dear [REDACTED]

I hope you are well and staying healthy and safe.

As you are probably already aware, the new health education curriculum as part of 'Relationships Education, Relationships and Sex Education (RSE) and Health Education' became statutory from 2021, and was introduced previously in 2019. Within the health education element of the curriculum, there is a new focus on children's understanding and knowledge of fluid intake as part of a healthy diet. However, there is currently no guidance on how this advice should be implemented by practitioners. This is where I have a proposal for new research, to potentially help develop this area of the curriculum.

Following my completion in 2019 of my Master's study, in which I investigated "Young Children's Understanding of Fluid Intake", I have gone on to publish several research papers. My work has also been a named area within a holistic approach to child health by the All Party Parliamentary Group for Fit and Healthy Childhood, in report number 17a (Emerging Dietary Patterns: Impact on Child Health). As I find this area so fascinating, I have decided to pursue my research further, this time with a focus on helping practitioners and teachers with educational resources such as a community and education hydration resource pack to aid in the teaching of health education.

I am currently undertaking a PhD at CCCU to develop and then evaluate the impact of such community and education hydration resources packs to aid teachers. This is where I would appreciate your help. I want these new resources to be developed from the ground up by myself in collaboration with experienced teachers practicing in early years settings. Particularly as teachers are in the best position to deliver the activities to help the study measure the impact of the resources, and support others in teaching the topic of fluid intake within healthy diets.

With this objective in mind, I intend to gather the opinions from a selection of experienced EYFS teachers to gain a valid, credible and reliable foundation on which to build and adapt the resource packs. Including what teachers think should be incorporated in these packs and how they may be logistically delivered and implemented in schools. As such, I am contacting you to firstly establish if you would be interested in providing your opinions on the development of the packs to work in collaboration with me. Secondly, I would then be really keen for you to then trial the packs and educational resources within your class to help me evaluate the effectiveness of these teaching tools. I hope that not only you will be willing to share your expertise in the development of the resources but also how you and your pupils respond to the education hydration resources at a later stage, once they have been fully developed?

Appendix 2: Initial Contact E-Mail (2 of 2)

The research timeline for your involvement would include:

1. EYFS teacher opinion semi-structured interviews, sharing expertise and focus on what is needed to teach hydration and fluid intake to 4 and 5 year olds (*January 2022*)
2. Pilot study phase in one school (*June 2022*) – test all resources as one educational pack, ideally within one week as part of healthy schools week. This would include me checking the children’s knowledge and understanding prior to delivery of the educational packs, and then repeating the child face to face questionnaire after the delivery. This will also involve interviewing the teacher to gain evaluation of the full pack.
3. Full study in all schools where EYFS teachers initially participated in the semi-structured interviews, assuming they are still happy to take part. (*Academic year 2023 - The time for delivery of resources to be finalised with schools and myself*)

(n.b. All dates are purely prospective and is just a timetable to work towards)

Currently, I am simply appealing to schools in which I have already established a relationship with to gather support for the project. To that end, if you are interested in assisting with this research, please do not hesitate to ask any questions about the project. As soon as ethical clearance has been approved by Canterbury Christ Church University, we can proceed with the study.

All the best,

Josh

Josh Williamson

jw784@canterbury.ac.uk

List of Version 1 HEP Resources

- 1. Teachers lesson guide**
 - 1a. Bling your bottle
 - 1b. Recognising signs of thirst on the body
 - 1c. Healthy vs Non-healthy drinks sorting cut/stick
 - 1d. Encourage Everyone to Drink Poster Design
 - 1e. The Water Song
- 2. Drinking Tracker Chart**
- 3. Water Bottle Sticker**
- 4. Whiteboard Animation Video 1**
 - 4a. Whiteboard Animation Scripts
- 4. Extremely Thirsty Cricketer Book Outline**



Water Week



GUIDE FOR TEACHERS



This guide is designed to provide a comprehensive overview of how to use the tools within the attached EYFS Education Water Week resource pack, and give ideas for questioning and cross-curricular activities. The pack is not intended to provide every single activity you may wish to make available to your class during each directed session, but more simply to give tools to effectively teach the various elements related to fluid intake.

If you have require additional support in your delivery of the EYFS Education Water Week resource pack, have any further questions or constructive feedback, please do not hesitate in contacting us using the email attached below.

Best of luck using the pack!

All the best,

Josh Williamson

jw784@canterbury.ac.uk (Possibly create water week email???)

Contents

Day 1 (***Insert Final Title***):

Day 2 (***Insert Final Title***):

Day 3 (***Insert Final Title***):

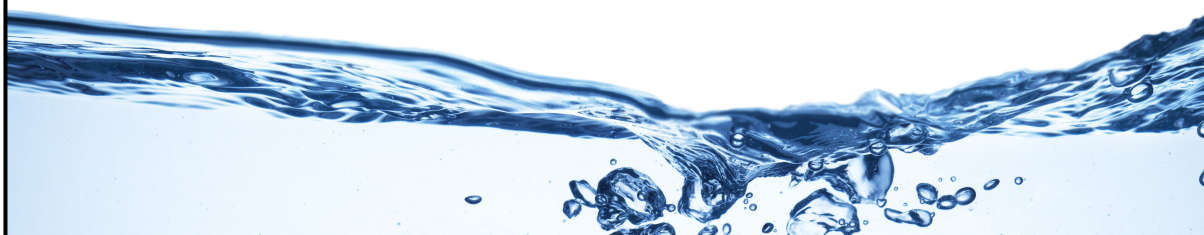
Day 4 (***Insert Final Title***):

Day 5 (***Insert Final Title***):

Things to Try and Remember

(Morning of Day 1) Explain to your class how to use the tracking visual register (*i.e. children can move their name to 'finished' once they have finished at least one bottle's worth*).

(During the week) If you can, try and remember to encourage the children to take their bottles with them during child initiated activities, stop for a whole cohort drinks break after exercise and breaks in the day and drink fluids yourself in front of the children to show them how to do it!



Day 1

Guide for Teachers'



Water Week



Why do we have to drink water? How much do we need to drink?

Objectives

1. To know and understand why drinking fluid is important.
2. To know much we need to drink.
3. To know and understand when is the best time

Lesson Outline and Child Initiated Activities

- Share the first whiteboard animation video. Pause video when prompted to answer questions and check understanding.
- Share the bling your bottle activity and what children could do. Adult to sit with the children to ask questions on the input while doing the activity. See questions in the 'Teacher Prompts' page. Use card if possible
- **Extension** - Can complete second bottle with higher volumes of fluid.
- **Worth trying?** - Possibly this could be the start of a new class display on what the children have/will learn this week?



INSERT TIME



INSERT RESOURCE LIST



Curriculum Links

Managing Self
Numerical Paterns
Creating with Materials
Fine Motor Skills



Day 1

Guide for Teachers'



**Water
Week** 

Teacher Prompts

Managing self

How many bottles of water do we need a day? How much is that?

How many bottles of water should we aim to drink at school?

Why is it important to drink water?

Where should I take my water bottle?

How often should I drink water?

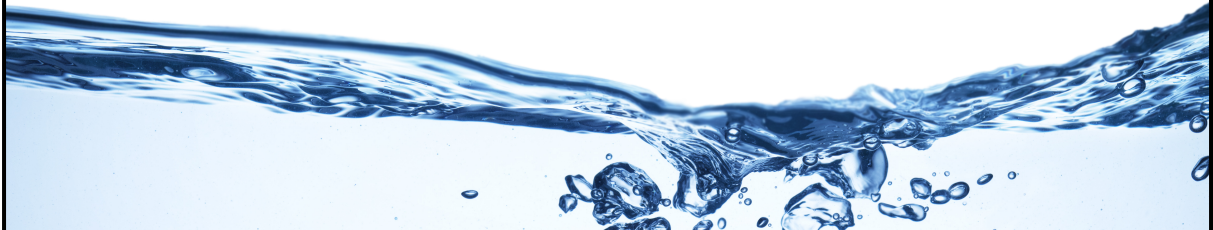
Numbers, counting & numerical patterns

Counting in 100s and 200s, what number is next / missing?

Creating with materials

What resources/things could we use to decorate our bottles?

Why did you use that material?



Day 2

Guide for Teachers'

The Signs of Dehydration - How to know when we need to drink

Objectives

1.

Lesson Outline and Child Initiated Activities



INSERT TIME



INSERT RESOURCE LIST



Curriculum Links

Managing Self
Numerical Patterns
Creating with Materials
Fine Motor Skills



Day 3

Guide for Teachers'

How teachers and parents can help us to drink more water

Objectives

1.

Lesson Outline and Child Initiated Activities



INSERT TIME



INSERT RESOURCE LIST



Curriculum Links

Managing Self
Numerical Patterns
Creating with Materials
Fine Motor Skills



Day 4

Guide for Teachers'

Healthy and Non-healthy Drinks

Objectives

1.

Lesson Outline and Child Initiated Activities



INSERT TIME



INSERT RESOURCE LIST



Curriculum Links

Managing Self
Numerical Patterns
Creating with Materials
Fine Motor Skills



Day 5

Guide for Teachers'

The Quiz! What have we learnt?

Objectives

1.

Lesson Outline and Child Initiated Activities



INSERT TIME



INSERT RESOURCE LIST



Curriculum Links

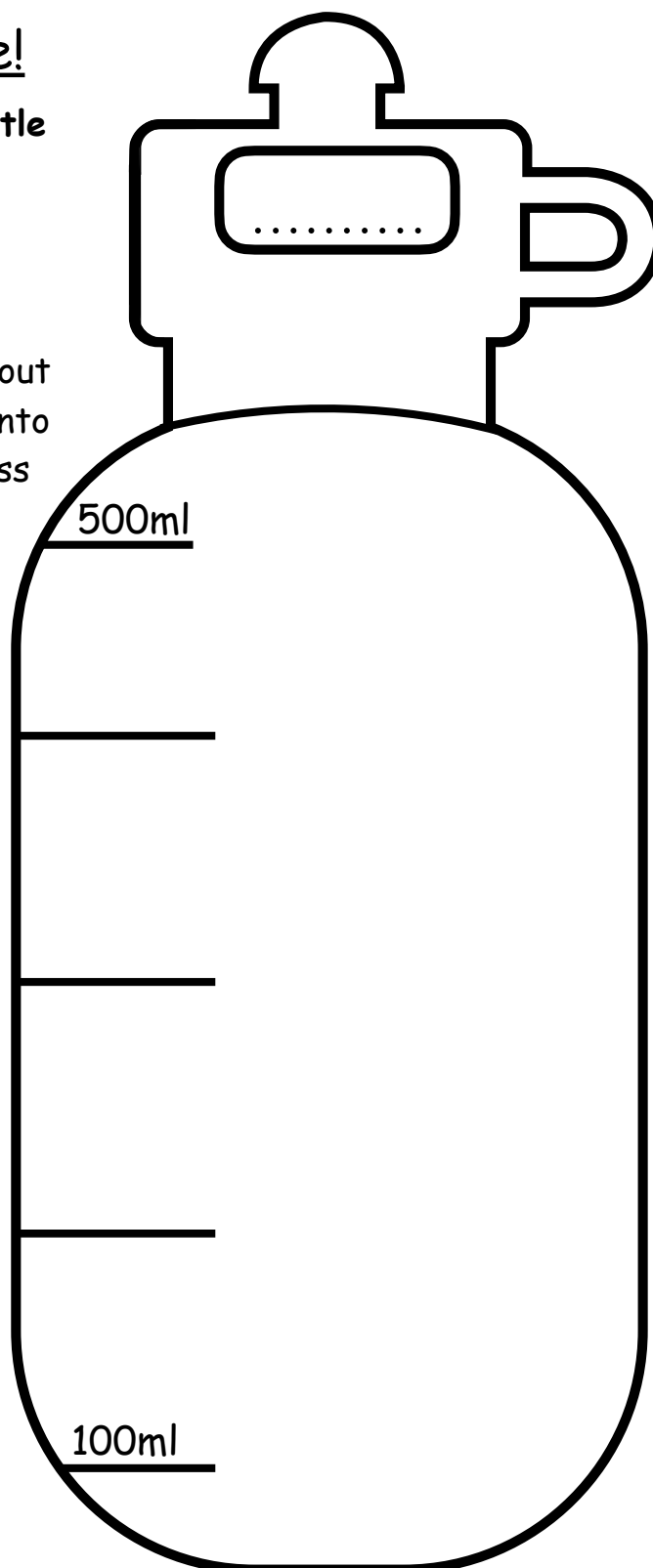
Managing Self
Numerical Paterns
Creating with Materials
Fine Motor Skills



Bling Your Bottle!

Can bling your **500ml bottle**
and fill in the missing
amounts of water
measurement?

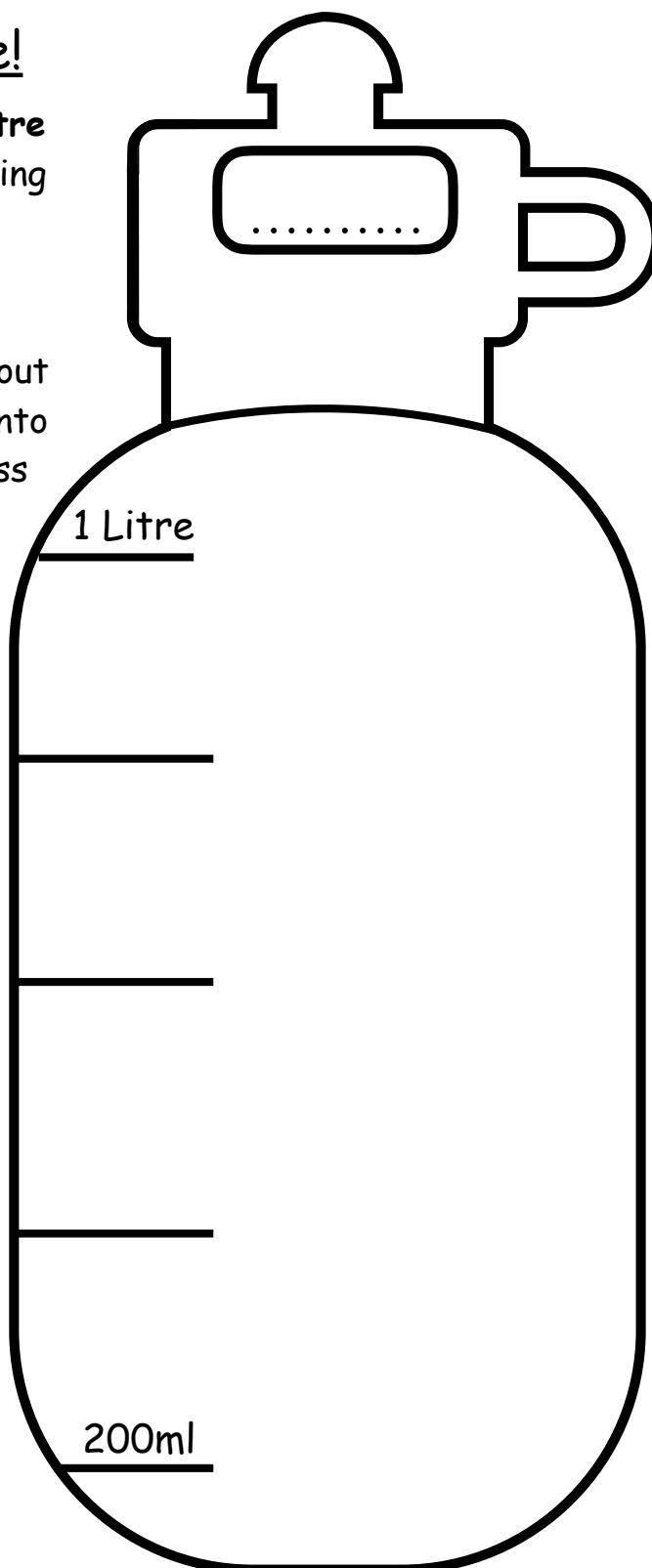
When you are happy, cut out
your design and stick it onto
some card to make a class
display!



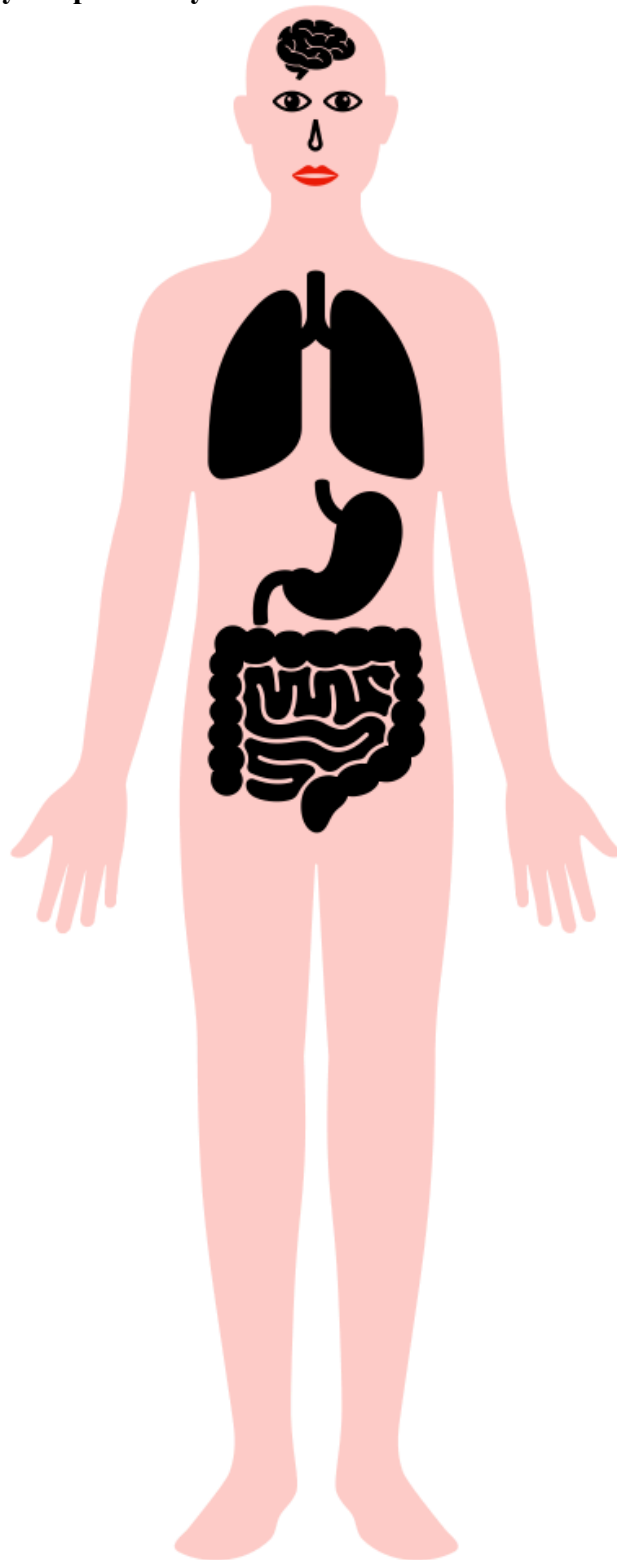
Bling Your Bottle!

Can bling your bottle 1 litre bottle and fill in the missing amounts of water measurement?

When you are happy, cut out your design and stick it onto some card to make a class display!



Dehydration Body Map Activity



Support Each Other to Drink

Poster Creation



Have **YOU** had enough
water today?

We need to drink water because...

1. It makes us less sleepy
2. It helps to think and learn
3. It means we don't get as hungry
4. It can stop us getting headaches

**Can you think of other things that
water helps?**

© Josh Williamson, 2021

Healthy Drinks Sorting



Water



Coke Cola



Orange Squash



Fizzy Water



Energy Drink



Milk



Milkshake



Apple Juice



Fruit Smoothie

Extension

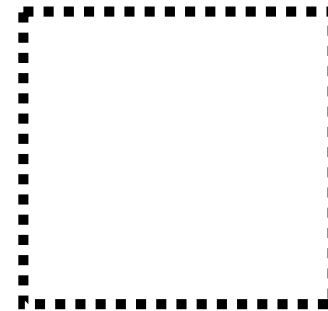
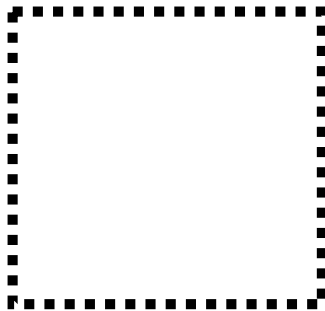
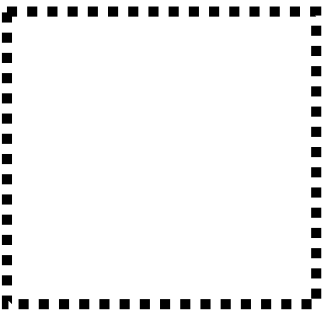
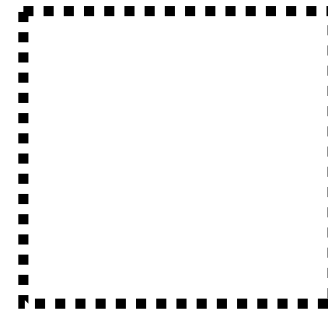
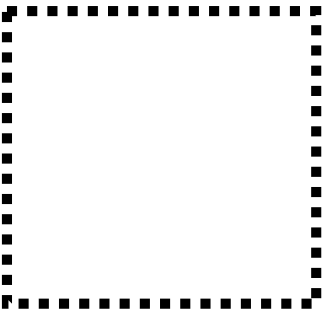
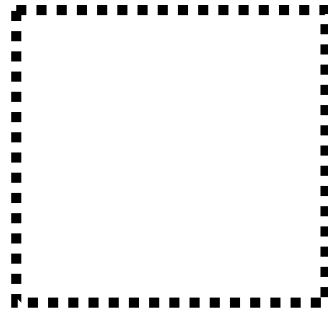
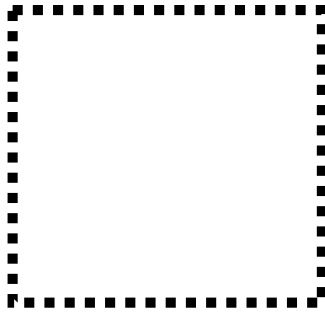
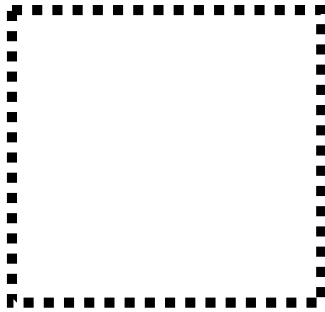
Can you think of any other drinks that are good or bad for you? Why not draw them on a blank grid.

Healthy Drinks Sorting

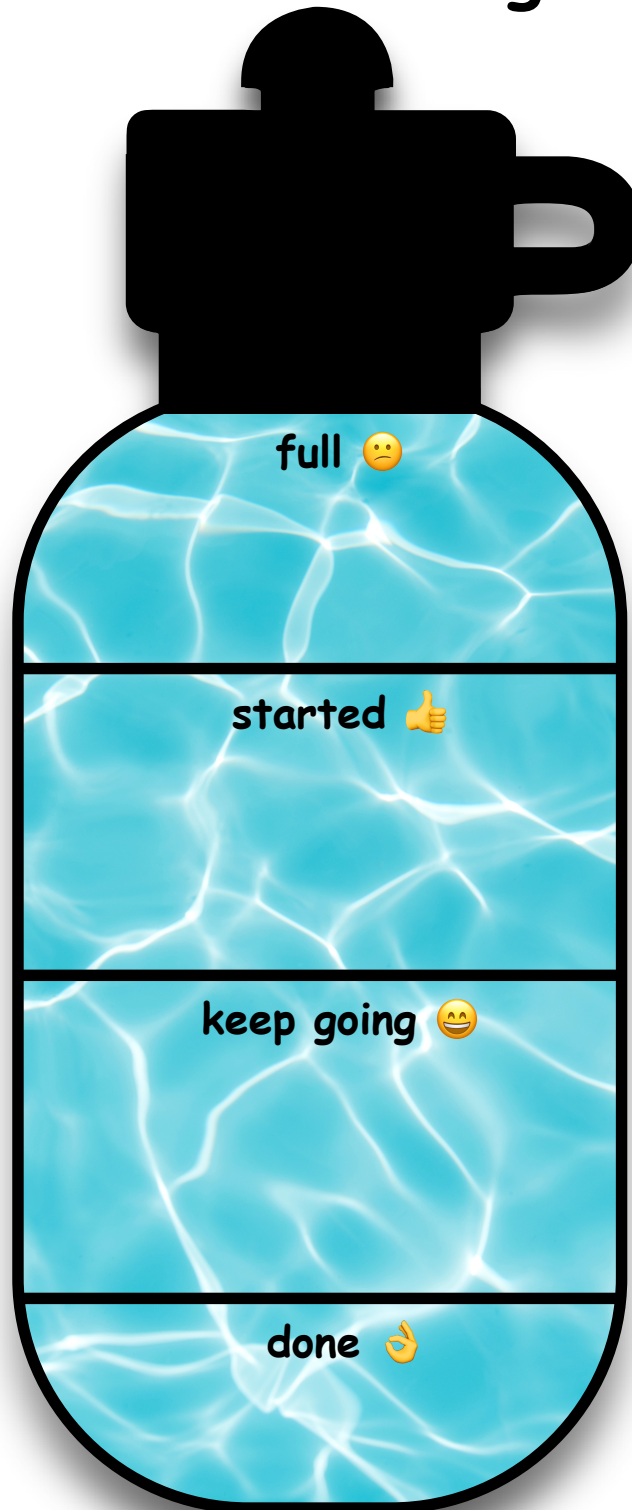
Healthy
(Drink all the time)

Sort of Healthy
(Drink some the time)

NOT Healthy
(Drink only as a treat)



Our Class Drinking Chart



Sticker Example



Whiteboard Animation Script 1 - Why do we have to drink water? How much do we have to drink?

YouTube Link: <https://youtu.be/gwaVld14KhI>

Hi! My name's Josh and I'm a primary school health education specialist but some people call me the water wizard! I'm mainly the magician in children and teachers' understanding of drinking water. In this series of short videos we will be looking at all sorts of things to do with the education of drinking water, otherwise known as consuming fluids!

In today's lesson we will be exploring why we as human beings need to drink water and how much of it we need to drink!

So let's start at the beginning shall we? Children and adults are made up of mainly water (or fluid if we want to be technical). However, this water doesn't stay in our bodies forever! We lose it doing many things! - How do you think we lose this water? **PAUSE** We lose fluid as we exercise by sweating, going about our daily activities and you guessed it, even when we have a wee or a poo! But we'll talk about losing water in another video!

So that means, when we lose water from our bodies we need to put it back! Otherwise known as, replenish the lost fluid. What do you think is the best way we can do this? **PAUSE** Yes! You guessed it, drink water! This is what we call 'being hydrated'

So what are the benefits from being hydrated. Well... it allows our bodies to stay at the right temperature and not get too hot, it gives us the feeling of being awake or alert, and the best thing about being hydrated is that it helps us to think and learn! Some studies have suggested that we learn 10% better when we are hydrated compared to people who are not.

So, how do we stay hydrated and how much do we have to drink to be hydrated? Well... children aged 4-8 years old need to drink 1.1-1.3 Litres of water a day (that's roughly 2 or 3 of your 500ml school water bottles!), however as you're not at school for all the time you're awake, if you make sure to drink at least one bottle at school throughout the day, that's definitely a good start! For adults, women need 2 litres and men need 2 and a half litres so that is even more! Which is why your teachers may drink more than you, and why we all need to drink together!

The best way to make sure you drink enough is to have little bits of water often throughout the day. So, after you've come in from the playground and are listening to your teacher, try and take your bottle with you. If you're learning through play or sat at your desk, take your bottle with you! If you see a friend, your teacher or parent take a sip of water, have a sip too!

So that was part one of our series in understanding about drinking water. To summarise what we have talked about.

- We need to drink water to replace lost fluids by exercising, daily activities and weeing or pooing! This is called being hydrated!
- The main benefits of being hydrated are to be alert, normalise body temperature and to think or learn 10% better!
- Children aged 4-8 need 2 or 3 of you 500ml school bottles of water day - but aim for at least 1 while at school!
- Finally, try and take your bottle with you wherever you go! So it's always there ready for you to drink little and often!

Thank you for listening and see you next time!

Whiteboard Animation Script 2 The signs of dehydration and thirst. When do we need to drink?

Hi! My name's Josh and I'm a primary school health education specialist but some people call me the water wizard! I'm mainly the magician in children and teachers' understanding of drinking water. In this series of short videos we will be looking at all sorts of things to do with the education of drinking water, otherwise known as consuming fluids!

In the previous video we talked about being hydrated and how to drink enough water. In today's lesson, we will be exploring what happens when we haven't had enough water, otherwise known as being dehydrated!

So, being dehydrated basically means you haven't put back the fluids lost through exercising, daily activities and (*whisper*) weeing or pooing! If enough time passes where you haven't replaced the lost water, it is what we call being dehydrated.

It's not just running around that makes you sweat. You can be doing any form of exercise. Playing football with your mates, practicing your bowling or batting skills in cricket or jumping with a skipping rope. Anything that makes your heart go fast, can make you sweat and lose body water! We lose even more when it's the summer and it's hot!

So, how do we know we are losing body fluids, and so need to replace it by drinking! Well... our body tells us! Have you ever felt all red in the face where it's really hot after playtime? Well that's the first sign, then we get a bit of a dry mouth. This is the best time to stop and drink some water as we are only a little bit hydrated at this point! If some more time passes without drinking, we then start to get a throbbing headache, get a bit tired and our wee turns from a light yellow to a dark yellow! But it gets worse! The wee also stinks a lot more! PEE EWW!

If even more time passes without anymore water, we can even start to feel a bit dizzy, have a feeling of wanting to eat anything and even pass out onto the floor! But a long time has to pass for that to happen.

This all means, that when you come in to the classroom from break or lunchtime after you have been playing, it is extra important to drink a good amount of water from your bottles. Because if you have red faces, a headache or feel a bit dizzy, your concentration powers for learning are not as good and so can't hold onto all the important information your teacher tells you! It's even better if you drink while on the playground to STOP dehydration in its tracks!

So to summarise what we have talked about here are some questions!

1 - What are the really early signs of dehydration? **PAUSE** Yes that's it! Red in the face and a dry mouth. You will eventually have a headache, feel a bit tired and have really yellow wee that stinks! So make sure to drink when you feel your face is hot and red and when you have a dry mouth!

2 - What is the best way to not be dehydrated? **PAUSE** Yes that's it! Drink little bits of water throughout the to top up on the water you lose.

Then Sing a little song -

If you're red in the face and have a dry mouth, drink water, drink water.

If you have a headache then what should you do? Drink water, drink water.

If your wee's really yellow and it stinks a little bit. Drink Water, drink water.

If you feel really dizzy, from playing all that footie. Drink water, drink water!

Drink waateer!

Whiteboard Animation Script 3 - How we can support each other to drink?

Hi! My name's Josh and I'm a primary school health education specialist but some people call me the water wizard! I'm mainly the magician in children and teachers' understanding of drinking water. In this series of short videos we will be looking at all sorts of things to do with the education of drinking water, otherwise known as consuming fluids!

This video is designed to be for teachers and parents on how you can help children to drink more water. And how children can help you too! That being said, the topic for why children, and yourself, should drink more is outlined in the first two videos, so if you haven't watched them, pause this and catch up after you have! It's not going anywhere!

So, let's begin. As you would have seen, children, and people in general, learn 10% better when they are hydrated compared to people who are not (Edmonds and Burford, 2009). Remember being hydrated means you have had enough water! This benefit also only takes 2 minutes from consumption to have this improvement. However, it seems from a recent study with 271 teachers from across the world, that only 11% of teachers' consumed enough fluids during the day. That's the same as roughly 1 in every 10 teachers drinking enough! So it looks like teachers need some help as well as you kids! So what can be done about it?

Firstly, if your teachers or parents were to set drink breaks at dedicated times in the day, this could help. This is even more important after playtimes and lunchtime. After all, remember it only takes 2 minutes from drinking water for the brain to react. It does although longer for our bodies to physically hydrate

though - $\frac{3}{4}$ of an hour! So we can't just rely on these directed drinks breaks to drink what we need!

So how can we make sure we are hydrated at all points in the day? Well...the start of the day is really important to making sure we are hydrated, as we slowly get more and more dehydrated throughout when we go about our daily activities and exercise. Meaning it's just a downhill slope if we haven't started the day hydrated. So drinking water at breakfast before school can really help!

Tracking our drinking at home and school is also helpful. A really good way to do this is by physically moving your name down on a display of a water bottle as you drink water. Teachers; you can also get involved too! You could even change your visual register in the morning so children can move their name onto the water tracking display at the start of every day; so you know who's at school and how much your class has had to drink! To make it drinking fun, it could also be a really good idea to set challenges and rewards if everyone in the class has had at least a bottle at school!

As parents and teachers, we also need to be health promoters. So please don't be shy to pause or stop during your teaching and parenting to take sips of water throughout the day to show your children how it should be done! Some children don't pick up on un-spoken hints to drink, so saying something like this could help - "Oh, I've got a bit of a dry throat and a headache, maybe I'm a little dehydrated! So I'm going to have some water". It sounds like such a simple thing to do, so don't be scared! Just think, If children were hydrated all the time at school and so learning 10% better, then progress and achievement could also rise by the 10%! And that surely can't be a bad thing!

Finally, if you can, try and allow drinking water at all times in the day. I know there are some issues with using the toilet too much or thinking that children may not be listening to you, but a lot of children struggle to understand when

they CAN drink if there are times where they CAN'T drink. This can train the brain to ignore the signs of thirst and helps no one!

So to summarise this video in a few points on how to help children drink more water and how children can help you too -

1. Try and schedule drinks breaks after playtime, lunchtime or after exercise.
2. Parents, try and make sure children have had some water with breakfast before school, even if they go to breakfast club and will drink there.
3. Let's try and encourage using a drinking tracking chart in the home and school setting (with challenges and rewards if you want!)
4. Role modelling as adult health promoters! Children you can always ask your teachers and parents if they have had enough to drink too!
5. Finally, please don't stop your children from drinking at any point as this can train the brain to ignore thirst signals!

Thank you for listening and see you next time!

Video 4 - Healthy and Non-healthy Fluids to Hydrate. What we need to drink?

Hi! My name's Josh and I'm a primary school health education specialist but some people call me the water wizard! I'm mainly the magician in children and teachers' understanding of drinking water. In this series of short videos we will be looking at all sorts of things to do with the education of drinking water, otherwise known as consuming fluids!

As we have already learnt, our bodies need water, otherwise known as fluid, to work properly! In fact, young children 4 to 8 years of age need 2 or 3 of your 500ml school water bottles a day! But there are different types of fluid that we can drink which can make up the 2 or 3 bottles worth!

Some people don't like plain water from the tap and prefer the flavour of something else to take the taste away. Some of these fluids are good for you, and others...not very good!

Fluids such as orange or blackcurrant squash are a great swap if you really do not like the taste of normal water as it doesn't have many calories, which is the word we use to describe the body's energy, but we'll talk about calories in a minute. We can even use a special water bottle where you can put fresh fruit to make it taste like the fruit we've put in it, like oranges, strawberries or raspberries!

So those are some healthy trades for plain water if you don't like the taste of it, but some people swap plain water for other fluids that are bad for you because they have loads of calories and sugar in. Can you think of any drinks that would be a bad swap to drink all the time? (Pause)

Yes that's right! Drinks such as milkshakes, fizzy drinks like Coke Cola, Fanta or energy drinks have well...load of extra energy that our bodies normally don't

need. Meaning that, over time, if we don't use this extra energy by doing more exercise, there is a good chance that we will become fat and unhealthy if we have these drinks too often. So, as part of a healthy diet, we should only have these drinks on a special occasion, like on your birthday or Christmas!

Finally, there are drinks for you that aren't bad for you, but also aren't particularly good for you either to have all the time as a swap for plain water! Drinks such as pressed apple or orange juice from the carton and fruit smoothies are fluids that have loads of important nutrients that the body needs but also have loads of sugar in too, which again, if we have too much sugar that we don't use by doing extra exercise, over time we will become fat and unhealthy! So, if your parents allow you to drink these, a really good way to not drink too much is to have them with a meal such as breakfast!

So, to sum up what we talked about today.

- The 2 or 3 school water bottles worth of fluid children need each day can be made up of different types of fluid. Some are healthy and others not.
- Fluids such as flavoured squash or plain water with fresh fruit in are a great swap for plain water if you really don't like the taste of plain water!
- There are however fluids that keep you hydrated but aren't good for you, such as Coke Cola or Fanta as they have too much energy that our bodies really do not need, so these should only be had on special occasions such as birthdays!
- Finally, drinks such as orange juice from the carton should only be had with a meal to limit the amount of it you drink!

So that's the end of our 4th video in our series on drinking water. I'm Josh the water wizard! See you next time!

Video 5 - The Water Quiz!

Hi! My name's Josh and I'm a primary school health education specialist but some people call me the water wizard! I'm mainly the magician in children and teachers' understanding of drinking water. In this series of short videos we will be looking at all sorts of things to do with the education of drinking water, otherwise known as consuming fluids!

This is the final video of our series and we've learnt so much! We've learnt why we need to drink water, or fluids if we want to be technical! We've learnt how much we need to drink, why we should drink together, the signs our bodies tell us when we haven't had enough to drink and how our teachers and parents can help us to drink more! In this final video we are going to TEST. OUR. KNOWLEDGE!

I am going to ask everyone a few questions about what we've learnt, be sure to pause the video after each question to think about it properly. For a bit of fun, you can always keep track of your score!

Q1: How much water do you children aged 4 to 8 years of age need?

- A. 500ml a day, which is one of your school water bottles
- B. 3 Litres a day, which is 6 of your 500ml school water bottles
- Or C. 1.1 - 1.3 litres a day or 2 or 3 of your 500ml school water bottles.

It's C. Children 4-8 need between 2 and 3 of your school sized 500ml water bottles a day, but aim for at least 1 while at school!

Q2: Why should we try and drink enough water to be hydrated?

- A. To make sure our bodies don't get over hot
- B. Think and learn 10% better
- C. To be alert and awake
- Or D. ALL OF THEM???

Ah I tricked you! Yes it's all of them! My favourite reason is because it makes us think and learn better!

Q3: What should we do with our water bottles to make sure we drink enough?

- A. Leave them in the drinks trolley and forget about them
- Or B. Take them wherever we go (if we can!)

It is definitely B! Try and take your bottle with you whether you go, so its always there ready for you to drink little and often throughout the day.

Q4: What are the signs our bodies tell us to say we haven't had enough water and need to drink some water? Can you tell me? (PAUSE)

- **Yes that's right! Headache, red in the face, dry mouth and stinky yellow wee are all early signs of not drinking enough. This is what we call being called dehydrated.**

Q5: Teachers' this one is for you! How can you help children to drink more water? Maybe children you can help your teacher as well?

- A. Remind your class to drink by drinking yourself in the classroom?
- B. Have drinking together time after playtime and lunchtime?
- Or C. Drinking tracker charts (as well as other things!)

Ah I tricked you again! The water wizard strikes again! Yes its all of those things!

Q6: What is a good and healthy swap for normal water?

- A. Coke Cola or Fanta
- B. Milkshakes
- Or C. Orange or Blackcurrant squash or plain water with fruit in!

It's definitely C. Although plain water is the best thing to drink to keep us hydrated, if you really don't like the taste of that, coloured squash or water with fruit in is a great way to drink more!

Q7: Last question, why are they a bad swap? Maybe have a quick discussion about why we shouldn't drink fizzy drinks or milk shakes all the time? (Pause)

- **Yes that's right guys! Because they have too many calories or energy in which means we can get fat and unhealthy!**

So that is all the questions to TEST. OUR. KNOWLEDGE! Well done to all of you who answered the questions, you've learnt so much!

We have now reached the end of this series of drinking water, try and remember everything that you have learnt and continue drinking enough as it will definitely help you! So thanks again for watching, I'm Josh the Water Wizard! Goodbye!

The Extremely Thirsty Cricketer Book Outline

This is Jim. Jim plays a game called cricket.

Hello Jim!

In cricket there are 2 teams, 1 team that bats and the other team that bowls.

These 2 parts of cricket are called an innings. In the middle of each innings, both teams stop for a drink of water.

"Why do you stop for a drink?" The tea lady cried!

"Because running around and doing exercise makes them thirsty!" The umpire bellowed from the middle of the pitch.

However, Jim decided that as he was having too much fun playing cricket and that he wasn't thirsty enough to drink!

"Do you think that is a good idea?" His teammate said. Jim nodded his head.

So Jim's Dad, who scores the game, ran onto the ground and cried *"even though you might not think you are thirsty enough to drink, you will be soon!"*

"You have a red face, you are sweating and probably have a headache too Jim!"

Jim thought he knew best so chose to ignore his Dad!

But Jim's Dad let his son get on with it and so Jim continued playing the game without drinking any water!

Jim was bowling. He was running to get the ball after the batsman hit it, but still would not drink any water!

Jim was starting to look a little dizzy and was losing all concentration!

Jim's Dad, again, ran onto the field, but this time with a big bottle of water. But he was too late! Jim fell to the ground as he was too dehydrated!

Jim's Dad was panicking! He did not know what to do! But the tea lady did!

She poured water on Jim so he could cool down and let him lie on the ground for a bit.

After a while, Jim was able to sit up and drink gallons of water! He knew he should have listened to his Dad!

Jim's Dad explained that even though you may not feel thirsty, drinking little bits of water often helps hydrate us. Choosing to not drink, even though we are having fun playing, is always a bad choice!

It helps us to keep our concentration, not have headaches, control how much we sweat and make us feel like new!

Jim's Dad asked *"So when someone tells you to drink, even though you may not feel like it Jim, what are you going to do?"*

Jim nodded and said *"Drink some water!"*

The End

Appendix 3: Study 1 Teacher Participant Information Sheet



Children's and Teachers' Understanding of Fluid Intake

PARTICIPANT INFORMATION

A research study is being conducted at Canterbury Christ Church University (CCCU) Josh Williamson

Please refer to our [Research Privacy Notice](#) for more information on how we will use and store your personal data.

Background

The purpose of the project is to create and assess the efficacy of a community/education hydration pack in schools. Research indicates that young children demonstrate a significant lack of knowledge of the recommended daily intake of water they are required to drink and have a lacking knowledge of their own thirst response to drinking before dehydration occurs (Williamson and Howells, 2019). Compacting this, further research suggests that teachers are inconsistent in their encouragement of children's consumption and self-reportedly drink below World Health Organisation guidelines (Howells and Coppinger, 2020).

To improve children's knowledge of the health benefits of rehydration, teachers could play an instrumental role in developing a shared understanding of the importance of rehydration to child development. This is where this research aims to address this possibility by creating a pack of hydration resources to be used by teachers.

What will you be required to do?

Early Years Foundation Stage (EYFS) teacher participants in this study will be required to partake in a semi-structured interview to gather the opinions from experienced practitioners to gain a valid, credible and reliable foundation on which to build and adapt the hydration resource packs.

To participate in this research you must:

- Be a teacher who holds Qualified Teacher Status (QTS) status.
- Be currently teaching in an Early Years Foundation Stage setting.

Procedures

You will be asked to take part in a 1:1 structured interview with the principal researcher: Josh Williamson

Feedback

Feedback will be given by email when disseminating the final resource packs before the full stage study is conducted.

Appendix 3: Study 1 Teacher Participant Information Sheet (2 of 2)

Confidentiality and Data Protection

The following categories of personal data (as defined by the [General Data Protection Regulation \(GDPR\)](#)) will be processed:

- Generic Data

We have identified that the public interest in processing the personal data is:

- To enable the study to assess what resources need to be developed and how they should be developed to improve children's and teachers' understanding of fluid intake. Generic personal data will be used and processed within the Statistical Package for the Social Sciences software (SPSS). This data will be anonymised.

Data can only be accessed by, or shared with:

- Myself (Josh Williamson)
- PhD Supervisors (Dr Kristy Howells and Dr Damian Coleman)
- Internal Examiner (TBC)
- External Examiner (TBC)

The identified period for the retention of personal data for this project:

The data will be retained for the duration of the project and deleted after thesis submission and the VIVA examination period.

If you would like to obtain further information related to how your personal data is processed for this project please contact the principle researcher; Josh Williamson (j.williamson784@canterbury.ac.uk).

You can read further information regarding how the University processes your personal data for research purposes at the following link: Research Privacy Notice - <https://www.canterbury.ac.uk/university-solicitors-office/data-protection/privacy-notices/privacy-notices.aspx>

Dissemination of results

- By PhD Thesis at the Canterbury Christ Church University repository
- Academic Journals such as the International Journal of Nutrition

Process for withdrawing consent to participate

You are free to withdraw your consent to participate in this research project at any time without having to give a reason. To do this please simply email the principal researcher; Josh Williamson (j.williamson784@canterbury.ac.uk).

You may read further information on your rights relating to your personal data at the following link: Research Privacy Notice - <https://www.canterbury.ac.uk/university-solicitors-office/data-protection/privacy-notices/privacy-notices.aspx>

Any questions?

Please contact the principal researcher; Josh Williamson (j.williamson784@canterbury.ac.uk) or alternatively the project's first supervisor Dr Kristy Howells (kristy.howells@canterbury.ac.uk).

Appendix 4: Study 1 Teacher Consent Forms



CONSENT FORM

Title of Project: Children's and Teachers' Understanding of Fluid Intake

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
 North Holmes Rd,
 Canterbury,
 CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

- | | |
|--|-------------------------------------|
| 1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions. | <input checked="" type="checkbox"/> |
| 2. (If applicable) I confirm that I agree to any audio and/or visual recordings. | <input checked="" type="checkbox"/> |
| 3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University Research Privacy Notice | <input checked="" type="checkbox"/> |
| 4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason. | <input checked="" type="checkbox"/> |
| 5. I agree to take part in the above project. | <input checked="" type="checkbox"/> |

Name of Participant: Teacher 1	Date: 27th Jan 2022	Signature: <i>A. Hunsford</i>
Name of person taking consent <i>(if different from researcher)</i>	Date:	Signature:
Researcher: Josh Williamson	Date: 27/1/22	Signature: <i>J. Williamson</i>

Copies: 1 for participant
 1 for researcher

Appendix 4: Study 1 Teacher Consent Forms (2 of 3)



CONSENT FORM

Title of Project: Children's and Teachers' Understanding of Fluid Intake

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences

North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

- | | | |
|--|--|----|
| 1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions. | | DS |
| 2. (If applicable) I confirm that I agree to any audio and/or visual recordings. | | DS |
| 3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University Research Privacy Notice | | DS |
| 4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason. | | DS |
| 5. I agree to take part in the above project. | | DS |

Name of Participant: Teacher 2	Date: 7.2.22	Signature: <i>D. Selgemit</i>
Name of person taking consent <i>(if different from researcher)</i>	Date:	Signature:
Researcher: Josh Williamson	Date: 7.2.22	Signature: <i>J. Williamson</i>

Copies: 1 for participant
1 for researcher

Appendix 4: Study 1 Teacher Consent Forms (3 of 3)



CONSENT FORM

Title of Project: Children's and Teachers' Understanding of Fluid Intake

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

- | | |
|--|-------------------------------------|
| 1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions. | <input checked="" type="checkbox"/> |
| 2. (If applicable) I confirm that I agree to any audio and/or visual recordings. | <input checked="" type="checkbox"/> |
| 3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University Research Privacy Notice | <input checked="" type="checkbox"/> |
| 4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason. | <input checked="" type="checkbox"/> |
| 5. I agree to take part in the above project. | <input checked="" type="checkbox"/> |

Name of Participant: Teacher 3	Date: 19.4.22	Signature: <i>Lh King</i>
Name of person taking consent <i>(if different from researcher)</i>	Date:	Signature:
Researcher: Josh Williamson	Date: 19.4.22	Signature: <i>J. Williamson</i>

Copies: 1 for participant
1 for researcher

Appendix 5: Study 1 Teacher Interview Questions

EYFS and KS1 Teacher Semi-Structured Interviews (Hydration Resource Pack)

The aim of this semi-structured interview is to establish what a selection of experienced EYFS teachers know and understand about their own practice in relation to children's fluid intake, to best inform the development of an 'education hydration resource pack'. Firstly, delving into what you currently implement within your teaching practice. Secondly, what you would like to implement and lastly, critique the prototype resources to help the study move forward.

Do you have Qualified Teacher Status Status? *

- Yes
- No

Do you currently teach in an Early Years Foundation Stage or KS1 setting? *

- Yes
- No

Are you happy for this semi-structured interview to be voice recorded? Primarily on account that it will ensure that your responses can be reflected with accuracy?

- Yes
- No

If yes. Would you like a copy of the recording following the conclusion of the interview?

- Yes
- No

Appendix 5: Study 1 Teacher Interview Questions (2 of 5)

1) What key messages, teaching strategies and resources do you currently use to encourage knowledge of diet and healthy lifestyles – and more specifically, water consumption in the classroom?

Long answer text
.....

1a) Why? (if applicable)

Long answer text
.....

1b) When would you implement those strategies / resources? (If applicable)

Long answer text
.....

1c) If you don't currently have any strategies, why do you not have any?

Long answer text
.....

2) If you could add any more strategies and resources to encourage knowledge and engage children in healthy diets and water intake, what would you like to see? And why? In terms of strategies, what works best for your children?

Long answer text
.....

3) Looking at delivering the resources – What detail of content in your view is better? Would you prefer to see the packs used in the form of a “water week”, possibly during healthy schools’ week in June? Where there are links to a breadth of curriculum subjects and taught over 5 afternoons, or delivered one afternoon a week for a term? Such as, “Water Wednesday” which essentially comprises of the water intake component?

- Water Week (Whole Week of Lessons)
- Water Wednesday (One lesson a week over a term)

Appendix 5: Study 1 Teacher Interview Questions (3 of 5)

3a) Why do you think the pack would be better delivered that way?

Long answer text
.....

4) In critiquing of the resource ideas presented earlier and prototypes made thus far (present resources currently made), is there any strategy or resource that significantly stands out which you feel WOULD be particularly helpful in delivering this statutory element of the health curriculum?

- Short Animation Videos
- Extremely Thirsty Cricketer Book
- Lesson pack
- Water Song
- Drinking tracker chart
- Other...

4a) Why do you feel it would be particularly helpful?

i. How could it help children's knowledge and understanding? ii. How could it help with an increase in actual intake of your pupils' water/fluids? iii. How could it help with your own subject knowledge of fluid intake, teaching of the topic / modelling??iv. How could it help with an increase of your own actual intake?

Long answer text
.....

5) In critiquing of the resource ideas presented earlier and prototypes made thus far (present resources currently made), is there any strategy or resource that significantly stands out which you feel WOULD NOT be particularly helpful in delivering this statutory element of the health curriculum?

- Short Animation Videos
- Extremely Thirsty Cricketer Book
- Lesson pack
- Water Song
- Drinking tracker chart
- Other...

Appendix 5: Study 1 Teacher Interview Questions (4 of 5)

5a) Why do you feel it would NOT be particularly helpful?

- i. How could it be unhelpful to children's knowledge and understanding? ii. How could it be unhelpful with an increase in actual intake of your pupils' water/fluids? iii. How could it be unhelpful with your own subject knowledge of fluid intake, teaching of the topic / modelling?? iv. How could it be unhelpful with an increase of your own actual intake?

Long answer text
.....

6) To summarise what we discussed, is there anything you would like to change in the final draft of the educational resource pack / the way that they are implemented / add anything I may have missed?

Long answer text
.....

7) Anything you would like to change in relation to children's knowledge and understanding of the resources?

- i.e. do any of the resources have too much onus on the activity itself rather than what message it is trying to impart? If so, what and how would you change to address this?

Long answer text
.....

8. To provide a quantifiable comparison, could you rank each individual resource please?
Likert style ranking of: 1. Never use 2. Sometimes use 3. Use all the time

Short answer text
.....

8a) Short animation videos

1. Never Use (Worst)
2. Sometimes Use (OK)
3. Use all the time (Best)

Appendix 5: Study 1 Teacher Interview Questions (5 of 5)

8b) Extremely Thirsty Cricketer Book

- 1. Never Use (Worst)
- 2. Sometimes Use (OK)
- 3. Use all the time (Best)

8c) Lesson pack

- 1. Never Use (Worst)
- 2. Sometimes Use (OK)
- 3. Use all the time (Best)

8d) Water Song '

- 1. Never Use(Worst)
- 2. Sometimes Use (OK)
- 3. Use all the time (Best)

8e) Drinking tracker chart

- 1. Never Use (Worst)
- 2. Sometimes Use (OK)
- 3. Use all the time (Best)

1

Appendix 6: Study 1 Teacher Transcripts

2

Teacher 1 Interview - Transcription FULL – 27/1/2022

3

4

J: Josh /

5

A: Participant / Interviewee

6

7

Context: The interviewee sat down in her classroom with the researcher and explained the intended purpose of the study, why a HEP could be required in our educational system and a brief explanation of what the various prototype resources are.

8

9

10

11

12

J: Okie doke, so do you have qualified teacher status?

13

14

A: Yes

15

16

J: What I'll do, is that I'll put it all on afterwards. Errrm, do you currently teach in the early years foundation stage or key stage one setting?

17

18

19

A: Yes, early years

20

21

J: I probably should have said for the voice recording that this is (NAME OMITTED) of (SCHOOL OMITTED).

22

23

J: So just for the voice recording are you, are you happy for the semi structured interview to be voice recorded?

24

25

26

A: Yes

27

J: And would you like a copy of it?

28

29

A: No, noo I'm fine.

30

31

J: eerrrm that's fine. So what key messages, teaching strategies and resources do you currently use, like within your own practise, about teaching healthy diets and more specifically about Water intake and fluid intake in children?

32

33

A: errrrm We tend to very much. It's tricky because obviously we teach the children to drink water as much as we can. But at the same time you want to build their self-resilience and own realisation of what their bodies are telling them, so you know where in PE we were, probably teach about drinking water then. Who's feeling hot? Do you feel sweaty? Are you tired? How do you feel different? You know their starting to listen to their bodies and then lots of them go. I need to drink. Why do you need a drink? Because of your muscles are working hard and you're started to sweat. And that's a really good sign actually that you're doing lots of exercise. So yeah, make sure when you get back to school, get back to class. We have a bit long drink, and that's really good. And then you re hydrate yourself. Errm So that's probably

34

47 our biggest song that we teach about errrm about water intake. Probably because, you know,
48 that's just. It's actually, you know, it's obvious to the children and why they

49

50 **Cont...**should do it. But during the day off, errrm we just remind them all the time you
51 know, especially if somebody's got a headache or something like that.

52

53 J: Because that's one of the earliest signs of dehydration.

54

55 A: Yeah. We might say to them, you know, even if you're feeling hot, you need to drink. If
56 you have a headache, have a drink – go to the loo, see how you feel then and after a while
57 you hear the children telling each other and reminding each other.

58

59 J: Which obviously that's part of the idea of the pack. One of the things proposed changes is
60 how we can support each other's consumption. Errm In there somewhere there's bout five
61 lesson plans, but we'll come onto that. But that's fine, thank you.

62

63 A: Obviously after playtime and lunchtime as well, we encourage them to have a drink.

64

65

66 J: Yes that's really important too. It doesn't necessarily matter what they drink in terms of
67 whether its squash, it is really what they like to make sure they get enough fluid.

68

69

70 A: Obviously some children get milk, you know coz it's free at the moment, is free until
71 they're five, others bring their own milk in and others, would just say make sure you have
72 drink or is paid for it.

73

74 J: But obviously when the ones that don't drink milk do they drink water? Is there to treat
75 water outside of that?

76

77 A: Yeah, I mean the water bottles are just on the side at the time. You know, once one starts
78 and they will go I NEED A DRINK TO! *laughter*

79

80 J: It'll probably be like that when the delivery of this pack starts, it'll be in the forefront.

81

82

83 A: Yeah. And when stickers come out, they all suddenly drink so much.

84

85 J: It would be quite interesting to see what reaction will be. So when would you implement
86 those, it would be after like, say, after playtime? More specifically

87

88 A: Yeah, after an activity their more aware. I mean probably the easiest thing to do would be
89 to take photo of the water bottles that beginning of a normal day which and at the end of
90 normal day to see actually have any of them changed. How much of the changed? You know
91 some of them pick them up at the end and they just as full as they were at the beginning then
92 just you just say? Why haven't you had a drink today? You should have had a drink.

93

94

95

96 J: That's actually quite a good idea to maybe assess actual drinking consumption levels.
97 Potentially
98
99 A: An easy way for you.
100
101 J: Yes, in terms of the methodological approach.
102
103 A: Especially you know when we do start saying if you drink your water bottle, especially in
104 the warmer months, you can have a sticker. You can see at the end of day they are all like
105 **excited noise**.
106
107 J: I suppose it's heightened at that time cause everyone's a lot hotter, but would you say
108 there's more of an onus in the summer to drink?
109
110 A: Errrm I think so. Because they are older. They understand a bit more. Errrm You know, as
111 with everything in reception year, in the early years, we just it's just reiterating it. You
112 revising it the whole time. You know. Then obviously after a while they start to realise that
113 they can. They can do it without being reminded.
114
115 J: Which is good. That's almost the end goal really isn't it?
116
117 J: So is there, is there, anything that you would like to do more or add to your current toolkit
118 if you like with teaching strategies and encouraging of drinking water?
119
120 A: Errrm I don't know. I think we cover it pretty well.
121
122 J: No's fine, no's fine.
123
124 A: I think we cover it well; you know it's very much a part of the self-regulation thing. I'm
125 thirsty.... have a drink then. You've got to because it has this effect, you know.
126
127 J: It's that recognition of all those signs of dehydration that not all children necessary pickup.
128 Or have been taught to pick up on them.
129
130 A: it's that independence thing as well. So many children come to school and...you know
131 you need to have a drink. Now we need to do this now. You know they are told exactly what
132 to do by their parents every step of the way. And obviously part of our experience we have to
133 give them in early years is is actually, you know, getting their independence of I'm thirsty...I
134 can provide myself with a drink. I'm cold. I can go and put on my cardigan or my coat.
135
136
137 J: Haven't got unnecessary to do so, which is quite nice to hear that there is that...is agency
138 the word? That children can go and do those simple things that you think are simple. But in in
139 child's head. Sometimes they might think they can actually drink.
140
141
142 A: As they go through school, each classes have different rules. You know down here it's all
143 quiet relaxed you know; we want to build up on the children's resilience and their self-
144 regulation and independence. But you know, if you go into another class, it might be more.

145 No, you need to sit on the carpet as I'm talking to you now. You can't just get up and wonder
146 away.

147

148 J: So do you think when they go up to say yeah I where? There is a slightly higher onus on
149 formal. Sit down. Listen to the teacher education, do you think there will be more.... that
150 that's harder to actually implement that that agency.

151

152 A: Yeah, sometimes I mean, you know during summer months. I think in the in the high
153 years they move the water bottles onto the table you know. Rather than in the water tray?
154 That's just because you know that you don't have a place they can sit anywhere. They can do
155 anything you want, whereas obviously they in the upper years. If you're sitting at a space you
156 might as well have a water bottle in your space all the time. That I mean you don't have to get
157 up and disturb you too.

158

159 J: And again that be interesting. See how much. Of those water bottle have been drunk as
160 well? Have they been finished, or they been refilled? So suppose the way to assess that you
161 put sticker on the bottle with their finishing. Which would be quite nice.

162

163

164 A: Some get completely covered, which is great. Can tell the ones that go in the dishwasher,
165 as they've all fallen off. *laughter*

166

167 J: Was gonna say, do they get taken off then?

168

169 A: We normally say to them, leave them on and then mummy can see when you drink water
170 when you go out, but we have stickers as they are so terrible at sticking on clothes, it so much
171 easier to actually put more actual flat surfaces.

172

173 J: We'll come back to that in terms of things in terms of the pack and the strategies will come
174 back to that in a minute as that was quite important. So looking at my resources that I've
175 prepared, I know there's a lot of them. So If I just briefly explained them, so ignored my
176 printer, decided to quit out. So imagine that it's a big, massive...

177

178 A: Water bottle

179

180 J:... display and that is like a class register. So essentially they put themselves a cross from a
181 bottle. Put their name at the full. And then move their name down and then they can either go
182 back to the top and maybe a second one or what have you. So that is the idea of that
183 particular resource, so that's what it will look like as a full whack, and obviously that's their
184 names. Over here is like a pack of teaching resources again, again my printer decided to kack
185 out. Errrm so this, that's like a guide for teachers, errr you've seen them in this bike to school
186 week. I think that's quite a popular one. I've taken that as inspiration and gone with it here.

187

188 A: No actual dates?

189

190 J: No, so this is, this is quite a key question. So looking at what I've done, how do you think it
191 would be best delivered? Do you think one afternoon a week for, I don't know like a term,
192 something like water Wednesday for instance. Or a water week? But I'm open to ideas

193

194
195 A: I mean I we were going to do it, I think we'd do it and then carry on. You wouldn't just
196 carry on. But you could definitely if you're going to do that, photographic evidence which
197 would be the easiest way for you. On the Monday say you could, errm, on the previous
198 Friday. Take photos, or Thursday or whatever, we take photos, introduce the idea on Friday,
199 getting to start on the Monday, see if the Monday changes at all, and then see photos are
200 different on Friday again and they have hopefully would be and then after that you would just
201 carry on the carry on the philosophy anyway when you can just carry on with the stickers and
202 all of that. I mean, that's what we've always left done so far. Once we've introduced the idea
203 that you can have a sticker once you've finished then they are very very, very keen to remind
204 you that you need a sticker.

205
206
207 J: So. I think when I've been working for my master's there a lot of drinking water today. But
208 in terms of in terms of this, these lessons, while I've drawn up one lesson so 5 lessons. So
209 essentially the first lesson is why do we drink water? And I would. I would then give you 5
210 videos to start each lesson with. Which is my idea of how to start it, so so why we drink
211 water which I'll show the video in a moment as I think it's quite good. The second one is the
212 signs of dehydration which is quite an important point. Errrm How teachers and parents help
213 us help us to drink more water and like we were saying in terms of telling children's peers to
214 drink more. And then know healthy and unhealthy drinks, which this is an activity to address
215 that. You could also do that as like hula hoops and actually use actual drinks, which would be
216 quite nice idea. Specially in early years.

217
218
219 J: And then a quiz to summarise what they've learned.

220
221 A: yeah. Sounds good.

222
223 J: So yeah? But in terms of the video, I'm going to show as I think you may like it.

224
225 **Video plays**

226
227 J: So that is essentially the first lesson, and then in my head, but whether this is taught over a
228 week or whether it stalled one afternoon a week is really the... What do you think is better?
229 Whole week OR the one day a week?

230
231
232 A: Errrm I mean, you could definitely do it that way to start, start more for the big. Big
233 Whammy that they probably enjoy that, errrm yeah, I mean obviously for you to see the to
234 see the benefits is going to be or to see the difference, if we do it in a week it's going to be
235 obvious. You know, and remember as they will get a video every day,

236
237 J: But this is good cause I wanted to be a big thing so I can take to the government.

238
239 A: Yeah obviously it be more interesting after that. Is it still there after a fortnight or after a
240 month are they still drinking the water.

241

242 J: As part of my lit review there is there is definitely precedent set for coming in over the
243 medium term, potentially redoing those again maybe a month later to see if that information
244 is retained and it also adds to actually level validity as well so. So maybe actually agree. I
245 think that's a good, clear, good way.

246
247

248 A: But yeah, I'm sure they'd definitely enjoy it, I mean, you know, even if it was just one
249 video right at the beginning and then you know, do another video at the end, you know and
250 another, you know, at then at end the video. You know you're now all hydration experts,
251 something like that. Or I'm going to pop back in at the end of the month, end of the week.
252 And say, have you did the magic spell work? Have you done this? Give them something to, I
253 don't know, maybe you could even make some sort of chart that they can stick their stickers
254 on for the first week, so they get your special stickers for a week when they finish their water
255 bottle.

256

257 J: What sort of chart? A chart like this? (*points to tracker chart*)

258

259 A: A personal one for themselves to keep a little chart.

260

261 J: oh like, I completed the water week or what have you?

262

263 A: Or a certificate, couldn't they?

264

265 J: Yeah, okay, that's good. I did. Yeah like that.

266

267 A: Specially if it's got GROOVY STICKERS to go on it. Normally, like I say, just give them
268 A sticker. They're quite happy with that.

269

270 J: So you reckon trying to produce the stickers for the pack that are dedicated water week
271 stickers?

272

273 A: You can get them to write anything on the thing.

274

275 J: I made some stickers for my for my book. My Autistic cricketer book, so yeah, they're not
276 expensive. They're quite cheap really. About 10 quid for bout 100 odd

277

278 A: So yeah they would love that obviously you know after that once they've got all of that.
279 Just follow it up with little stickers, that we stick actually on their on chart on their water
280 bottle for the first week it could be. We could have it's as a display, you can have the big one
281 on there. Could you have all their certificates around there and then they can put their
282 certificates sticker on at the end of each day. So you could provide some little square or
283 something couldn't you?

284

285 J: Yes, "I've drunk my bottle this week". How do you think that would work over the long
286 term. Would you have to constantly refresh?

287

288 A: Could do, well just give them the certificate just for the for the week? If that's what the big
289 onus is on beginning and then you could say in your last video. Okay so over to you now.
290 Hydration experts, you know it's over to you now. You've got to carry on doing it!

291
292
293 J: Ah good idea. I'll add that to my script.
294
295 J: Do you think connect videos as almost like a starting point for each lesson.
296
297 A: I think so. I mean you're the expert! You're the hydration wizard!
298
299 J: but I'm not the pedagogical wizard which is the reason why I'm here!
300
301 J: Do you think there's much point in the series or do you reckon just go in and trust the
302 teacher to Deliver something early doors if it.
303
304 A: I think if it's a video...with resources and you're almost introducing the lesson.
305
306 J: With that, is essentially what it is.
307
308 A: Add with that video and then somebody's gotta get something else out and explain it as
309 well. That's getting a bit more onerous and it's getting long. If you're saying to them today, I
310 think your teacher might have some drinks that she's got. Let's see if you can sort them into
311 healthy and non-healthy.
312
313 J: The fourth one would be talking about what the different types of healthy drinks are, but
314 it's also like a middle ground as well, as some drinks are not necessarily bad for you. But
315 they're not good for you either and shouldn't really have all the time. Orange juice or
316 something. Probably once a day with a meal would be fine.
317
318 A: You could get the hoops for sorting circles. So maybe if you almost list the ones that
319 you're going to have in your video, you know, we could try and get the same ones and say, do
320 you hoops look like mine? And show them what you think?
321
322 J: Good idea. Like that.
323
324 A: You know, or compare to what we've sorted. Did we get it right? Did we get it Wrong? Is
325 there a right answer? Is there a wrong answer? Or is there a grey ground in the middle.
326
327
328 J: Good idea. Yeah essentially it would be based off that (*points to paper sorting activity*)
329
330
331 A: Wouldn't necessarily want a paper-based thing every day in early years. So yeah, that's a
332 nice thing, you know. Cos they can do it if they want to. You looked at that and never got
333 this. Do you wanna do it? Some of them will just carry on playing with the other things
334
335
336 J: In my head I'm thinking maybe one activity along alongside other bits and bobs that the
337 teacher potentially will want to put in. So errm OK, that's interesting.
338

339 A: Yeah, I mean you know your last video. Again you put into your videos ‘how hopefully
340 you've got your five stickers on your certificate’. Take that home, be really proud of it. I think
341 your teacher might agree if you all say please. May agree to give you a sticker every time you
342 finish your water bottle. It might just be a little tiny sticker, might be a big one, you know.

343
344

345 J: No, no, that's a good idea. Hopefully make them much actually drink their water bottle,
346 even though it might be some warm, not stagnant, but not particularly pleasing thing for them
347 to drink.

348

349 A: yeah last summer that was what it was literally like. I's say you have 2/3 of the class,
350 literally (*Actioned chugging*) and see them all chugging the bottle before they go home.

351

352

353 J: Which is not good. really

354

355 A: No good really, but at the same time are drinking it.

356

357 J; Obviously there's a 10% boost in an academic performance.

358

359 A: I always say to them, it's like watering your brain. Water a seed, make it grow

360

361 J: Nice, good idea thank you, may have to pinch that.

362

363 A: or like a sponge. Specially when going into year 1. Brain is like a sponge. Growing, bigger
364 and bigger and bigger. Yeah ours are a big swamped sometimes but when they go into year 1
365 it helps.

366

367 A: Have you got a song!?!?!?

368

369 J: I have got a song...

370 **Plays song**

371

372 **Pauses song**

373

374 J: So I should say. You know the beautiful South?

375

376 A: Yeah.

377

378 J: Something Alison Wheeler, her is name. She sings the song, but Kristy has got a credit in
379 it, so that's how we're allowed to use it.

380

381 **plays song**

382

383 A: Like this. Could put it at the start and end of the video so it's a little programme that
384 they're watching then as well with.

385

386 J: Do you that would be useful, I don't know, while they come in in the morning or while
387 they...?

388
389 A: Could do. It'll almost be like a little assembly, isn't it? So we could do it. Probably when
390 we do probably be during milk and snack time. So they are then drinking anyway.
391
392
393 J: And then hopefully we just come in naturally, I suppose.
394
395 A: and then just play the songs. If you had it at beginning the end of your videos and after the
396 week, can just play the song afterwards. Where after they are like AHHHH – must drink
397 water bottle. Must retrieve.
398
399 J: Brainwash essentially, but that my things of ideas. So it wasn't on that one, but on my big
400 long note my big there was a dance move style thing. I did. I did ponder the idea of doing a
401 cartoon, but I haven't got the skills to do that, I've got the skills make those little videos and
402 white board animations .
403
404 A: What application is that?
405
406 J: It's called video scribe, so I've got the Uni to subscribe for a year for it. It's about £100
407
408
409 A: I can cope with them. Yeah. Can cope with iMovie.
410
411 J: During lockdown I learnt how to use final cut from and made this hour and half epic of
412 how me and my mates became friends. And towards the end of it, the production value got
413 better and better.
414
415 J: I know that that was one plan, so that's good that you said that clearly supports errrrm
416 trying to get a dance group or something.
417
418 A: if you've got a dance to do that would be good
419
420 J: Yeah I've thought about trying to get a dance group to get involved.
421
422 A: you could just do during the credits in the end video.
423
424
425 J: Well what we could potentially do. I could potentially come in. Obviously we will have to
426 get permission from your parents for that, but. But even if you've got 5 of your children and
427 they do dance moves with me. Maybe that might work. I don't know.
428
429
430 A: yeah, could go on the website then as well couldn't it?
431
432 J: Yeah, so I don't know open to the idea with that. I'm sure I think in terms of the video and
433 dance moves and what have you. I think if other children see over children doing the dance
434 moves, is any only going to encourage Them? I don't know potentially.
435
436

437 A: Even if you just do them in the intro to videos. They will soon catch onto them. You know
438 things like go noodle is so simple. They just copy it, or they make up some dodgy danced
439 anyway?

440
441 J: Start waving their hands! I'm thinking within the end of the video, probably because at the
442 start may be too much.

443 A: Don't have to have the whole song though do you? Just that little bit
444

445 J: That's very true. That's very true. It's good idea. Okay, so in terms of any resource that you
446 think particularly helpful for the improvement of knowledge of fluid intake for children.
447 What? What do you think might be useful? So in terms for the short animation videos, the
448 creation of this book? I need to get it illustrated. The lesson pack for yourself, the water song
449 with dance moves. And the drinking Track tracker chart. What do you think potentially is a
450 particularly useful?

451
452 A: obviously, not done it yet, but I would imagine the little videos will be. Yeah, especially
453 you know because of lockdown, we've got used to using things on the Internet. More children
454 used to watching it with lessons on the Internet. So I think that's a that would be really useful.
455 Obviously not seen your book yet, I'm sure it's marvellous but not seen it.

456
457

458 J: It's based on me! (*Both laugh*)

459
460 A: errrm the Lesson pack would be interesting to read for teacher information, but like I said,
461 I think if you're introducing everything through your videos. And you wouldn't necessarily
462 want to be reading that as well as the teacher's guide lesson pack. I mean, I might just be a
463 lazy teacher, but yeah. I wouldn't want to do the video and then go back to me with the
464 teacher's guide, and then say 'I want you to do this boring thing, but hang on! Let me just
465 read this script cause I've got to read it'."

466
467

468 J: It wouldn't necessarily be reading a script. Just be for teachers to read what the lesson is.
469 And then go with the video yet, but so would you say that it needs to be explicit that this isn't
470 the script to read out?

471
472

472 A: Yeah

473
474 A: It's just when you're going through. It looked like they were going to be worksheets for
475 children to fill in. I mean, you know, again, other schools might be different or not work.
476 Whereas you know that you know that sorting activity. That's nice. I like that as that that
477 would be following up the practical yet anyway. So yeah, that, the videos or you know for a
478 little dance to go with it. And the tracker thing, I think we could do that quite easily, so yeah.
479 I mean, you know all sounds good, but I think the videos, I especially after seeing the one
480 you've done already, that'll be nice and easy to follow. The kids would like it. Like I said, if
481 its got a song at the beginning or the end, they will soon catch on.

482
483

484 J: So you think it's worth the time and effort cause it probably took me a little while. I've got
485 all the scripts written which I think I think has got reasonably good, reasonable child, child

486 friendly language. But yeah, so you would say it's worth investing the time to make those
487 videos.

488

489 A: Yeah that's going to be your most exciting bit for the children. You want them to be
490 excited about it. I mean, like I said, you know it doesn't take a lot to get a 4 or 5 year old to
491 do some things with a bit of bribery, with a bit of sticker. They will do it anyway, but to get
492 them to jump on the bandwagon, I suppose onto the drinking bandwagon, this could get it
493 started off. Yeah think would be a great idea, you know and then they'll think of it in that way
494 and then went to think to drink. So yeah, that would be good. I mean, you could do one video
495 based around you saying, you're about to PE today aren't you? I want you to do that today...
496 or I would need you to judge.... Everyone will have a PE lesson at some point. Even if they
497 do PE in their classroom. They can do that. But you know, we see. Especially in the early
498 years. That is where we would introduce it. That's where they would feel the most difference
499 in their bodies. You could say, if you, if you had a beginning (video) one and an end one, and
500 do the three in the middle had to go in particular order?

501

502

503 J: No, not particularly. Don't think it particularly matters. As long as the video correlates
504 with whatever potential activities have been suggested.

505

506 A: So this sorting one, is that the last one?

507

508 J: No that's the fourth one. Obviously volume and quantity is more important than what you
509 drink as obviously if you're given... your gonna get overwhelmed if not drinking the right
510 things so that not particularly good for anyone but OK. Now that's useful to note. It could be
511 worth investing the time making the videos. It does take a while to make them so.

512

513

514 J: errrrm cool. So is there anything that you think you think wouldn't be helpful? On the
515 inverse of that?

516

517 A: Errrm, (*big pause*) like I said, you know, just loads of worksheets and that. It's just
518 another thing.

519

520 J: So avoid that?

521

522 A: Yes. Teachers have so much effort they have to put in anyway. To give them a worksheet
523 today. *I mean, that's just another thing, you know to give more worksheets today is just
524 another thing, isn't it? And people [teachers] don't you wanna do it? Better if it's a video you
525 can stick on at the end of the day for five minutes and you can actually. ...relax for but listen
526 in the background.

527

528 J: Okay, pretty much what you saying. I'm putting words in your mouth but. Feel free to
529 agree or disagree with me, keep to those two things a worksheet (bling your bottle and sorting
530 activity) be done.

531

532 A: No more worksheets. Yeah, yeah. Because this could fit in quite easily with that.

533

534 J: This is an art and design thing called bling your bottle.

535
536 J: Yeah, I suppose you could do that as a real thing as well. Add list bit more probably costs
537 and in impeding I should mention.
538
539 J: Okay, that's fine. OK.
540
541 A: I mean ours won't be able to do the water measurement thing as that's too complicated.
542
543
544 J: Because was thinking something that would be a little bit of maths in there.
545
546 A: I mean what I think what you've got here on the colourful on. Is a bit better, but I mean
547 obviously when...
548
549 J: That was just an example of what the big one will look like.
550
551 A: Yeah, I mean, obviously when you're in early years that would be empty. Nearly empty,
552 nearly full and full.
553
554 J: So no number?
555
556 A: No numbers. But cos you got the five measures.
557
558 J: Or we could make it 3?
559
560 A: yeah, well No they can do half way as well that's fine, but I would put writing on there as
561 well of full, empty half full.
562
563 J: So this is more than vocab of ...
564
565 A: capacity.
566
567 J: Of capacity. And obviously how you describe what is full and what is not. Do you think
568 that would be useful in something like key stage one. Cos well, I'm stop looking at both, both
569 purely because its access to schools. So with any luck, maybe going to a couple of teachers
570 up in in the school.
571
572 J: So Yeah okay. So so you reckon so.
573
574 A: Well you could have the measurements on there and maybe have a line or sound buttons
575 for 'empty' 'full' so they write empty and full and then year 2s can write do the
576 measurements.
577
578 J: So could keep that and have like a selection is what you saying there I spouse?
579
580 A: Yeah but empty full this one that you, especially in terms of early years you want to be.
581 It's full and now its empty! WHAHOOO!
582

583 J: That's good to know, useful in terms of critiquing. So to summarise what we discussed is
584 that anything that you would like to change we discussed that in the final draft. Errrm Of the
585 resource packs.

586

587 A: erm No, haven't looked at your books, but I'm sure that's fine and you know the pack
588 looks quite (*Deep voice*) MEATY. Obviously you know if it's just that, that's fine. I was just
589 looking at these presuming they were worksheets.

590

591 J: No, no that was that was for your benefit.

592

593 A: You know just to make you obvious to people that this is the teachers guide.

594

595 J: Maybe big letters teachers?

596

597 A: Yeah. But you can just make this a lot shorter almost like a page. With lesson 2, lesson 3,
598 lesson 4.

599

600 J: Rather than the intimidating thing

601

602 A: Yeah. If it's just one page, one page and a load of resources. Teachers like resources. They
603 like kids. So if you've got a pack of stickers you doing well.

604

605 J: So you don't think it's much point in having the time (*direction in the lesson pack*).?

606

607 A: No. Do qualified teachers really need it?

608

609 J: Suppose not. Could be useful for student teachers. But yes, in terms of curricular links and
610 all that. Let teachers work that out for themselves?

611

612

613 A: yeah I don't think so. Again I might be wrong. Bash it on, watch the video and away you
614 go.

615

616 J: So I reckon I could do something like that in maybe 2 pages, will that be fine?

617

618 A: Yeah that'll be fine. And like I say, if it comes with a lovely resource pack of like stickers.
619 Or if you were going to, if you're going to roll it out to schools, you know if you do the walk
620 on Wednesday thing you get chart, don't you? Don't have to photocopy yourself, its all
621 provided. I as a teachers, and lazy teachers are busy teachers and you know anything that
622 takes you time is a bit of a pain I the butt.

623

624 J: So you reckon that that if have your water bottle sticker in terms of what I haven't done to
625 include, that would be quite a good thing.

626

627 A: If suddenly you can put something on the back of the door or something and stick the big
628 water bottle on there. Children's faces on it and the certificates or pictures don't have to be
629 big. Almost like Credit card size would fit under still places again. People will be like, OH
630 what am I going to do with that.

631

632 J: So after they use another awards scheme that we were talking about.
633
634 A: yeah, every bit of wall in classes they use, you know where am I going to put this big
635 bottle? What am I going to do?
636
637 J: Maybe if its just for this one week I'm sure teachers can find space. Yeah, I'm just thinking
638 if it's something that would 30 names on fit.
639
640 A: Right, yeah, something the size that can fit on something like a door would be good. Or if
641 it comes as a as a thing, a thing you roll out. You know, you know from the bottom of that
642 that window down to the floor. And obviously if you want them to move their faces to be it's
643 got to be able a metre. You know it's gonna be big enough that they can all fit without just
644 jostling or arguing.
645
646 J: So you reckon do the tactile register and the water tracker?
647
648 A: Yeah, this would be a nice thing for them to do, and but again, you know, maybe just.
649 Have them all here at the beginning of the day and move yourself when you're done. So do a
650 simple Full and empty.
651
652 J: Okay, okay makes sense as it is a little bit nuanced isn't it?
653
654 A: Not only that, just the more they're going to pull it out and more its going to break.
655
656 J: So you reckon in that case, because I suppose. I suppose that's useful to have a visual
657 register and water is the forefront of the brain at the moment they walk through the door,
658 which is good. And then once they've done that as well, so they've done that, then remove
659 across to do that.
660
661 A: I mean, you know on that door, they put their bags in, their water bottle there and put their
662 heads down.
663
664 J: That's really interesting. You say you might make; you might make them have a drink, or
665 you can get even make them drink as they walk through the door. Basically it takes two
666 minutes from consumption for the cognitive benefit to realise.
667
668 A: SO yeah, the deal place for the chart needs to be in front of your face doesn't it..
669
670 J: That's good idea, OK, but I will make that.
671
672 A: So probably what I do. Again, I probably say to just have these (*faces document*) as little
673 rectangles for names.
674
675 J: Okay, I'll just think because some children don't recognise their name that would not help.
676
677
678 A: Well they need to.
679

680 A: Yeah. Again, you gotta drop a picture in and you making work for the teacher. They could
681 draw themselves, but again but then you might want to laminate.

682
683 J: and again more work for the teacher.

684
685 A: It is more work so literally all the teacher has to do is print a a classless and then and then
686 laminate that class list is the only thing people have to do. So the only thing you have to do is
687 laminate a class list, so that is the only pre-work that you have to do. You don't want to
688 provide little name cards, but you could if that's what you really want to do. If you were
689 going to provide this as a...

690
691 J: I don't want there to be any bespoke thing that I necessarily have to do. Obviously, once
692 we've done the assessing of whether it works or not, in theory it'll literally be a case of me
693 going, here you go, this is yours.

694
695 A: Yeah, I mean you know if it's if it's like 2 A3 sheets would make your bottle and People
696 had a load of rectangles with rectangles on a page. They can write the names on and went
697 through the laminator or. You know you do yourself from a class list. That's the only things
698 that people got to prepare and print this out. You know, presuming probably sent it as an
699 email anyway. People more likely to do it. To have them printed out already would probably
700 be a good thing. Again, you might open the pack on the morning and find that you gonna do
701 it. So if it's emailed, it's one thing to print it out would be better.

702
703
704 J: I mean, in terms of my testing schools, if you like or classes, it will be a case, where I'll
705 come in and help set up, because actually I think there needs to be a little bit of my input in
706 that just to make sure that I know that it's been done. In terms of methodological validity of it
707 so, but in terms of terms of post PhD and I'm hopefully giving this schools or what have you,
708 then it is a case of teachers it is over to them.

709
710 A: Just thinking if it turns into a thing.

711
712 J: Which potentially could happen.

713
714 A: Getting the resources from the central place and do it.

715
716 J. So in terms of it, anything you would like to change in terms of the children in terms of the
717 children's knowledge and understanding of the resources. Is is there anything so IE. What
718 they're actually getting out of it is it to is it too of an onus on the activity itself rather than the
719 knowledge it's trying to portray.

720
721 A: Errm no, I think that as long as they understand to drink that'll be a fab thing to do.
722 Getting clever as the year goes on, so keep watering in your brain and that'll be a fabulous,
723 fabulous thing to be cleverer.

724
725 J: That's a good little slang line, good slogan - are you watering your brain. Okay, think we
726 are nearly there. So for you to provide a quantifiable comparison cos obviously all this is
727 qualitative, could you rank each resource as 1, never use, 2 sometimes use or 3, use all the
728 time? So really one, worst three, the best really. So should we go for short animation videos?

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A: Yeah, I think that was good. Yeah we have that

J: 1,2 or 3?

A: For the children's interest, I'd probably say, I don't know, that might be the one I suppose. That will catch their interest the most. So 3.

A: Yeah. But the big bottle moving their face is exciting but maybe not as exciting as a video, but the same time that would be something that we can carry on with for longer, so I probably put that 2. And two. Yeah, yeah or 2.5.

J: And then there's the book

A: I haven't looked at it yet but everyone loves a book. But it's going to be the video that's going to catch them. Everything you need is in the video, is going to be telling the teachers is going to be telling the children, so even if you haven't read the teachers guide. Hopefully by looking at the video beforehand.

J: OK, so in terms of that lesson pack. Always ignore that. I think potentially this is quite nice extra I Suppose. The lesson pack is 1, two or three, so three obviously all the time.

A: Yeah, I mean you know the idea is nice and yeah, the sorting one looks good. I mean, you know, the tracking bottle look quite nice, but the sorting one would be the one...they would be interested in and obviously, you know, the bling in the bottle. That, they would do that but they probably won't be fussed about that as it's not quite as exciting as moving things and chatting it your friend about it but still all good.

J: So would you suppose sometimes use so be between one and two would say for the bling your bottle and lesson pack.

A: Errrrrr. I won't be too worried about that one. And obviously the actual physical one as well. Which I'd give that a three. Cut and stick a 2 and blingy bottle a 2 but not too fussed.

A: Errm do you need physical evidence?

J: I need I need no physical but I need to come in question the children, ideally if I'm allowed.

A: I mean the cut and stick is a nice evidence-y activity . Like has it all sunk in and have a good understanding of the finer things to do with drinking? Do they know what is good, but you know there are better drinks for you.

J: Cos obviously that is quite a nuanced thing part of the understanding. Do you know how much to drink, why we get thirsty and when are we thirsty? If that's really what that's really

778 what the nuts and bolts of it is. But in terms of this 4th lesson, yeah, are they're going to be to
779 access that activity on say a Thursday.

780

781 A: yeah or even have it as your final activity, you know? I don't know what your final videos
782 gonna be. You could almost be....

783

784 J: Yes, it was like a class quiz thing. Which would be quite nice. Almost using a similar thing
785 to the videos. Where the teacher can then pause it and think about the answers.

786

787

788 A: Yeah, so you could say to them on the Thursday, another video. Ok so the week is nearly
789 up...I wonder could you help these children drink... And then on the Friday, if you have
790 some questions related to that. I think this week you've done XYX.

791

792 J: Almost draw things from what they've done. Yeah, Okay, I have to change the script for
793 that but like that. As it almost brings to home, what they are watching, maybe I don't know, I
794 don't know. I think (NAME OMITTED) that's everything. Just have a check.

795

796

797 J: Ah the water song with the dance moves in terms of number.

798

799 A: If you got a group dance moves to go with this the children will love it. Yeah, if the song
800 is linked to your videos, they'll sing along to it quite quickly. As long as you choose the
801 catchy, repetitive bit. If you can then watch the song separately from the videos and there's
802 the dance you could do that before lunchtime maybe. I think the videos are going to be go to.
803 Your selling point is almost like a constant bringing home of the song, and if there's a dance
804 move to it as well, that's great. It's really great, well done you.

805

806

807 J: Thank you, I have to say this, so obviously if you don't want your data included. I've got to
808 say just let me know and I will delete. If you're prepared to be my pilot school, I would
809 greatly appreciate that, but you haven't got to be.

810

811 A: I'm sure that will be fine - Both classes or just one?

812

813 J: What would you prefer? I'm quite happy for them to be.

814

815 A: Yeah, for it to be both. (OMMITE NAME) should be fine with it as well it's a similar set
816 up etc.

817

818 J: There's also potentially ethical issue if there's one class getting some extra tuition when
819 there is another so let do both classes for the pilot.

820

821 J: Thank you again.

822

823

824 END OF TRANSCRIPTION

825

Teacher 2 Interview - Transcription FULL – 7/2/2022

J: Josh / Researcher

D: Participant / Interviewee

831 Context: The interviewee sat down in her classroom with the researcher and explained the
832 intended purpose of the study, why a HEP could be required in our educational system and a
833 brief explanation of what the various prototype resources are.

834
835
836 J: Right OK, so just for the recording I've got (NAME OMITTED) of (SCHOOL
837 OMITTED)?

838 D: (SCHOOL OMITTED)

839
840 J: (SCHOOL OMITTED). And we're sat school

841
842 J: So (NAME OMITTED), so do you, do you have qualified teacher status?

843
844 D: Yes

845
846 J: Do you currently teach in the early Years Foundation stage or key stage one setting?

847
848
849 D: Key stage one. Year one

850
851 J: and are you happy for this semi-Structured interview to be voice recorded, primarily on
852 account that it'll ensure your responses are reflected accurately.

853
854 D: Yes

855
856 J: and with you like copy of the recording.

857
858 D: No.

859
860 J: I know this might be a big question to sort of just put on you but what key messages,
861 teaching strategies and resources do you currently use to encourage knowledge of diet and
862 healthy lifestyles, more specifically water consumption in the classroom?

863
864
865 D: ARGH ... *pause...hesitancy*. We cover PSHE every week but that ranges from
866 emotions, relationships, *pause* ... semi on diet but it doesn't cover anything with water I
867 mean it may get mentioned once or twice if that but it would be maybe semi covered in a
868 term then not covered on a regular basis at all.

869
870 J: So something like this could be of use?

871
872 D: Oh! 100% (*enthusiastic tone*)

875 J: That's useful. So in terms of teaching strategies or maybe some reminders to drink, would
876 that be something that you would do or not? You're not being judged, it's just useful to know.
877

878 D: I...If they say they've got a bit of a throat I'd say go have a sip of water. If they say they
879 got a headache I'd say have a sip of water, but it would make. Is when the kids mentioned it
880 to me then I say have some water. I wouldn't remind them all day every day to drink water.
881

882

883 J: Ok, so this is something, this is something of a reactionary thing?

884

885 D: yep, 100%

886

887 J: Rather than prevention style thing

888

889 D: **audible noises in agreement**

890

891 J: errrm...so. So like you say that's when you would implement them, but you wouldn't do it
892 normally into everyday practice?

893

894 D: No

895

896 J: OK that's fine. errrrm why?

897

898 D: Think just don't round to it, like you just... even myself I don't even drink, so I'm
899 thinking of lessons what needs to do next, what need the tick boxes what needs to happen.
900 Errm it's just something that you just something that you just don't think. Make sure you
901 have some water. I mean I've got some of my kids that go straight for it, but then sometimes I
902 think do they use as they get off the carpet type thing. But if I was put water bottles on tables
903 when they're doing their work, they're more likely to drink them. Rather than we have them
904 currently in a tray, so and if I'm not happy with him getting up the carpet going for quick
905 drink as one does it, they all do it. Whereas, if you was to put them on the table and you use
906 something like a chart then it would help massively.

907

908

909 J: So is there a big problem in in allowing the water bottles on carpet for ALL the children?
910 And make it a norm?

911

912 D: errrrm. Spillages. Definitely not the carpet because I think it would interfere with their
913 learning. Will be fiddling the whole time. Tables; they can put them to the end and not touch
914 them until they want them. But...yeah, the carpet, only coz today I had them on the carpet
915 and it got spilled everywhere.

916

917 J: So if say this pack suggested that we should have like a communal drinking time after say
918 playtime time or lunchtime.

919

920 D: Yep

921

922 J: errrm while you're having your teacher input.

923

924 D: **Noises in agreement**
925
926 J: Would it be something that you be completely against for the period of this delivery, or
927 would you?
928
929 D: I wouldn't be completely against it. I'd like to see how it would run
930
931 J: OK
932
933 D: and maybe see actually if it does work. Maybe I'm not giving it a chance.
934
935 J: So if it did suggest that you'd be up for that?
936
937 D: Oh definitely, I'd be up for trying it.
938
939 J: Ok, great. Suppose that's sort of the point I was trying to make with, some teachers that
940 maybe have been teaching longer because you're an NQT aren't you?.
941
942
943 D: Yeah...well ECT
944
945 J: ECT they changed it to the Australian which is 2 years. So that is some teachers That just
946 don't want to deal with that. And it's so closed to the idea of errrrm, can't teach an old dog
947 new tricks.
948
949 D: No, I'm happy to try new things 100%.
950
951 J: That's cool. Errrm, so if you could add any strategies. To water consumption, in the
952 classroom encouraging teaching it. Off the top of your head, is there anything that would or
953 comes to mind?
954
955 D: I like the idea of PowerPoint and songs, 100% songs, cos children get songs and they
956 remember from songs. Errrm...Maybe a sticker that you can put on to a water bottle?
957
958
959 J: OK.
960
961 D: Sort of thing. So so he could put on so they can see it on their water bottle. Sort of thing,
962 and encourages them to want to drink to that line each day? Cause they like will excited from
963 the line and could get sticker once they put that little but it's a sticker that would come off it
964 but my children my age is all visual. It's all colours is all visually excited like that so that that
965 would be good, something like that.
966
967 J: Alright OK thanks. Obviously difficult to think these things will stop your head.
968
969
970 D: Yes.
971

972 J: Well, technically you've been teaching for two years over the years, you've been a TA
973 and...
974
975 D: Well...a TA during lockdown, nine months online training to classes not even in the
976 whole school and five months as an ECT.
977
978 J: And what another 18 is it? It's two years isn't it so?
979
980 D: Yeah
981
982 J: errrm cool thank you. So looking at the delivery of the resources, I know we talked about it
983 briefly before we started, but just to get it on record if you like, errr what detailed content, in
984 your view, is better? So would you prefer to see the packs used in like the form of water
985 week, errr possibly during healthy schools week, for instance in June, sorry, also where the
986 links where there's links, where's links to a breadth of curriculum subjects and those
987 obviously taught over 5 afternoons, or delivered one afternoon a week for a term. Such as a
988 water Wednesday, which essentially comprises of, like the water intake component.
989
990
991 D: It's difficult Cos I like the idea of both as you've got your week where you're focusing like
992 at the moment with the mental health week, and it's all about facing mental health. But I like
993 bringing stuff up on a weekly basis, so maybe more of a input. Probably maybe every
994 Wednesday then, because then it refreshes their minds because if we do over a week it could
995 then fade. And then it gets forgotten about
996
997 J: Sure.
998
999 D: Whereas if it's on a Wednesday for like a whole time. It could then get in with that flow.
1000 You're used to it. And I like how if you could put science into it as well, that could cover part
1001 of the curriculum with science so we could always then look at our planning and be like that's
1002 getting taught during water week, double tick, so it's cross curricular.
1003
1004
1005 J: So you just said water week there?
1006
1007 D: Yeah? Oh water week! Water week... Or water lesson even?
1008
1009 J: So where you say like there's a constant refresher.
1010
1011 D: Yeah, I like the idea of it being refresher if it's during a term
1012
1013 J: But how about, so, for instance, you did a week ?
1014
1015 D: And you use those that are stuck up permanently and that would be different . It'll have to
1016 be something visual in the class to keep it more of a permanent thing going because I think it
1017 would end up getting phased out because so much is getting hammered into schools at the
1018 moment. So maybe a week actually. And then having that visual up. That they will then
1019 remind me to be to be fair as they are very, very good at.
1020

1021
1022 J: *Audible noises of attention*
1023
1024 D: Yeah maybe a water week then actually rather than... Yeah.
1025
1026 J: Well almost just side load everything in in one foul hit and then go. Right, we're going to
1027 use. You use our suggested methods is probably the wrong thing, but use the supportive
1028 displays.
1029
1030 D: Yeah, you definitely use a big display because their mind will remember to do that
1031 whereas if we had nothing to display and we did a week, they would, they would forget
1032 because...
1033
1034 J: So there's things you can continuously us.
1035
1036 D: Like the colour monster, we learnt all about that in the first week and every day they go to
1037 their colour monster to move their names and I refreshed it today and they got it all,
1038 remembered everything, because it there, it's visual and their using it every day.
1039
1040
1041 J: Sure. Just out of interest, what is the colour monster?
1042
1043 D: Oh! Errrm, Emotions.
1044
1045 J: Oh Okay
1046
1047 D: So I feeling happy, sad, calm and every morning they come in and put their name to how
1048 they are feeling.
1049
1050 J: Oh like...what do you call it? Mental health!
1051
1052 D: Yeah, absolutely yeah. I like I like that cause then I can see where they are why they are
1053 feeling like that. No, it's good, so maybe something like that as well because they can go to
1054 that during the daytime for their chart and they can move it up and down and mine will get
1055 quite excited by doing that.
1056
1057 J: Specially if they can see that you can see.
1058
1059 D: They get so proud of themselves as well when they've done something they're so proud.
1060
1061 J: They want to impress don't they?
1062
1063
1064 D: Yeah they want to please.
1065
1066 D: So yeah, maybe a water week would probably be more beneficial.
1067
1068 J: Ok. Ok. So, so obviously we sort of highlighted why that that should happen which was
1069 actually with my next question, but that all filled into one. So critiquing the ideas, errrm, in

1070 terms of prototypes that have made so obviously you've got the short animation videos of this
1071 series will be five of them. There is an extremely thirsty cricketer book coz I've written the
1072 extremely greedy cricketer. Have you seen this?

1073
1074 D: Nooo! **laughs**

1075
1076 J: It's basically me!

1077
1078 D: That's really cool!

1079
1080 J: Yeah, so there's a book but in terms of a general scope of an idea.

1081
1082 D: What's the book like? Is it for?

1083
1084 J: Errrm not really, just a child's book. It's very repetitive. That, **points to the greedy*
1085 *cricketer book**, that isn't quite so quite so repetitive.

1086
1087 D: But I like the idea that we have the colour monster book and the colour monster book talks
1088 about muddled up colour monster and somebody goes to help him. Puts these colours in
1089 different jars and it separates all his colours. Instead of being muddled, so something like that
1090 in a book would be amazing to be able to read to them and refer back to them, and have it on
1091 a display.

1092
1093 J: Yes, so I suppose actually if I show you the book. Errrm it essentially starts, so this is Jim.
1094 And Jim, looks very familiar. **Laughter** Yeah, that's Jim.

1095
1096 D: *Laughter*. Doesn't look like you at all!

1097
1098 J: It's even got the red hat!

1099
1100 J: So yeah this is Jim, Hello Jim. Errrm Talks a bit about cricket and what it actually is. And
1101 then. Why did you stop for a drink the team later? Why do you stop for a drink? Yes, there
1102 are two parts in cricket. Two halves in cricket is called an innings and in the middle of each
1103 innings. Both teams stop for a drink of water and tea lady goes well. Why did you stop for a
1104 drink in the tea? The lady is actually my mother looks just like her because running around
1105 doing exercise make you thirsty! Almost put it in like a narrative.

1106
1107
1108 D: I like how you've explained that as well,

1109
1110 J: So essentially just to just quickly run through it leads to Jim not drinking enough.

1111
1112
1113 D: Yep. Yep

1114
1115 J: Being in the second half of the innings falling over and fainting and then his dad, who
1116 scorer then have to come out and give him water?

1117
1118 D: That's cool!

1119
1120 J; So it's really showing the serious signs of dehydration.
1121
1122 D: Will you have like in your videos, scenarios? So that children can think and talk about it
1123 and be like say like that story. But in this scenario what happens here? Why why they feeling
1124 like that?
1125
1126 J: So that's actually useful in terms of critiquing this coz I haven't thought of that. That could
1127 be...
1128
1129 D: Because, well, my children love going back and talking about. We do a lot of partner
1130 learning partner talk. And they could be talking about what happened, why? Why is he
1131 fainted? Or why is so and so got a headache? Why is this person really grumpy? And then
1132 how much water they drunk today? And then you have a look and then they link it. So a lot of
1133 linking water and kind of everyday life like headaches, been tired, sluggish, not wanting to go
1134 out and play. Like Loads of those little things we can link back to that water.
1135
1136
1137 J: So I'm actually just thinking hadn't of it. But you saying that scenarios is just sort of
1138 clicked in my brain? Do you think something like errr, I say moving book but like having
1139 each scene sort of made out with these pictures. And then there's all the voice over that I
1140 would do. Do you think that would? Because I've gotta get that errrr illustrated by probably
1141 my cousin and I don't think she wants to do it, so struggling to find an illustrator per say. Cos
1142 obviously I've got some of the graphics there I could use again.
1143
1144
1145 D: Yeah. It's nice to see different scenarios, 100%.
1146
1147 J: OK, so that could be quite, that could almost be an extra.
1148
1149 D: And like the whole eating instead of drinking a drink is quite, a few my children. I mean,
1150 even (NAMES OMITTED) are like I'm really hungry, I'm really hungry. How much have
1151 you mad to drink today? This. Well you're thirsty. Yeah it's also going along the kind of
1152 healthy diet route as well, especially children over eating nowadays and you're actually
1153 thirsty, you're not hungry.
1154
1155 J: As in, I find that if I'm if I'm thirsty, if I'm hungry, I was down a pint of water.
1156
1157 D: Yeah I wouldn't do that, I would eat.
1158
1159 J: If I'm still hungry... but then a lot of the time, it's boredom as well,
1160
1161 D: Completely. So that could be in, that a boredom situation, that they will like. Yeah
1162
1163 J: Yeah, I like the idea of that. That's good. It's really good.
1164
1165 J: errrm. So you got the drinking tracker chart. Any critiquing to that?
1166

1167 D: I like it, I like it a lot and I know you said about maybe just having the full and done but
1168 my would love to kind of started my drink stating to move my name. Get them thinking about
1169 starting it and then they will probably keep referring back to the water. And they will be like
1170 I'm going I'm going or maybe just doing full kind of. Something in the middle, and done.

1171

1172

1173 J: OK.

1174

1175 D: I like that, but it depends what wording you would have in the middle.

1176

1177 J: Or have that as a key stage one one and then have an early years one as well?

1178

1179 D: Yeah. You could change it. You could differentiate it

1180

1181 J: Yeah, could change it couldn't you. Okay, that's cool. And there is the water song, don't
1182 know if you want to listen to it.

1183

1184 J: Oh yes! I guess I do! (*Very excited*) Mine love a song. I love a song to be fair Are you
1185 singing it?

1186

1187 J: No. So this was made by, you know the beautiful South. Allison Wheeler sings it. Kristy
1188 who's my supervisor. I think she part wrote it with her.

1189

1190 D: WOW!

1191

1192 J: So yes, he got some contact and got her involved. But yeah, so this is the song.

1193

1194 **Song was played**

1195

1196 J: Cheesy American song...

1197

1198 D: What I'm thinking you could add some dance moves. They could do this sort of thing as a
1199 movement break? Because now only in the last couple of weeks, are hot on movement breaks
1200 only because mine are losing focus cos they're sat too long on the carpet. Even something
1201 like this, listening to it. Maybe some cartoons on it though and actions.

1202

1203

1204 J: Again, it's resources and...but. Yeah, I think something like that.

1205

1206 D: Because then they can drink, but their learning also that exercising is good for the mind.
1207 But after they've done their exercise they know they need to replenish and have some water.

1208

1209

1210 J: Yeah exactly. Some gentle dancing, won't sweat too much.

1211

1212 D: but no, it'll be like the two minute movement breaks that we currently do now. Sooo, like,
1213 like a go noodle song or errrm an... What the other ones? Just Dance! And they stand there
1214 and do a bit of dancing and then there's no actual movement breaks by Jack Hartmann that
1215 we use and they are literally like 2-3 minutes on.

1216
1217 J: Might have a look at that and try and replicate it
1218
1219 D: And then sometimes when might have done that. They then ask to get a drink so they are
1220 quite good, then there are some that don't quite get it but something like this. You're thrown
1221 in the knowledge of it and go and get their drink.
1222
1223 J: And hopefully then potentially go and re-do.
1224
1225 D: Yeah 100% definitely!
1226
1227 D: Specially for summertime as well.
1228
1229 J: Yes cos obviously there's the heat factor as well?
1230
1231 D: **Noise in agreement**
1232
1233 J: So is there anything here that you think would be particularly helpful?
1234
1235 D: I like the sorting chart. I love that because that can go up and use it as a visual kind of
1236 thing. So we could do it as a whole class activity and it will go up on the board. It will stay up
1237 on the board because children can refer to it. They can remind themselves to go back to it.
1238 And even maybe showing like letters to parents to show what we actually have done.
1239
1240
1241 J: There is another one called bling your bottle. It's like a DT style thing.
1242
1243 D: Oh so they can make their own bottles? That's really cool? And decorate their own
1244 bottles?
1245
1246 J: Yeah, yeah. So is the volumes alright with this?
1247
1248 D: Errrm (*Pause*) yeah. We haven't covered volume yet.
1249
1250 J: So that'll be the only thing?
1251
1252 D: We are are looking to do that. So we're talking about rain. Precipitation this week, and
1253 obviously we're looking at millilitres and centilitres, but why not? It will teach them. So
1254 when they go look at their own bottles or bottles from a shop
1255
1256 J: Obviously not all of them are 500 millilitres, that's the only thing that's changing it
1257
1258 D: But how much are children supposed to drink?
1259
1260 J: it's supposed to be 1.1-1.3L a day. And obviously they get fluid from food as well, but then
1261 including that 1.6 but.
1262
1263 D: But then they'll learn that this is like a third of what they should be drinking
1264

1265 J: Exactly. And then you drink another third at home and another before you come to school.
1266
1267 D: Yeah I like them. Really like them actually.
1268
1269
1270 J: So in terms of. like you say you think they will be really helpful.
1271
1272 D: Yeah really helpful.
1273
1274 J: The drinking chart.
1275
1276 D: Love the drinking chart.
1277
1278 J: Why do you think that? I we sort of touched upon that. But just to reiterate?
1279
1280 D: So, the sorting activity, mine love a sorting activity and again its visual. They're picking it
1281 up and there seeing what kind of group colour bands they should be drinking. Red shouldn't
1282 have it often. Orange, you can have it, like the apple juice every now and again, and then the
1283 water which is green for good. I would like to hope that they would already know that they
1284 would be in the green and, then if did that and have that up in the class, they could always
1285 refer back to it and we can just bring it in every now and again.
1286
1287
1288 J: So you could almost do it as a display.
1289
1290 D: Yeah, 100%. Could do a display on it
1291
1292 J: So yeah. So that's good.
1293
1294 D: And the designing your own kind of water bottle. I just think they would love that.
1295
1296 J: So in terms of other activities I should. no. No we'll come back in a minute. So in terms of
1297 not helpful. Is there anything that you think is a bit pointless?
1298
1299 D: Not pointless. I would like the water song to have some sort of visual actions on it, even if
1300 it's just bright colours, coz if that's up on my board they would just be a bit (*audible sign of*
1301 *not interested*) or even the words come up as we go along and then like just what pictures of
1302 water around it just so they linking the song the words to the pictures. Is all yeah all linking.
1303 Ermm no, I really like these to be fair, they're simple that easy for them to do. And even My
1304 low's would understand this. Because although you got the words, you've got the words there
1305 for the highers'. You've also got the pictures, the lowers.
1306
1307
1308 J: and I think most of them are pretty self-explanatory.
1309
1310 D: Yeah 100%.
1311
1312 J: Maybe not that one. That's the big little bit.
1313

1314 D: No! I think I will get that. Yeah 100% I think they will get that.
1315
1316 J: errrm cool! So in terms of the other activities in maybe similar vein as that. Maybe not
1317 quite so papery I don't know. Errrm Have you got any other ideas that potentially we could
1318 get, errrm Children to learn about how much they need to drink and why they need to drink?
1319 As obviously that's good (*points to another activity*), but that's more knowledge rather than.
1320 That's how much (*Points to bling my bottle activity*), potentially. But obviously there's the
1321 why they need to drink as well?
1322
1323 D: The why. Yeah.
1324
1325 J: And obviously the self-regulation of their own, bodily signs of dehydration
1326
1327 D: But that could come in on your different lessons couldn't it? We could have like a
1328 different activity on each lesson to cover.
1329
1330 J: That's why I'm asking, is there anything that on the top your head that you think? That
1331 would be seen in the past of about dehydration.
1332
1333 D: Errrm I've seen poster there. I like the idea of a poster design. Trying to think. (*Pause*) It's
1334 a difficult one. Mine like doing things. Mine like, maybe you could do an activity where there
1335 measuring water, and maybe like pouring water into bottles. And like this is how much, so
1336 that they are actually physically seeing it because we have a water table outside doesn't often
1337 actually get used to be quite interesting to bring some empty bottles, and there actually
1338 pouring water in and see how much pours out. Very basic and simple, but I think it will get
1339 into them because they're doing it. Rather than just sitting there just listening. Which makes
1340 sense.
1341
1342 J: What like the videos?
1343
1344 D: I mean the Videos are good. I like the videos. I really like the videos and maybe having
1345 like a word wall around that bottle sort of thing like hydration and then reasons why you need
1346 to drink something. Some keywords could be around that, but again teachers can answer that
1347 themselves. I think that would be quite nice.
1348
1349 J: So almost a word wall creation activity. But again I suppose it's writing again is the only
1350 thing.
1351
1352 D: I think do it as a whole class? Stick that up (*the water bottle*) write on strips of paper,
1353 whole class and stick it up with Blu tack. That's what I like to do.
1354
1355 J: And obviously got the measuring, which is more practical, would be quite nice. Errrm so
1356 maybe try find some game out of that.
1357
1358 D: Maybe we could do something like where we get a big jug that represents a person and
1359 pour an amount of water to show how much you start with at the beginning of the day. And
1360 then you would give scenarios like 'this person is hot today and they are going out for a run',
1361 so the children can pour some water out to visually see that exercise and sweating results in
1362 losing bodily fluid, and so you need to replace that amount of water to be hydrated. Where

1363 the teacher can say, 'you've run out [of water] and that is what causes you to want to drink
1364 more otherwise you will get headaches, tiredness and fatigue'. So as a really fun activity, this
1365 will be interesting to as its practical and the children enjoy a practical activity.

1366
1367

1368 J: That's could be like the dehydration lesson potentially?

1369

1370 D: Yeah, yeah. So, you can be like, 'where are you going to get your water from?' And then
1371 that's where you throw out the questions to the class and they will say by drinking and eating
1372 this type of food, that can go onto another kind of solid lesson because I don't think most of
1373 my children would know what food you get water from. I mean to be fair as an adult I would
1374 find this interesting as well.

1375

1376 J: Really it's the fruit so your melons, your strawberries. Errrm Aubergines, courgettes
1377 anything that's got a lot of water inside it and it does add to your...I think you get 60% of
1378 your water from water and the rest from that.

1379

1380 D: Cucumber is a big one I know that cucumber hydrates

1381

1382 D: I think this will help the adults, as well as the children, and then we could kind of turn it
1383 with a fun activity. And we could turn into like a fun activity where the children then moan at
1384 the adults if they haven't drunk enough. To say we're not very good at that, as both adults in
1385 my class are not very good at it. So, it contains the whole class that we having a drink of
1386 water at the same time? I mean it would help me out!

1387

1388 J: Or you could have a homework, when I say homework, it's not really homework. But a
1389 home task maybe, where...

1390

1391 D: They do ticks when they've had... We're doing a sleep challenge at the moment at school.
1392 So when they've got so many hours asleep and they've gotta tick chart, that's only this term so
1393 we could do something like this in a term or even that even even in a week or two weeks to
1394 see how it progresses and they have to get a tick. When they've drunk so much at home,

1395

1396

1397 J: Okay, so another bottle at home?

1398

1399 D: But bring it back to school. Bring this sheet back to school to show us that they have been
1400 drinking.

1401

1402 J: I like that. And then you've got the parental involvement as well. To embed it there as well

1403

1404

1405 D: 100% 100%!

1406

1407 J: No that's good. So, actually, so that's what I was going to say. Is there anything that you
1408 are going to change?

1409

1410

1411

1412 J: Yeah.
1413
1414 D: So specially some of these children that do turn up and don't have water bottle with them.
1415 They're probably not thinking that. I would like to somehow get a leaflet sent home to
1416 explain to the parents why they need to drink, coz some I mean myself. I would sometimes be
1417 like have you drunk enough? And some parents might be so busy they might not even
1418 thought of that. Something like, the facts. Make them kind of hardcore facts that make you
1419 think like, 'whooh I didn't realise that.
1420
1421 J: They're the worst ones for it cos obviously they haven't got the parental help from home to
1422 bring it in or fill it or what have you.
1423
1424 D: So would say to bring in an empty water bottle. That's what I do with these two (*her own*
1425 *children*). So I do these to send them in with an empty water bottle and they fill it up at
1426 school because obviously I know they can leak in bags and some that's why some parents but
1427 promoting just bring up to water bottle in and then this will help. They can fill it themselves.
1428 And it gives them independence as well.
1429
1430 J: Yes, is that agency to go. I want to go for a drink of water. Errm rather than potentially
1431 asking someone, maybe, but there's basically there are pedagogical issues with that.
1432
1433
1434 D: Yeah, like there will be that kind of set times when you can't just get up and have a drink.
1435 But if we did small bits frequently, they wouldn't need thing go up. And I mean do it all the
1436 time.
1437
1438 J: I'm a big advocate for after play times and lunch times just actually every. Every child
1439 bring their water bottle to the carpet. I know you say spillages, but its only water, it's not
1440 juice or anything, its not going to get sticky.
1441
1442 D: Umm, some have juice but errrm
1443
1444 J: So I suppose there needs to be a rule of, just have water but then there's the problem of
1445 whether the children won't drink it as they don't like it,
1446
1447 D: But then if you've got a reward chart going. That will encourage them.
1448
1449 J: True, true
1450
1451 D: I think
1452
1453 J: and also, if you don't use the words squash, always use water. Then they just drink a lot to
1454 drink water.
1455
1456 D: I like that after break and after lunch like today we took him out for the afternoon just for
1457 little mind five-minute mind break and then I got them to come in and they gave them an
1458 extra piece of fruit and they sat on the carpet and I said you're bring your water down but
1459 then that those he did happen the spillage but I've got to trust them. And that's what I don't do

1460 enough I don't think. I don't trust them to stick things themselves into books coz I just. But
1461 then you're not giving them those key...
1462
1463 J: As obviously that's a lot of time you're spending.
1464
1465 D: And I'm not giving them that independence and teaching them how to do it properly. So if
1466 I was teaching them to not spill it and be sensible and to do their lids up properly. You will
1467 then show them a whole new thing I suppose.
1468
1469 J: Suppose the big problem is that if they spill the whole bottle.
1470
1471 D: But then I suppose, it doesn't really matter. You don't know really till you try it properly.
1472
1473
1474 J: So so yes, in terms of changing stuff really is is the actions.
1475
1476 D: The song with actions and maybe The bottle (*tracker chart*) may be turned into three
1477 rather than four. They can just have a couple minutes of minutes to change it after lunch.
1478
1479
1480 J: Ok, Yeah okay, yeah dehydration activity.
1481
1482 D: Yeah I really liked that.
1483
1484 J: Could you put into words for me.
1485
1486 D: Yeah. Can see it in my head right now. Yeah, kind of water area that you have. They have
1487 like these big tables, don't they like water baths and then just having jugs and water bottles.
1488 And then just maybe you could even just draw a picture of an outline of a person to stick on
1489 the jug laminated person and then you just kind of talking through it with the class and then
1490 send him outside and getting them to. Kind of working groups with an adult.
1491
1492
1493 J: Ok. Yeah I like that. So much just trying to put a little bit of realism in it rather than just
1494 water in jugs .
1495
1496 D: Yeah, completely.
1497
1498 J; Laminated man I do like that.
1499
1500 D: Yeah and you can even laminate like fruit, oh they had this piece of fruit. Drop it in the
1501 water at a bit of extra water because it covers that fruit. Oh I went into the toilets, you know
1502 and I lost some. It's just getting in their heads coz I mean I'm learning a lot from this to be
1503 fair.
1504
1505 J: I suppose we could do is actually put a hole the jug where the laminated man goes for a
1506 wee.
1507 **Both laugh**
1508

1509 D: Oh they will find that hilarious! Honestly! Oh my god! Yeah I'm not doing that! You can
1510 come in and teach that lesson.
1511
1512 J: So in terms out of anything you would change in relation to the children's knowledge rather
1513 than the pedagogical stuff?
1514
1515 D: I like a lot more role plays as well. Maybe our lesson could be like role playing would be
1516 quite good and is a lot of class discussion. Mine do really well class discussions rather than
1517 sitting there showing them teaching. We do a lot of learning partner talk .
1518
1519
1520 J: In terms of where it pause is (*in the videos*)?
1521
1522 D: Love the pauses. Absolutely 100%. Gets them talking to each other about it. coz sum
1523 don't put up their hands up to answer because they're embarrassed. Or nervous. But talking
1524 partners it works great, but I'll probably come up with more ideas and I really have been
1525 thinking about it then. But can just message you and...
1526
1527 J: Yes can just ping me message and will always add into it as well so.
1528
1529 D: That's the bonus about being an ECT
1530
1531 J: The last question...
1532
1533 D: Always getting some fresh ideas where sum staying in their ways they wouldn't wanna try
1534 in.
1535
1536 J: I recon (NAME OMMITTED) would be up for that.
1537
1538 D: Yeah I do too.
1539
1540 J: Yeah so yeah. So last question well it's a the series of last questions in terms of providing a
1541 quantifiable comparison. How would you rank these in terms of 1 never use or not as good. 2
1542 sometimes use, which is okay/ good and 3, really good/ amazing.
1543
1544
1545 D: So definitely the drinking chart.
1546
1547 J: So let's started this one. The animation videos? (*The song was left idol on the iPad, so the*
1548 *reply was in relation to the song and dance moves*)
1549
1550 D: I would use that movement breaks so that we really like maybe one every other day sort of
1551 thing, or at least twice a week for the movement break. Coz I really like that idea and I know
1552 what that implemented in their heads. They hear that they need to have a drink.
1553
1554
1555 J: Oh the song! You're talking about the song! What about the videos?
1556

1557 D: I would like to try and go back to those videos, For like PHSE lessons. Just revisit them.
1558 Yeah, so wouldn't obviously do the week, but then be like "do you remember that video that
1559 we did or still got it. Let's have a little look" coz yeah some children being off as well. I'd like
1560 them to all know. And then they can talk amongst themselves about it. Remind each other
1561 what it is. So I like the idea of the videos as well as it's something there.
1562
1563
1564 J: So what number would you do that so in terms of one never usual? C**p. Two OK, good
1565 or three, really good?
1566
1567 D: I love the videos, but I wouldn't use them on a weekly basis. I probably use maybe once
1568 term. So I love the three for how amazing they are, but how often I'm using it probably in the
1569 middle as I'd probably wouldn't repeated every day.
1570
1571 J: So would use it for the water week (3) but how often is a (2)?
1572
1573 D: So use it for the water week. Then I'd like the refresher doing refreshers.
1574
1575 J: Yeah I probably haven't phrased the question that well. So in terms of the book. One never
1576 use, two. Sometimes useful, or three.
1577
1578 D: I sometimes use the book, but it would be cool to do different scenarios. So maybe I'll
1579 throw that one in. Maybe the lessons, or maybe come up with a few versions as a book or
1580 PDFs book, even kind of like a video book."
1581
1582 J: Yes, I was thinking with that like whiteboard animation this. Get the character to move it
1583 while its talking.
1584
1585 D: yeah 100%. I think that would be really cool
1586
1587 J: Most achievable thing I could probably do.
1588
1589 D: Yeah, so I think he's a really good idea. Again three. I would use it every now and again.
1590
1591
1592 J: So in terms of this lesson pack for teachers. So in terms of that lesson pack for you?
1593
1594
1595 D: For me? The bling your bottle that would be in afternoon activity.
1596
1597 J: I mean the teachers' guide. So in terms of your own teaching, how useful is that?
1598
1599 D: I think it's amazing because we don't have time to come up with all of this by ourselves.
1600 And if it's something quick and easy, we can grab, skim over and use you're onto a winner.
1601
1602
1603 J: So would you say something shorter? Which literally maybe in three pages has the lesson
1604 plans in, has the resources? or something like that which is longer which has more structure?
1605

1606
1607 D: I like the idea of structure, structure because I like knowing what we will be teaching, why
1608 we teaching it, and then what resource is we need, and then maybe add into it, say with the
1609 sorting activity. Why don't you stick it up on a display in the room, so children refer to it all
1610 the time?
1611
1612 J: Okay yeah. That's fine. This is useful to know coz there's been different ideas or. So the
1613 teacher I spoke to. The other week she was like, she's been 20 years, and she was like just
1614 need 3 pages, the resources, what I'm doing and that's it, which is why then asked you coz
1615 it's quite interesting but it's completely different ends of the career spectrum
1616
1617
1618 D: Maybe it's because I am looking more in detail because I like to cover myself to know
1619 what I'm doing, and I that I can't just pick it up and go with it. Maybe that is being a teacher
1620 for a long time, but I like it laid out and specially if someone's covering your lesson for you.
1621
1622
1623 J: Yeah, there's that yeah.
1624
1625 D: Yeah, I would rather give them more information than less. And if there is, why not give it
1626 to the mass?"
1627
1628 J: No that's fine, that's why I'm asking cos my initial thought was the pack. That's probably
1629 how I would like it.
1630
1631 D: Is it is like one page per day?
1632
1633 J: Yeah? So there's the lesson, Lesson outline. Then teachers prob teacher prompts.
1634
1635 D: Can probably squeeze that all onto one page to be honest. So it's almost like 5 pages.5
1636 lessons, 5 pages. So it is not too heavy?
1637
1638 J: So you don't think you need the prompts?
1639
1640 D: What are the prompts?
1641
1642 J: Really just how it fits into the curriculum, and there's a bit more in depth with that, so this
1643 is yes, early years. But almost what questions as well.
1644
1645 D: Oh But I quite like that actually is that could be an optional bit then couldn't it? Like you,
1646 as long as you got in the pack. It's an optional for the teacher to use it or not, and if it does
1647 cross curricular you're onto a winner there.
1648
1649 J: Just because it's the structure?
1650
1651 D: Yeah
1652 J: that's what you're saying. And last, the water song with dance moves? You said 3 didn't
1653 you?
1654

1655 D: Yeah 3, but it needs some pictures. Some video, characters, some sort of colour, and in
1656 your face.
1657
1658 J: Or humans dancing.
1659
1660 D: Humans dancing yeah. You can even just do it with kids Use those two!
1661
1662 J: I could, but then I have to dance!
1663
1664 J: And the last one is the tracker chart.
1665
1666 D: Love it and I like the idea of the stickers maybe during the week. I love the idea. Would
1667 you provide the stickers? With like water drops on?
1668
1669 J: Yeah. Well I was thinking water week stickers. I've got a little logo that I've made. So
1670 that'll be quite cool. That'll just be for that week. You can then carry it on. Even if it's just a
1671 little dot or something
1672
1673 D: What I would do, I would laminate names and then they can move them on a daily basis.
1674
1675
1676 J: Yes, you can re-use it, yeah.
1677
1678 J: Well that's everything (NAME OMMITTED). Thank you for having our interview. And
1679 just for the recording, if you want any of your data taken out, then just let me know and I will
1680 do that without providing a reason. Errrm cool. I'll end it there.
1681
1682 END OF TRANSCRIPTION
1683

Teacher 3 Interview – Transcription FULL – 19/4/22

J: Josh / Researcher

T: Participant / Interviewee

Context: The interviewee sat down in her classroom with the researcher and explained the intended purpose of the study, why a HEP could be required in our educational system and a brief explanation of what the various prototype resources are.

J: OK. So just for the recording, I've got (NAME OMITTED) of (SCHOOL OMITTED). We're going to have a semi structured interview. So OK shall we get going?

T: Yes

J: So these are just demographic questions. So do you have qualified teacher status?

T: Yes

J: Do you currently teach in an early years setting or Key stage one setting?

T: Yes

J: And are you happy for this semi structured interview to be recorded?

T: Yes

J: And would you like a copy of the recording?

T: No, I'm fine. Should I say yes?

J: No, no. That's absolutely fine! (*Both audible laughter*)

[*Interviewer Moved recording device to more effectively record interview*]

J: So, what key messages? What key messages, teaching strategies and resources do you currently use to encourage knowledge of diet and healthy lifestyles, and more specifically, water consumption in the classroom?

T: What were the first three bits again?

J: So what key messages, teaching strategies and resources do you currently use?

T: Do you know what. very much these sorts of videos I find often, so I'll scour several school resources, like Espresso, or good ol' Cbeebies BBC or something like that. For any topic for Easter or whatever we'll move onto the Jubilee, let's say. I'll always start. Maybe it's just modern kids coz they swipe, they tap, and it always that we'll generally start with

1733 something like that video or else some sort of silly bit of magic. Like when I say magic it's
1734 not magic, it's a bag or somethings concealed something for this or it could be concealed
1735 water bottles, ooo how many have I got in there. So something just really to capture their
1736 interest first, I suppose. And then it makes you like some of its tricky coz some kids are really
1737 good at listening, aren't they? And other don't learn by listening. They want to get up and do
1738 so.

1739
1740 J: Tactile.

1741
1742 T: You might also want other things, specially areas on the table where just investigative in
1743 free-flow time was there to be before you talk, what is there to provide input to mess with?
1744 Maybe I would have water bottles out or something and funnels and what not. For a few
1745 days, we even introduced the topic. Does that make sense. I'm panicking

1746
1747 J: OK, So almost like setting that.

1748
1749
1750 T: Is that ok?

1751
1752 J: no, that's absolutely fine. Don't panic at all. There's not wrong answers.

1753
1754 J: So almost like you're setting the scene before you introduce it?

1755
1756 T: Yeah in a way absolutely! Or gauging interest or you're get to high summer and they
1757 naturally be more thirsty but the kids you want drink still won't drink. It's like their reluctant
1758 water drinkers I mean I'm gasping all day long in there. I could do it without fluids, but kids,
1759 some kids can go all day and you'll see the little bottle that have had a sip or most years there
1760 will be one parent at the gate who's asking me. Can you encourage them or getting a sticker
1761 tonight in their chart at home or something? Because they did just a habit of not drinking and
1762 being dehydrated or going to the toilet. So then specifically what not a target sounds cruel,
1763 but you might encourage that one person. Errrm I don't think I do enough really to encourage
1764 that water drinking (*interviewer agreement*). But often campaigns are brilliant. We were
1765 recycling yourself plastics now because we just go in the bin here. We just have hard plastic
1766 recycling with or rubbish. That's it. We do compost but they catch rodents, so we tend not to
1767 compost now and we're all doing that and se at our homes. If you live locally. But now the
1768 school encourages you to take to the supermarket, let's say, so we just waffled on about that,
1769 found videos and now they do it. This is a little bag by the bin. They know about it. So we
1770 opened our bananas, so it's making. That was just a focus for several days. An in my head
1771 campaign really works. I think something like this, a bit like we will have, you know, Earth
1772 Day. No doubt. Or something like that. Really. Resonate with the smallies and then they
1773 carry it on. They go home and the parents will feedback to me and Go. "Oh Mrs (NAME
1774 OMITTED) said this". Or they'll start taking their soft plastics to Tesco. So I think sometimes
1775 highlighting it really works. It gets you going is like the kick start and then you carry it on.

1776
1777
1778
1779 J: Hmm ok. I know you say you try and pick a child, or you would almost, yeah. You pick
1780 children that have been highlighted to you by their parents or what have you (*interviewee*

1781 *agreement*). And when would you implement those strategies during the day to actually sort
1782 of up their water intake individually?

1783

1784 T: I mean really for the specific folk that I was worried about, I'd be just thinking of key
1785 times like snack time is actually the worst thing is when, this is awful, but when you're in the
1786 middle of a saying in literacy and about to deliver a new phoneme, even that could have drink
1787 water or one person says that, seven more people want to drink, which is magical but not
1788 right now in the middle of my new phoneme. What I need is these four minutes for you to
1789 listen to me, so unless we, just a bit like snack time, we should have maybe on the visual
1790 timetable water break time. You know, we have free time, we have milk time and at milk
1791 time if you don't like milk you have water. But I don't have a Water bottle. I'm mean it
1792 available all day. It's really prominent. They are in their groups. But at the moment I don't
1793 recommend that they. They can go a whole day and take home a full bottle. And I will be
1794 honest. I might not know. And at the end of the day I'll go "OOOO you've not drunk a thing
1795 today!". And rarely in the dinner we provide a little bit of water, but they would rarely ask for
1796 a refill. Which is sad in a way isn't it?.

1797

1798

1799 J: That's one of the questions that I want to ask the children when I come in for the pilot. But
1800 we haven't booked a time yet. But that's one of the questions I want to ask is how much do
1801 you drink in a day? In terms of bottles. But also in terms of cups I'll bring in a visual
1802 representation of the cups, how much, how many cups to drink at lunchtime? So that would
1803 be quite interesting to see potentially what? But what hydration levels there are and if they if
1804 they perceive not to be drinking a lot. And is probably an easy question for them to be able to
1805 answer because of the smaller cups in terms of the little yellow...

1806

1807

1808 T: Yes beakers.

1809

1810 J: So if you could. I knew you drew upon drinks break time and what have you?

1811

1812 T: Yes.

1813

1814 J: But if you could add anymore strategies and resources to encourage knowledge and to
1815 engage children in healthy diets and water intake, what would you like to do in like an ideal
1816 world?

1817

1818 T: We should do it. It's part of our curriculum. We are meant to be doing it. It is often not
1819 really a discrete lesson. And assumed we'll mention it now and again and think that'll do,
1820 which isn't enough. But although it's hard managing multiple charts and things, but this is a
1821 beautiful visual idea specially if you had a kiddie height. (*pointing to the drinking tracker*
1822 *chart.*)

1823

1824 J: Yeah,

1825

1826 T: and it's so easy it introduces that element of competition which some of them will
1827 loooove. And they will be guzzling. And that's what you find in the first day, especially in the
1828 summer when it's new, and there's a heatwave and they're absolutely conscious. We must all
1829 drink or we'll going to collapse. Then it's almost like a competition, yes they have to be

1830 careful that they don't overdo it, where they are like on the 3rd refill, and your like "oh you
1831 will be OK", but this would be brilliant at something like that. But to keep going to prove to
1832 persist, I think it's so easy to start things, but to keep momentum going is tricky. (*Audible*
1833 *noise of research agreement*) What would I do? Maybe, including my fellow team members,
1834 maybe. Or assigning a monitor. There will be someone there you could find you would love
1835 to be in charge of it. Yeah, maybe someone like a kind monitor who was checking and
1836 noting. "Gosh, you know, Gina's hasn't had a lot today". I don't know! Maybe things are on
1837 rotation into turns. Maybe little drinks monitors in the most positive way possible that we
1838 were supporting each other to drink and not telling someone off.

1839

1840

1841 J: That's one of, that's the third lesson of that the children can feel comfortable enough to say,
1842 "oh, (NAME OMITTED) have you drunk today?"

1843

1844 T: YES!

1845

1846 J: That should hopefully land into the children asking each other, have a drunk enough?

1847

1848

1849 T: Even today they asked (NAME OMITTED), in a safety key cup and asked what's in there
1850 and it was coffee. But you know she said some water and they were asking why are you
1851 drinking? What is this? Could easily harvest their fascination. It's a great topic!

1852

1853

1854 J: Thanks for that! So looking at delivering these resources and lessons, videos and what have
1855 you. What detail of content. Is it in your view? Is better? So would you prefer to see taught in
1856 like a form of a water week? And there's one lesson every single afternoon for five days.
1857 Possibly during healthy schools week or would you ever see it one afternoon a week for a
1858 term or potentially bringing another literally as a specialised focus just on water and no, no
1859 real other parts of the curriculum apart from the water.

1860

1861

1862 T: (Pause) My God, I don't but my gut is saying water week. It's early enough in the season
1863 will say. I just from found my own experience in there like they do the recycling as soon as
1864 you set them off, they take it off your hands. Then you know what I mean? Tremendous input
1865 at the beginning and then it gathers its own momentum anyway. I just feel for us five weeks
1866 in for Smallies is an eternity.

1867

1868 J: A week was too long a gap?

1869

1870 T: I think possibly to maybe to keep it going, I think they just might enjoy. For them, that
1871 would feel quite speedy. errrm I'll go with water week.

1872

1873 J: And almost yeah, special most having these resources that are so perpetual for instance.

1874

1875

1876 T: Yes. yes

1877

1878 J: This could be a visual, not visual, yeah visual timetable. Not isvual timetable. Visual
1879 Register.
1880
1881 T: Yes! Almost like a self-register!
1882
1883 J: Yeah. So they almost move their name to the top and then move then move down.
1884
1885 T: That'll be brilliant they will be able to read. They will be able to say "oh so and so have
1886 had enough" - "or so and so has had loads".
1887
1888 J: Yeah. Exactly. And you've got that. It's not the word I'm looking for but it that checking
1889 on each other isn't it so. That's cool. So you sort of went on as to why? Why you think it
1890 would be better? Because you've got that immersing at the start?
1891
1892 T: Yes, I think so. For us I find it's easier. It's like dropping a water week bomb, that
1893 explodes and then because we're so free and easy, you can go any which way they'll come up
1894 with an idea we haven't thought of. And when we're free, we've got the time, I will go with it.
1895 I'd rather do that and harness their enthusiasm. They tend to respond well. You know they
1896 love a festival with festival Diwali boom were mad about it.
1897
1898 J: Yeah. No
1899
1900 T: fireworks night. Another one? Yeah! Mad a festival or event. To be honest, I find here.
1901 Anyway, here (SCHOOL OMITTED) I think that would work, but now want to know
1902 (NAME OMITTED) said now! (*Both Laugh*).
1903
1904 J: So in terms of critiquing the resource ideas and prototypes that I've made thus far. Is there
1905 any strategy or resource that significantly stands out that you feel will be particularly helpful
1906 in teaching this statutory element of the health curriculum?
1907
1908 T: Honestly it's simple. That chart [water tracker chart]. Something as simple as that and the
1909 videos I would say are the two most effective initially would be those two. It's like the spark
1910 is almost coming from the video. It's short and sweet. I might even just use a snippet and
1911 absolutely still would be waffling talking sharing so we wouldn't watch that possibly even in
1912 one goal or or you might return to it. Sometimes they love it and they'll return, and return
1913 again. Then they'll be using that vocab. The fluids and what not to mention their replenishing
1914 fluids and what not. Yeah, it's amazing how that would become part of everyday vocabulary
1915 right now, but they would just say it and maybe, you know, they'd be like (NAME
1916 OMITTED) is not replenishing his fluid (NAME OMMITTED). That sort of thing would
1917 become everyday vocabulary. (POINTS TO THE TRACKER CHART) I love that, the
1918 turquoise is beautiful. I can see this working for loads of us. I love these things. These cut
1919 outs and I think we could combine. So instead of me "I'm working as much as my scissors
1920 cutting out" or for the folk you find that taxing and exhausting I'd have a laminated set
1921 maybe on the carpet or it could be early morning work when you came in and that was out
1922 and ready to go. Some you could even sent home almost. You could on that are little. And
1923 this weekend I'll give you two. One for Saturday. One for Sunday. Bring it back to me and let
1924 me know how much you drank. I love them all!
1925
1926

1927 J: I mean, this is well (*points to bling your bottle*) Yeah if I pass it to you. Yeah. It's it's
1928 essentially just a brief lesson overview or activity overview of the five of the five lessons that
1929 with each video that will attached. And....
1930
1931 T: Oh, this is this is great! A great starting point. I do find in there they are so chatty and mad
1932 thrilled. They will probably take the lesson in a slightly different direction that you hadn't
1933 planned. It's giving tips!
1934
1935 J: This is just a couple of a couple of structured activities then you can put in wherever you
1936 like, so.
1937
1938 T: Absolutely. This would lead to all sorts of things will just lead to even creative things.
1939 Even decorating bottles aren't even real water bottles making displays. Great job!
1940
1941
1942 J: Sure.
1943
1944 T: If there's ever a story?
1945
1946 J: Yeah, I want there to be.
1947
1948 T: Would be great.
1949
1950 J: It's just getting in illustrator and my cousin won't do it. (*Noises of agreement from*
1951 *interviewee*) But she did that one. Which is funny. But yeah, so the story just starts on about
1952 cricket and doesn't drink enough. And his dad, who's the scorer, it goes of Jim. You need to
1953 drink and he goes on. I don't wanna drink and it gets the second half. After everyone else has
1954 had a drinks break. But he didn't. He decides to ignore his thirst response and he felt so dizzy
1955 that he collapsed on the floor(*Noises of agreement from interviewee*). So this is why we need
1956 to drink, if it gets so bad that eventually you will know that.
1957
1958
1959 T: yes.
1960
1961 J: It's almost as a little bit of a shock factor coz you just have to be so dehydrated to collapse.
1962 It's really just getting the children to recognise dry mouth. Flushed skin, a bit of a headache,
1963 yellow wee that those are the early signs of Dehydration.
1964
1965 T: You know what they will love the idea of the yellow wee. Cos the toilets are never
1966 flushed.
1967
1968
1969 J: Yeah.
1970
1971 T: That'll be another that will improve our toileting habits! haha yeah. Check the wee!
1972
1973 J: So so for that, you'd say the video and...
1974

1975 T: I love it all honestly! More my mind is thinking of getting the, getting the germination of
1976 the idea, I suppose. But all very useful.
1977
1978 J: Yeah. Planting the seed.
1979
1980 T: But all very useful. Yes, yes.
1981
1982 J: Ok that's cool. I would, I would say anything, anything particular unhelpful, but I don't
1983 think that something from the tone of voice there wasn't. There wasn't a terrible amount, so.
1984
1985
1986 T: No, there's nothing there that I wouldn't use. I'm dreadful for following plans. But then I
1987 put then it depends on the person. I'm not saying I'm an expert, I'm just saying the older you
1988 get. Maybe you were more comfortable letting the lesson go where it might go, or is it?
1989 Perhaps I was just starting out. I might be anxious that they wanted me to get to the end of
1990 that lesson was, I'd be less panicked. And as long as I knew I was covering the vocab, I know
1991 I'll come back to it tomorrow. Probably be a bit more relaxed, so maybe grab some more
1992 experienced person. I love it as a guide.
1993
1994
1995 J: Yeah, okay.
1996
1997 T: I'd never have thought about replenishing fluids. I wouldn't have called it that so that's
1998 brilliant.
1999
2000 J: Yeah, as I said, that's something that actually they might like the different words. I mean,
2001 when I was student in, (NAME OMITTED) class the word tessellate her favourite word.
2002
2003
2004 T: This is it! Introducing new works that sometimes even their parents haven't heard before
2005 you know.
2006
2007 J: So yeah, so to summarise, what we discussed, is there anything that you would like to
2008 change or add? To this final pack of hydration education resources, or the way it's
2009 implemented, anything just like to change pretty much...or add.
2010
2011 T: I. Now I'm not saying it's not good, only I would love is just an element of play. I that I
2012 mean you can't play with rehydrating yourself or maybe just some water play activities
2013 around it could be to do with the litres. It could be linked with maths with you mentioned the
2014 1.3 litres maybe some of them in there who might know. And I know when you get older, its
2015 almost very difficult, you talking they are 4, talking about a litre of something in the fridge.
2016 But yeah, I mean, you could certainly extend it to, you've got this little bottle here, you could
2017 have bottles that had label to the 500ml. I'll definitely put that out anyway. If it was water
2018 week, that would be happening. We will be messing about with bottles, funnels, that maybe
2019 do more measures, screwing on lids, this doesn't feel. Also things freezing as well. Maybe
2020 playing with freezing a bottle overnight, leaving it to defrost all day as you play with it
2021
2022
2023 J: okay.

2024
2025 T: For some of them, maybe the less verbal folk maybe or peoples, maybe with special needs
2026 you might not be able to verbalise or express what they're thinking about the topic, but might
2027 physically enjoy playing with the water and it could be that it would lead to a conversation
2028 or. I don't know even sensations where they then go and feel like I want to drink. I don't
2029 know, I feel like Waffling.
2030
2031 J: No, no, no, no, you're fine.
2032
2033 T: Yeah. I'd include play.
2034
2035 J: yeah ok, something "play-ie"
2036
2037 T: Try that okay.
2038
2039 J: I know you talk about the water try there. That's cool. I've got an idea because I could,
2040 because you're not obviously the first person I've interviewed. But I'll tell you about that at
2041 the end coz it's I think it's quite clever but it but in terms of that idea of play that's really
2042 useful to justify in my research methodology because at the end of the day, it's important, so
2043 thank you for that coz yeah, there's because you're not the first person I think, I think. I think
2044 all three of you now have said that you need something play. So that's really useful. So is
2045 there anything that you would like to change in relation to the children's understanding of like
2046 what they're actually being taught?
2047
2048
2049 T: It's almost hard to say till I've done it once,
2050
2051 J: yeah.
2052
2053 T: Well we can then all feedback and go... I thought it was going to go like this would have
2054 went like that. I don't know. Maybe I mean, it'll be depending on the season when you did it,
2055 it'll be great to do it in the summer, to be fair today actually quite hot almost today where
2056 you're feeling. I reckon all were feeling a bit more thirsty. You're probably still wearing your
2057 winter layers on, which I probably shouldn't, even though I did this morning? Errrm I've lost
2058 my trail of thought now. Yeah. Possibly I do. But then when she want kids to do this from the
2059 moment they came in, then is that almost too soon? And really in the dead of winter, although
2060 we shouldn't, does it matter you've still got to consume the same amount of water?
2061
2062
2063 J: Yeah.
2064
2065 T: I suppose in a way, you know you need that minimum at least
2066
2067 J: That 1.1 to 1.3 is children not really doing much exercise and just being in class and just
2068 going about their daily activities (*Agreement from interviewee*). So it's actually more than
2069 that, so. Is really how much they lose in the in the differential between how much they need
2070 to put back in. But OK!
2071

2072 T: Also if you can make it practical. If you could somehow make it even more practical by
2073 just almost experiencing when you water week to be a hot week basically. That'll be great! .
2074 Where they will be sweating buckets where they come in at 2, specially at 2:30 and then there
2075 gasping. Even if they were not naturally drawn to the water, they are gasping.
2076
2077
2078 J: Well, you say that one of yours came in from PE, and I was just sat there (*Audible*
2079 *agreement from interviewee*) and I overheard where they were like "I'm really thirsty".
2080
2081 J: So you know, So you went to terms of like almost trying to provide a quantifiable
2082 comparison for for the study. How would you rank each of these resources as either one, No
2083 good, two good or three great? So, shall we start with the videos?
2084
2085 T: Ah! Three. great.
2086
2087 J: OK.
2088
2089 T: Then I'm a person who loves it. I like a bit of input. Errrm I suppose I just find them
2090 useful, but I think there's just enough you wouldn't need overkill on that. You know the I love
2091 that. Three is good, isn't it?
2092
2093 J: Three is great. Two is good. And then one is no good. Nice and simple, just three numbers.
2094 Right ok, the book? I know you've not read it but...
2095
2096 T: (*Pause for thinking*) I would love a book cos I get asked for a book all the time, but
2097 depending when you suggest to would use it and depends on their concentration. So maybe a
2098 two out of three of usefulness, but I mean I could deliver it without the book, but I would
2099 love the book. Personally I would love the move depends, but then they could take to that
2100 book and I'll read that book everyday (*Agreement from interviewer*). Where they are like
2101 "read that book again, read that book again!" It depends again, maybe you have to test it first
2102 to see how it goes.
2103
2104 J: Yes, that's fine. Again part of the pilot, really. In terms of the actual, before I go into
2105 multiple schools but we'll talk about that in a minute, just when this is not part of this study,
2106 of the questions really.
2107 J: Errrm so the lesson pack?
2108 T: Oh I mean, come on! Three for a teacher! You need that. Otherwise. Without that, I'm
2109 making it up. I could make it up, but I'll be missing lots of those beautiful key terms that you
2110 want to say and I might not be using the details within the curriculum either, so yes, Three.
2111
2112
2113 J: Almost the video gives you a lot of what you need. You'll be watching it at the same time,
2114 you might wanna watch it before you teach it. Obviously not compulsory but.
2115
2116
2117 J: Oh you've not heard the water song!
2118
2119 T: Oh if there's a song it's already a 3. That is just a winner that gets the mood going. The
2120 motivation going they'll be asking for it of this will be!

2121
2122 J: It's professionally done
2123
2124 **(SONG WAS PLAYED)**
2125
2126 T: That's epic! That now. That's given the whole thing is going to be great! They will love
2127 that!
2128
2129 J: I'd love there to be some dance moves as well but.
2130
2131 T: Yeah that's the thing, we'd invent them anyway!
2132
2133 J: Yeah you could do! That's something you could do! and then you might get the the
2134 children a little bit hesitant to it to then come in and hopefully really enjoy it. And then the
2135 drinking tracker chart?
2136
2137 T: Oh I love that! If it could be magnetic-y somehow. If it was somehow, I know we are
2138 going into mass production but almost like on a magnetic board and they could just push their
2139 name up and down. That'll be really cool.
2140
2141 J: I suppose you could. I mean, you could put the.
2142
2143 T: I mean something slightly smaller and much lower, and you put that you just pushed your
2144 name up and down. Who knows? Can you print this onto a magnetic board? But you know,
2145 it's so important. It'll be brilliant. It was a physical resource. We make one for now.
2146
2147
2148 J: but yeah I'm thinking literally an A3 bit of paper. Laminate it so it's reusable and. Faces or
2149 names there.
2150
2151 T: Oh you have faces too! That'll be good
2152
2153 J: So you know that's the thing is, is that that's a little bit of pre-work for you. If you wanted
2154 to make and use all the time. But, but that's pretty much pretty much that in terms of
2155 questions. So we'll end it there. Thank you (NAME OMITTED). So it's all been really useful
2156 thank you.
2157
2158 T: that's ok.
2159
2160 J: Ok that's perfect.
2161
2162
2163 END OF TRANSCRIPTION

Appendix 7: Version 2 HEP








List of Water Week Resources

- 1. Teachers Guide Lesson Plan Pack**
 - 1a. Bling your bottle
 - 1b. Water tray dehydration activity
 - 1c. Extremely Thirsty Cricketer Drama / Role-Play / Drawing
 - 1d. Healthy vs Non-healthy drinks sorting (physical and cut/stick)
 - 1e. Poster Design Example
 - 1f. Water Song

- 2. Whole Class Drinking Visual Register Tracker**
- 3. Sticker chart with Water Week stickers**
- 4. Hydration driving licences**
- 5. 5 Whiteboard Animations Series**
- 6. Teacher / Parents Information Fact Sheet**

Version 2: Water Week Video Series Links

<p>Water Week 1 Why do we have to drink? How much do we have to drink?</p> 	<p>Video 1: https://youtu.be/jfohHo_mn_Q</p>
<p>Water Week 2 The signs of dehydration How to know when to drink!</p> 	<p>Video 2: https://youtu.be/J2fvUDLS7uo</p>
<p>Water Week 3 How we can all help each other to drink!</p> 	<p>Video 3: https://youtu.be/ej5C9sSP48U</p>
<p>Water Week 4 Healthy and Non-Healthy Drinks</p> 	<p>Video 4: https://youtu.be/rKZLMT9oIrQ</p>
<p>Water Week 5 The Water Quiz!</p> 	<p>Video 5: https://youtu.be/EpRipUiVBuO</p>

Stickers – Mass Print



Hydration Driving Licences



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Water Week

TEACHER / PARENT INFORMATION FACT SHEET

This week at school your children have been learning all about water consumption. But the learning doesn't stop here! Below is an abridged summary of the things they have learnt so teachers and parents can help too! **You could even watch the water week video series!?**

FLUID FUN FACTS!

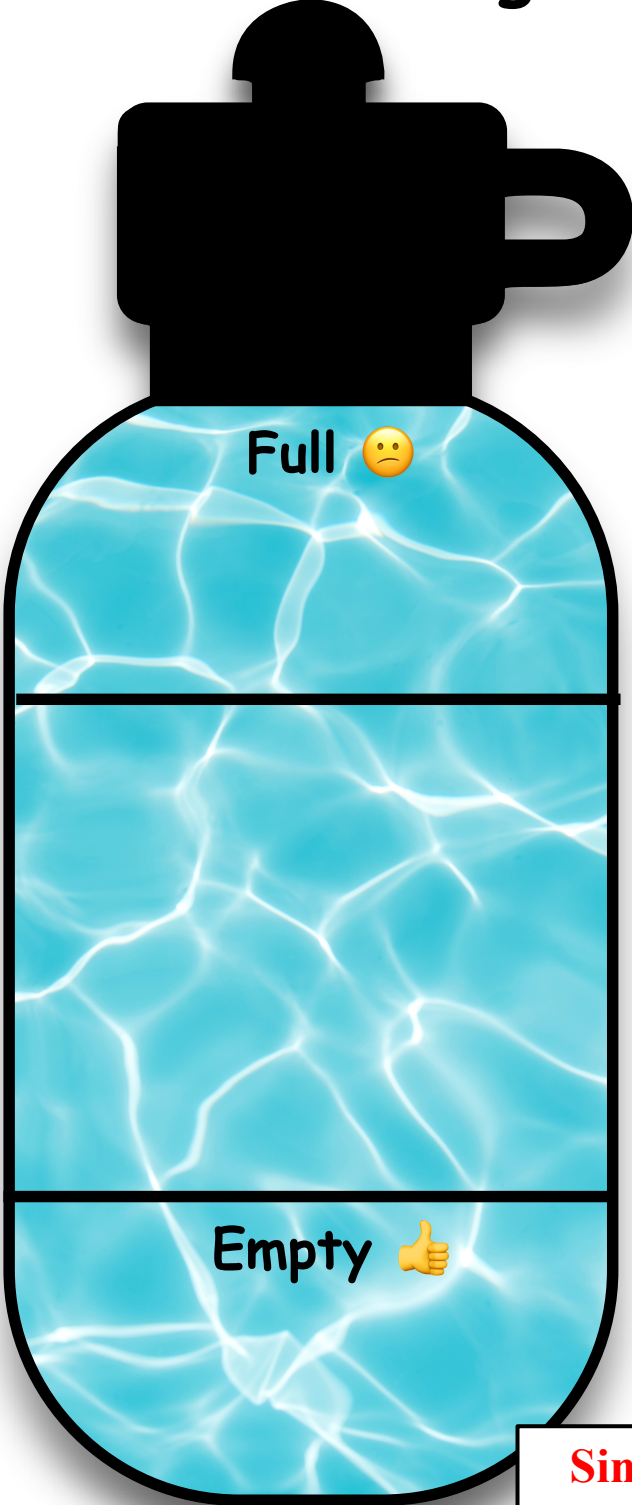
1. Children aged 4-8 need between 1.1L - 1.3L of fluid a day (not including the fluid we get from food! Most fruit and vegetables have a really high content of water!)
2. Women need around 2L and Men, 2.5L!
3. Drinking enough does bring some benefits though!
 - Feeling of being alert and awake.
 - Learn 10 percent more effectively.
 - Satiates hunger and aids weight loss / weight maintenance.
4. However, there are many downsides! The early signs of dehydration include:
 - Feeling of being tired and lethargic.
 - Really yellow urine! Where you pee less than 4 times a day
 - Headaches, dry lips, dizziness

TIPS TO MAXIMISE CONSUMPTION

As you can see, it's really important that we all as human beings drink enough water. But children often do not know recognise these signs of dehydration and need support to drink enough water. Below are some tips to help our children!

- Encourage drinking after periods of exercise and breaks in learning. It only takes 2 minutes from drinking to get cognitive benefit of fluid!
- At the very least, pack an empty bottle in your child's book bag. The schools can then fill them up and it avoids leaks if you're worried about that!
- Model drinking at home and in the classroom. Make it the norm to pause what you are doing and drink if you feel some of the signs of dehydration.
- Provide a reward system for drinking at home and in the classroom. If children were to drink one whole school water bottle at while at school, that'll go a long way to meeting the 1.1L - 1.3L they need a day! A sticker chart has worked well!
- Although it is the quantity that really matters. Drinking little and often is best!
- Finally, try and limit the times when children can't consume water. It really confuses some children to know when they are allowed to drink if there are times when they can't! At the very least, try and make it obvious when they can drink.

Our Class Drinking Chart



Single Vertical



Water Week



TEACHER'S GUIDE





This guide is designed to provide a comprehensive overview of how to use the tools within the attached EYFS and KS1 Education Water Week Resource Pack. The pack is not intended to provide every single activity you may wish to make available to your class during each directed session, but more simply to give tools to effectively teach the various elements related to fluid intake.

If you have require any additional support in your delivery of the EYFS and KS1 Education Water Week Resource Pack, have any further questions or constructive feedback, please do not hesitate in contacting us using the email attached below.

Best of luck using the pack!

All the best,

Josh Williamson

WaterWeekH2O@gmail.com

Contents

Day 1: ***Why do we have to drink water? How much do we need to drink?***

Day 2: ***The Signs of Dehydration - How to know when we need to drink?***

Day 3: ***How we can all help each other to drink!***

Day 4: ***Healthy and Non-healthy Drinks?***

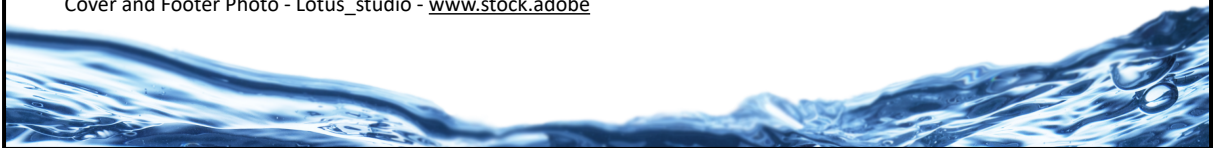
Day 5: ***The Water Quiz! What have we learnt?***

Resource list

(1. Five Animation Videos) (2. Bling Your Bottle) (3. Healthy Drinks Cut/Stick & Large Pictures for Hoop Sorting) (4. Dehydration Water Tray Activity) (5. Water Visual Register) (6. Stickers) (7. Sticker Chart and Hydration Driving Licences) (8. Water Song link) (9. Teacher/Parents Fact Sheet) (10. Poster Example)(11. Drama Guide)

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Teacher Setup Tasks Checklist



- Print & Laminate A3 Daily Water Tracking Visual Register
- Print & Laminate Individual Class Names/Faces for Visual Register
- Print & Laminate Class Sticker Chart
- Write Names - Print & Laminate Hydration Driving Licences for Class
- Print / Ready the Practical Resources for Each Day

Things to Try and Remember

(Morning of Day 1) Explain to your class how to use the tracking visual register (*i.e. children can move their name to 'finished' once they have finished at least one bottle's worth*). And to drink at the start of the day.

(Before teaching 1st lesson) Explain to your class that for every child that finishes one at least bottle, they will get a sticker at the end of the day to go onto the class sticker chart. Where finally, for all children that get a sticker every day this week will earn their very own hydration driving licence!

(During the week) If you can, try and remember to encourage the children to take their bottles with them during child initiated activities, stop for a whole cohort drinks break after exercise and breaks in the day and drink fluids yourself in front of the children to show them how to do it!



Why do we have to drink water? How much do we need to drink?

Objectives

1. To know and understand why drinking fluid is important.
2. To know much we need to drink.
3. To know and understand when is the best time to drink.

Lesson Outline and Activities

- Share the 1st whiteboard animation video. Pause video when prompted to answer questions and check understanding.
- Share the bling your bottle activity and what children can do. Explain the concept of not all bottles are 500ml but if we drink one 500ml bottle while at school and then drinking before and after school at home then we can meet our hydration goals.
- **Extension** - Children can complete second bottle with higher volumes of fluid, different words etc.
- **Worth trying?** - Possibly this could be the start of a new class display on what the children have/will learn this week?



Resource List

Day 1 Animation Video
Bling Your Bottle Activity



EYFS Curriculum Links

Managing Self
Writing
Numerical Patterns
Creating with Materials
Fine Motor Skills

NC Links

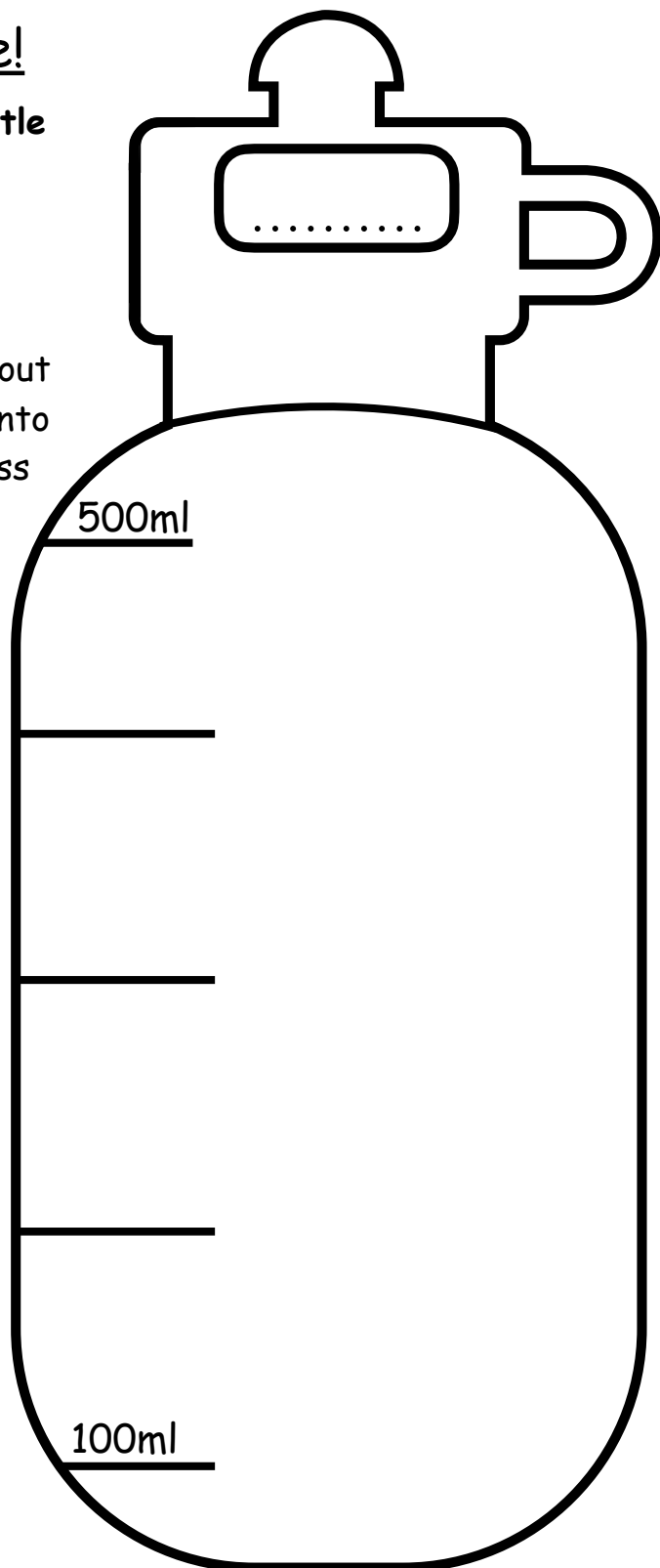
Volume
Writing
Art and Design



Bling Your Bottle!

Can bling your **500ml bottle**
and fill in the missing
amounts of water
measurement?

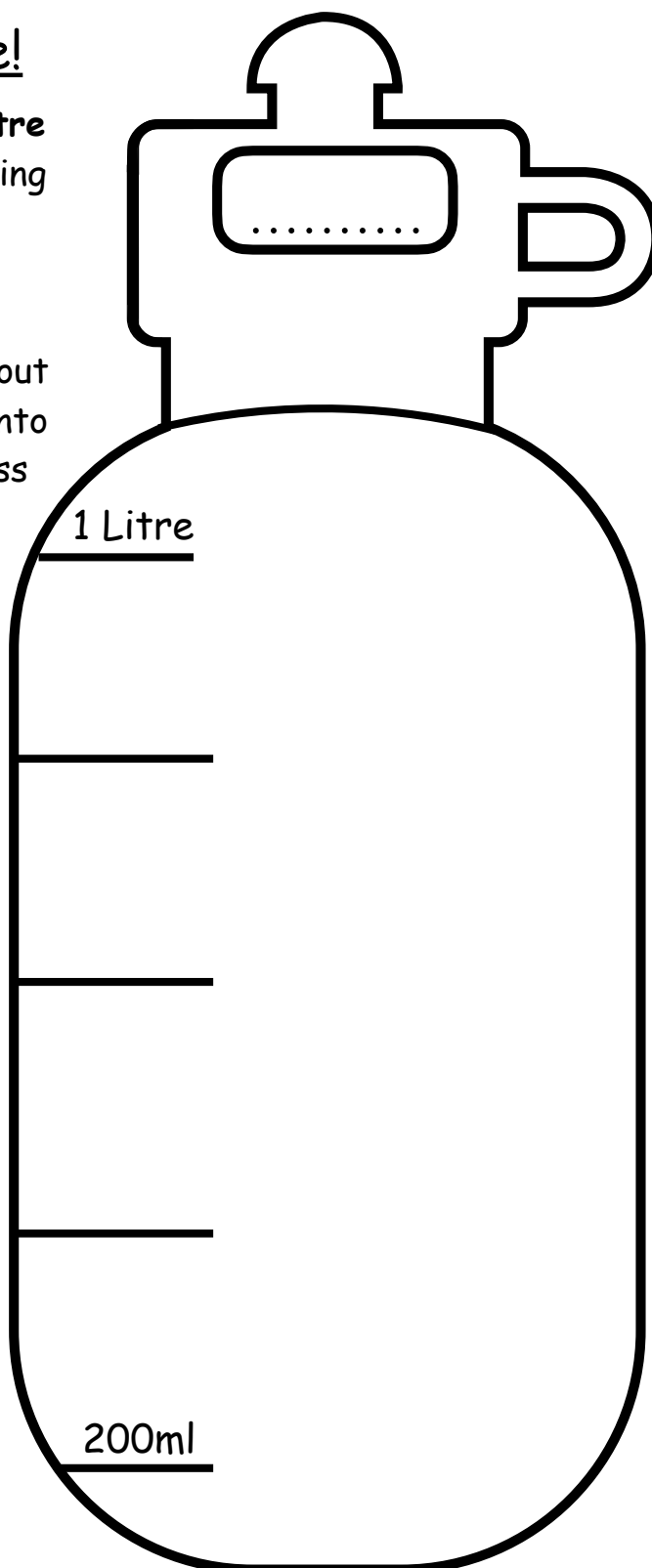
When you are happy, cut out
your design and stick it onto
some card to make a class
display!



Bling Your Bottle!

Can bling your bottle 1 litre bottle and fill in the missing amounts of water measurement?

When you are happy, cut out your design and stick it onto some card to make a class display!

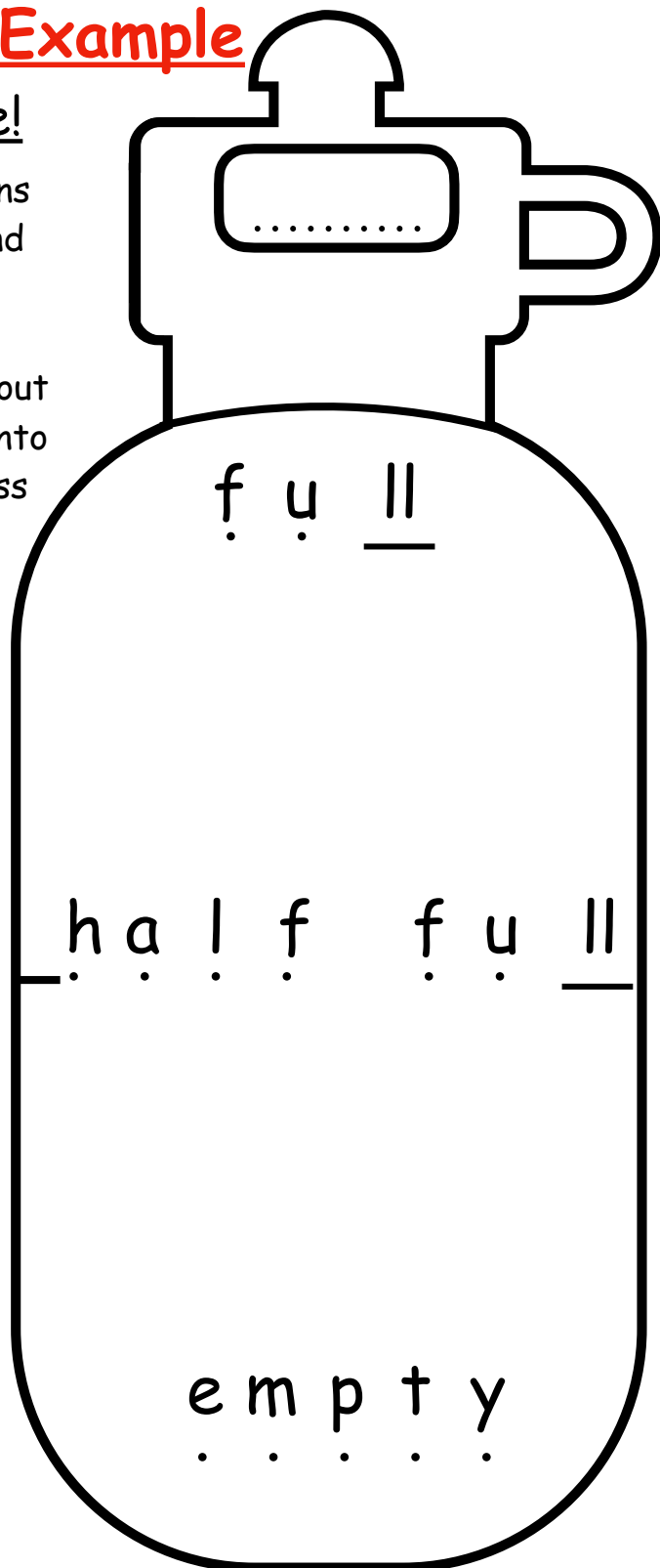


Example

Bling Your Bottle!

Can use the sound buttons
to write full, half full and
empty?

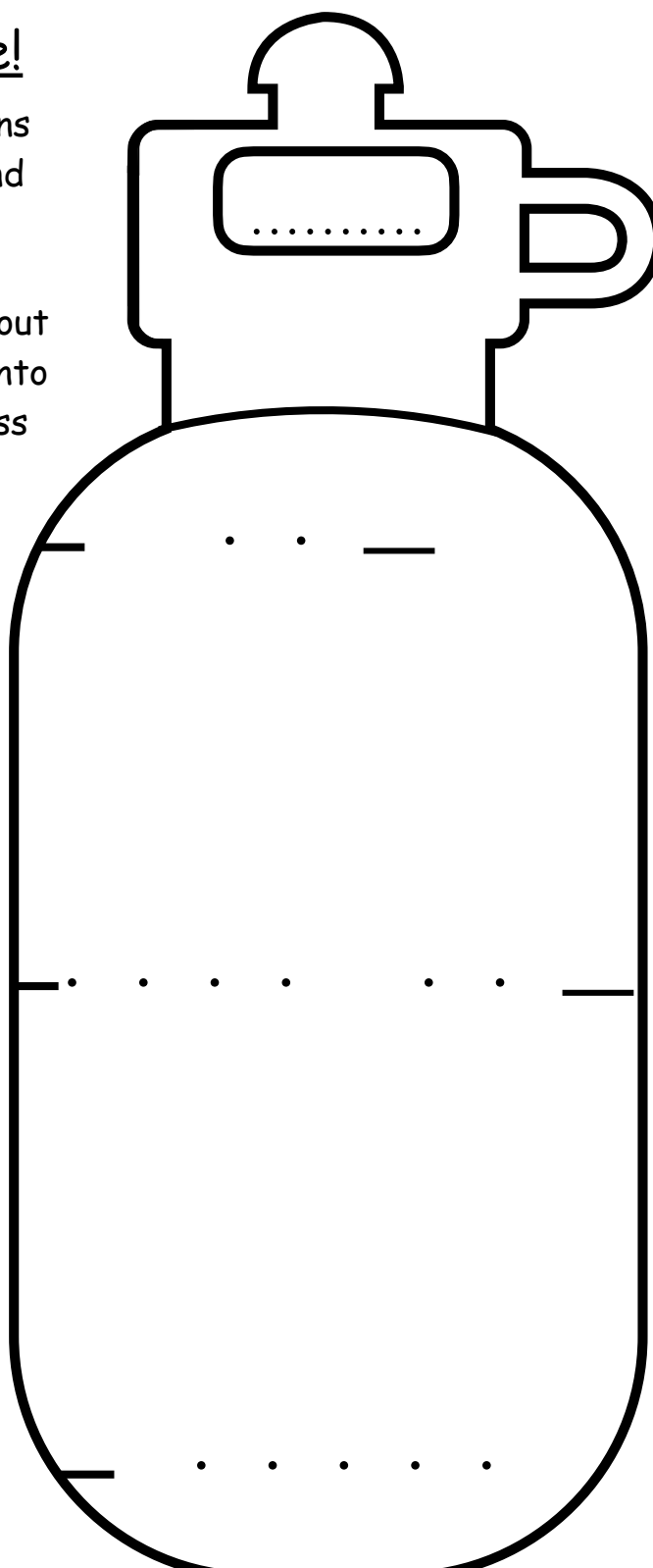
When you are happy, cut out
your design and stick it onto
some card to make a class
display!



Bling Your Bottle!

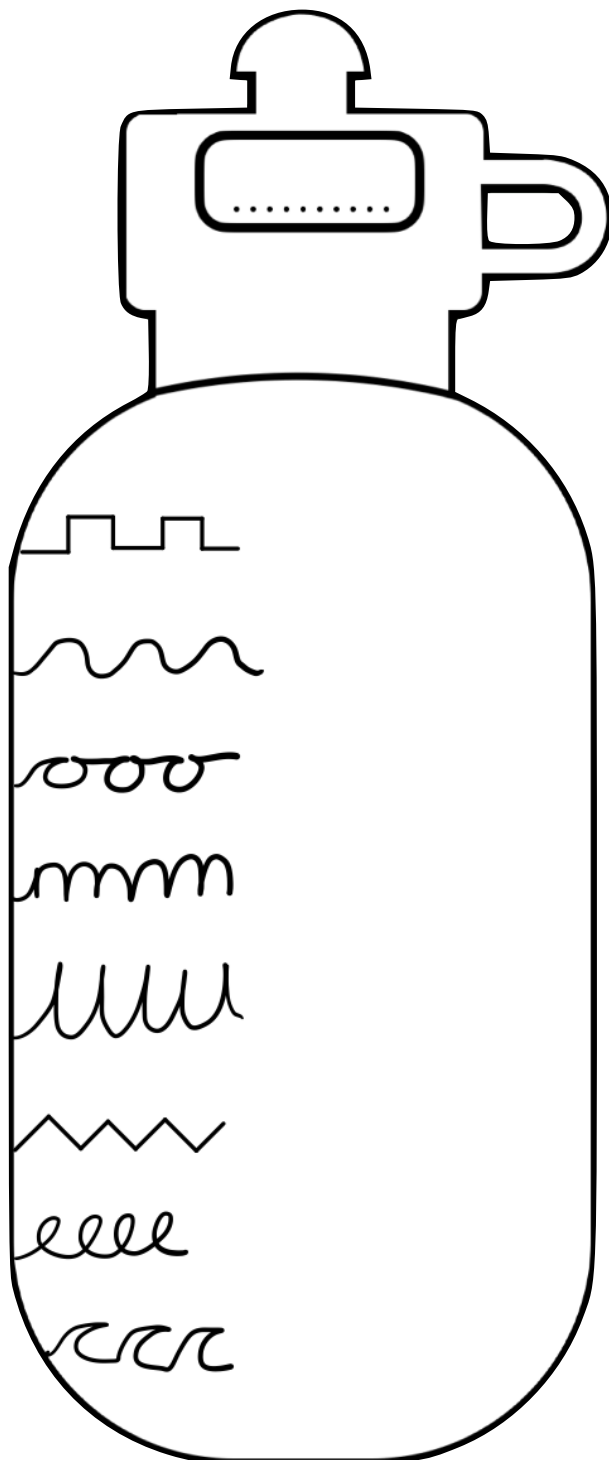
Can use the sound buttons
to write full, half full and
empty?

When you are happy, cut out
your design and stick it onto
some card to make a class
display!



Bling Your Bottle!

Can use continue the handwriting patterns?
When you are happy, cut out your design and stick it onto some card to make a class display!



The Signs of Dehydration - How to know when we need to drink

Objectives

1. To know and understand what dehydration is.
2. To know and understand some of the things that make us dehydrated.

Lesson Outline and Activities

- Share the 2nd whiteboard animation video. Pause video when prompted to answer questions and check understanding.
- See explanation of the water tray dehydration activity on the actual resource.
- If time, feel free to try the class drama activity in the Extremely Thirsty Cricketer Book?
- **Extension:**
 - Children to draw and write their own drinks that hydrate and activities that dehydrate.
 - Children could draw pictures for the pages in the class drama?



Resource List

Day 2 Animation Video
Dehydration Water Activity



EYFS Curriculum Links

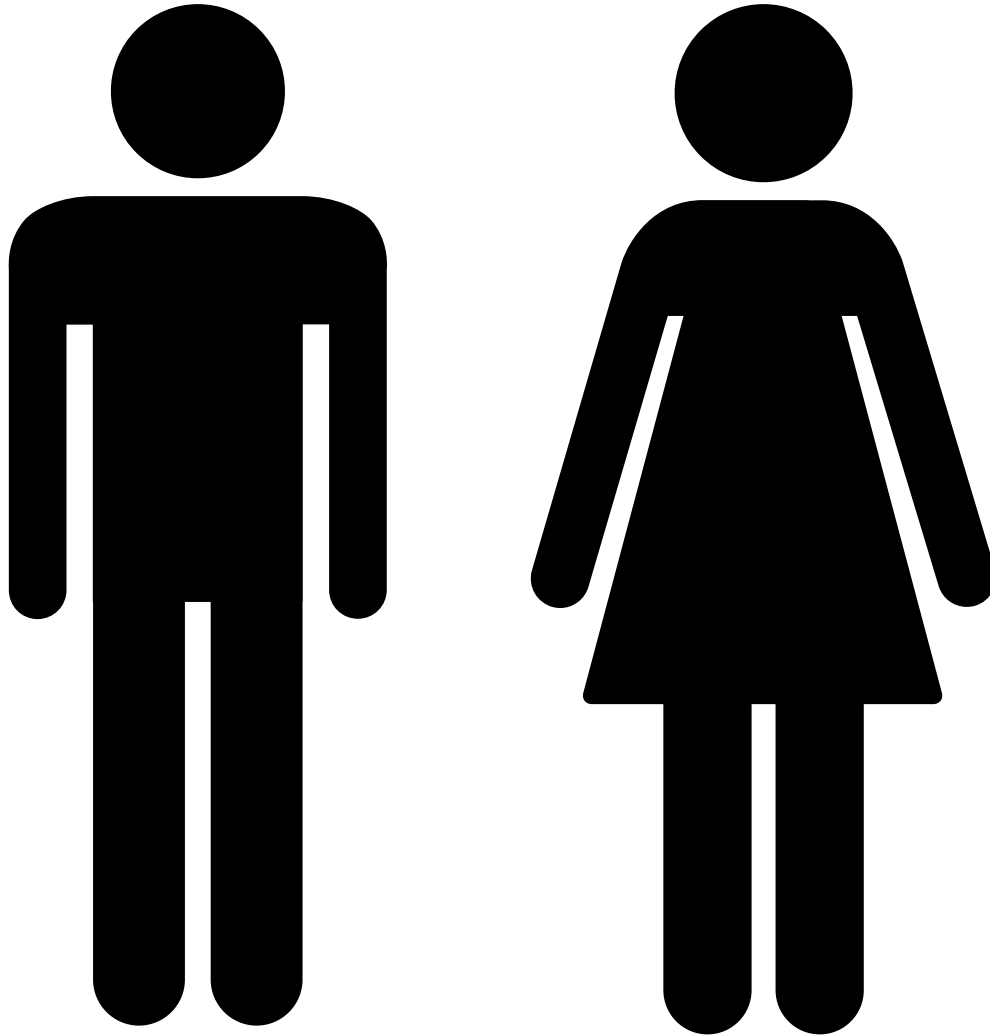
Managing Self
Self-regulation
Writing
Creating with Materials
Fine Motor Skills

NC Links

Volume
Writing
Healthy Eating
Art and Design
PE (lead healthy lives)



Dehydration Water Tray Activity



Teaching Guidance (Resource list: 1. Water tray 2. Laminated people + black/blue tiles.
3. Jug

1. Introduce to the children that doing certain things makes us sweat and lose body water. Stick a laminated person (or wizard!) onto a full jug of water and say this is us at the start of the day after we have had our breakfast.
2. Explain that by doing some of the different things listed below (black tiles) makes us lose body water. E.g. Running makes us sweat so we lose some water ***demonstrate this by pouring some water out of the jug***. Keep doing this with the different activities until there is less water in the jug. Hold a class discussion around what this means? What are the signs of dehydration? **Red in the face, Headache, tiredness dry lips, really yellow wee.**
3. What should we do to make sure we have enough body water to make sure we don't feel like this? **Drink some fluids.** Then demonstrate the opposite of the dehydrating activities by putting the laminated tiles into the jug and top up with water as you go.
4. Children to play around with this process of losing and gaining water. Children can also create their own dehydrating activities and hydration sources.





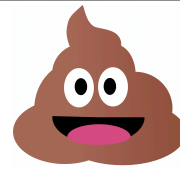
Exercise



Running



Weeing



Pooing



Skipping



Learning Time



Breaktime



Cricket



Water Bottle

500ml



Orange Squash

250ml Glass



Milk

330ml Carton



Vegetables

Tomato
Cucumber
Lettuce

250ml Glass



Cup of Water

250ml Glass



Blackcurrant Squash

Apple
Handful of Grapes
Orange

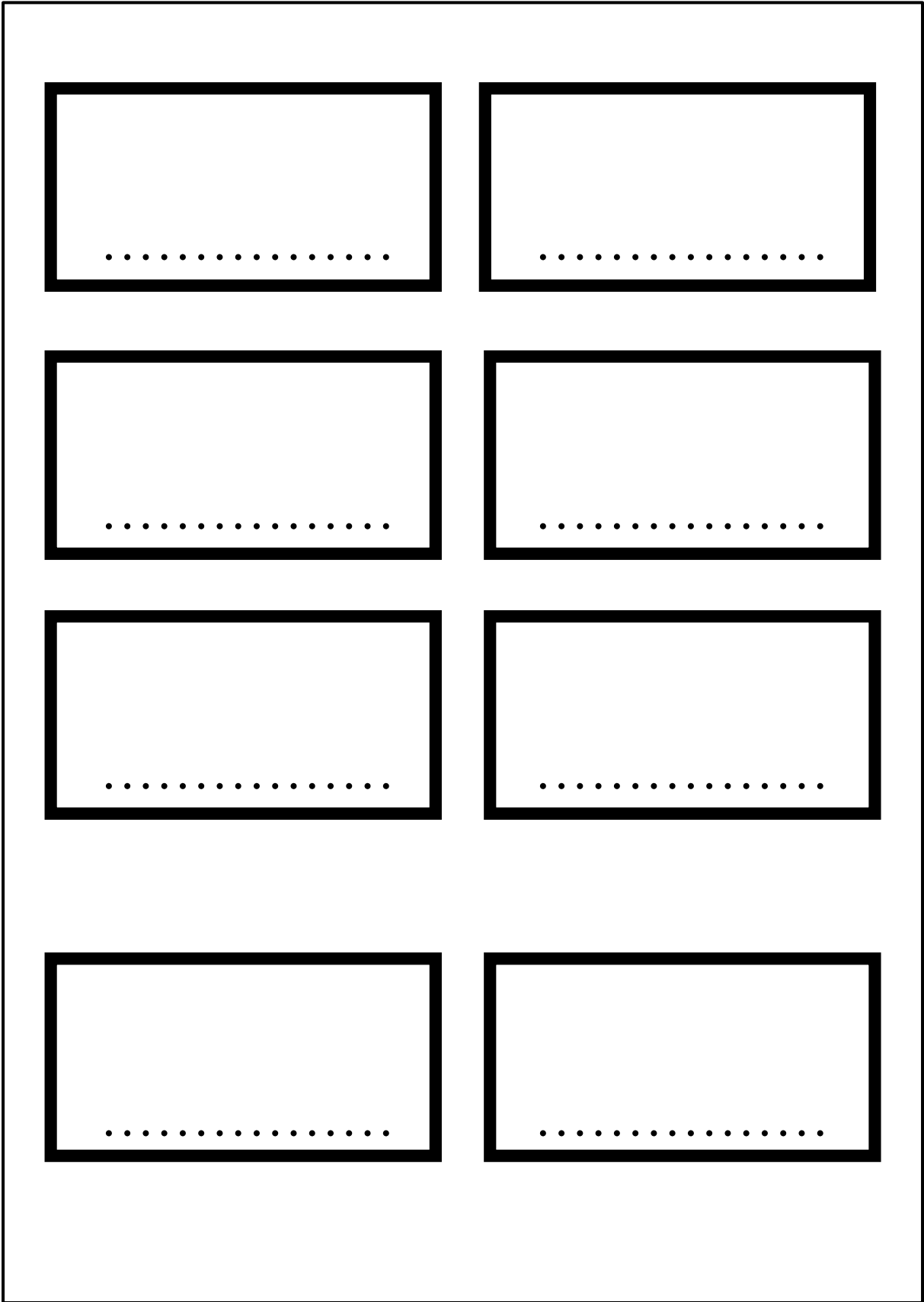


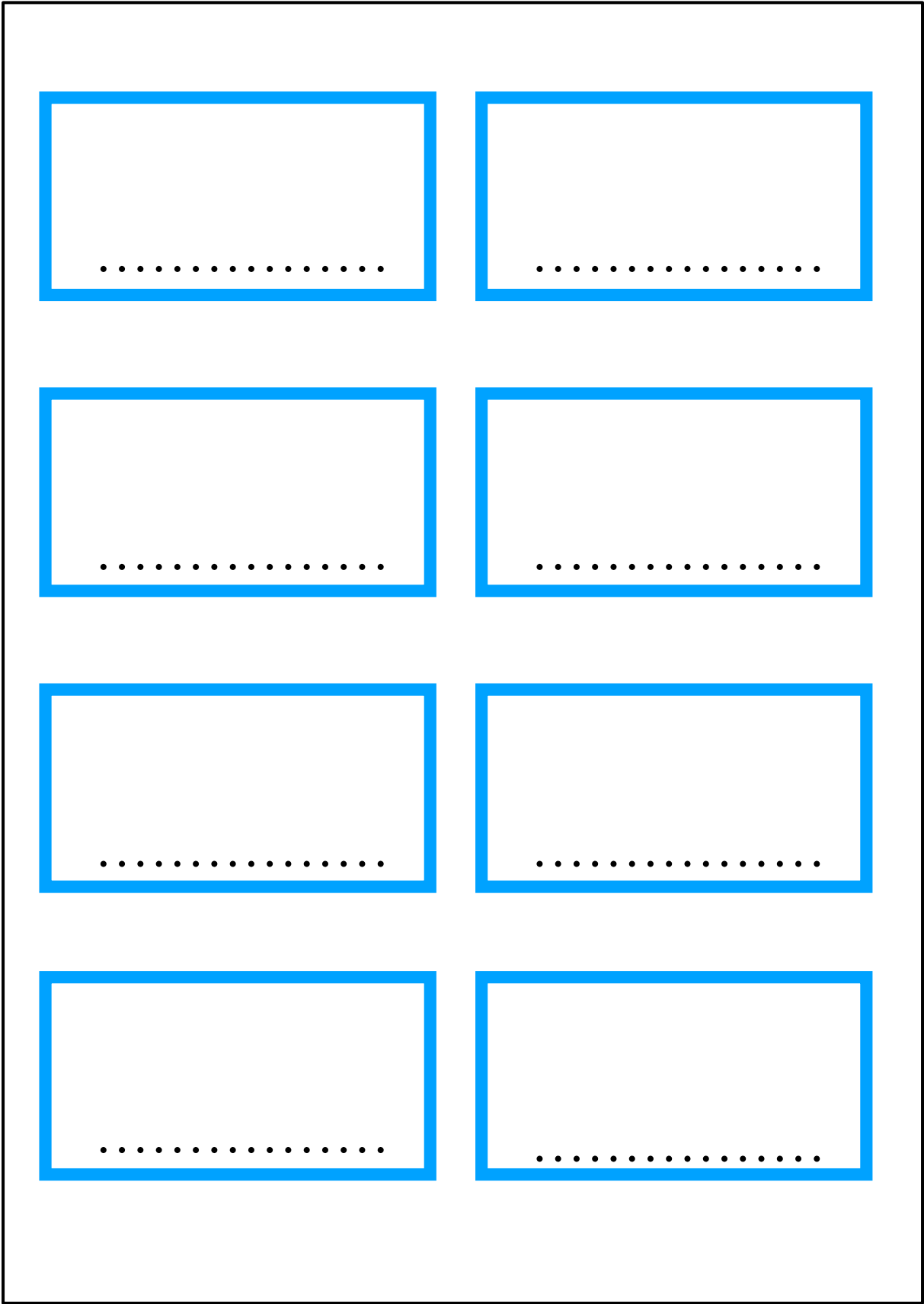
Fruit

250ml Glass



Apple Juice





The Extremely Thirsty Cricketer

Drama Role-Play Guide

Character List

Jim

The Tea Lady

Jim's Dad (The Scorer)

The Umpires

2 Teams of Cricket Players

This is Jim. Jim plays a game called cricket.

Hello Jim!

In cricket there are 2 teams, 1 team that bats and the other team that bowls.

These 2 parts of cricket are called an innings. In the middle of each innings, both teams stop for a drink of water.

"Why do you stop for a drink?" The tea lady cried!

"Because running around and doing exercise makes them thirsty!" The umpire bellowed from the middle of the pitch.

However, Jim decided that as he was having too much fun playing cricket and that he wasn't thirsty enough to drink!

"Do you think that is a good idea?" His teammate said. Jim nodded his head.

So Jim's Dad, who scores the game, ran onto the ground and cried *"even though you might not think you are thirsty enough to drink, you will be soon!"*

"You have a red face, you are sweating and probably have a headache too Jim!"

Jim thought he knew best so chose to ignore his Dad!

But Jim's Dad let his son get on with it and so Jim continued playing the game without drinking any water!

Jim was bowling. He was running to get the ball after the batsman hit it, but still would not drink any water!

Jim was starting to look a little dizzy and was losing all concentration!

Jim's Dad, again, ran onto the field, but this time with a big bottle of water. But he was too late! Jim fell to the ground as he was too dehydrated!

Jim's Dad was panicking! He did not know what to do! But the tea lady did!

She poured water on Jim so he could cool down and let him lie on the ground for a bit.

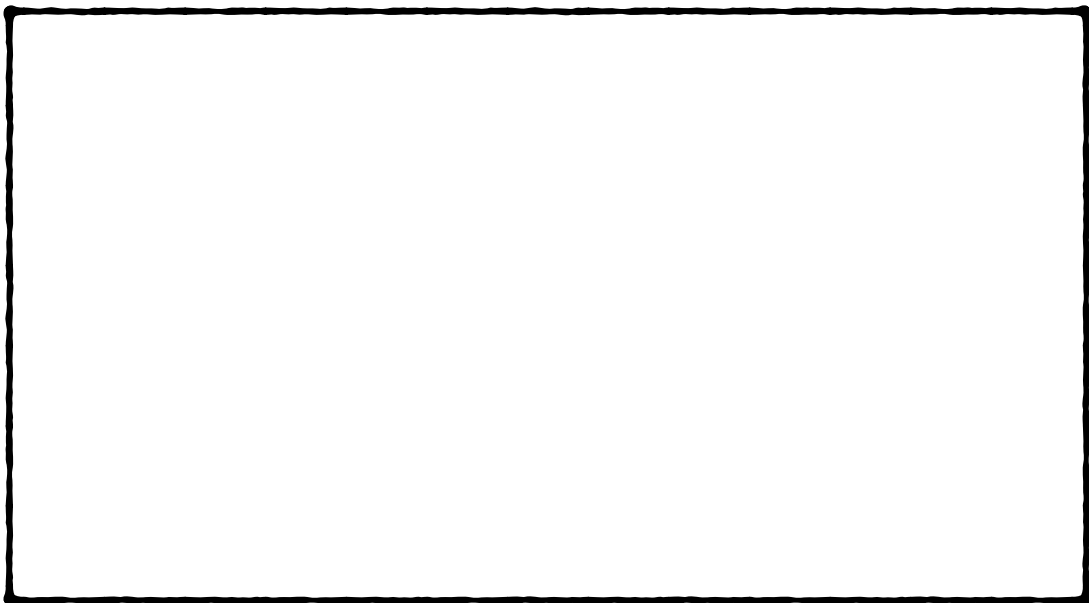
After a while, Jim was able to sit up and drink gallons of water! He knew he should have listened to his Dad!

Jim's Dad explained that even though you may not feel thirsty, drinking little bits of water often helps hydrate us. Choosing to not drink, even though we are having fun playing, is always a bad choice!

It helps us to keep our concentration, not have headaches, control how much we sweat and make us feel like new!

Jim's Dad asked "So when someone tells you to drink, even though you may not feel like it Jim, what are you going to do?"

Jim nodded and said *"Drink some water!"*



The End

How we can all help each other to drink!

Objectives

1. To know and understand how we can support each others drinking of fluid.

Lesson Outline and Activities

- Share the 3rd whiteboard animation video. Pause video when prompted to answer questions and check understanding.
- Show children the example poster design and demonstrate how they can make their own.
- Explore ways in which we can support each others drinking by regular reminding and thirst signals (*such as: dry throat, red in the face, after exercise, yellow wee*)
- **Extension:** As a plenary, children can do a show and tell to explain their poster creations!



Resource List

Day 3 Animation Video
Poster Design



EYFS Curriculum Links

Writing
Creating with Materials
Being Imaginative
Managing Self

NC Links

Art and Design
PE (lead healthy lives)
Writing





Have **YOU** had enough
water today?

We need to drink water because...

1. It makes us less sleepy
2. It helps to think and learn
3. It means we don't get as hungry
4. It can stop us getting headaches

**Can you think of other things that
water helps?**

Healthy and Non-healthy Drinks

Objectives

1. To know and understand what fluids are healthy and un-healthy for us.
2. To know and understand that all drinks are ok in moderation.

Lesson Outline and Activities

- Share the 4th whiteboard animation video. Pause video when prompted to answer questions and check understanding.
- Demonstrate to the children the cut and stick activity. And Hoop sorting
- If you wanted to make this more practical, you could also present the children with the real life versions of the drinks and red/amber/green hoops for the children to physically sort them.
- **Extension:** Perhaps children could even draw their favourite drink and see where it should be placed in the hoops as well?



Resource List

Day 4 Animation Video
Healthy Drinks Cut/Stick
Health Drinks Physical Sorting



EYFS Curriculum Links

Comprehension
Fine Motor Skills
Word Reading
Managing Self
Speaking
Listening/Understanding

NC Links

Art and Design
Healthy Eating
PE (lead healthy lives)



Water



Coke Cola



Orange Squash



Fizzy Water



Energy Drink



Milk



Milkshake



Apple Juice



Fruit Smoothie

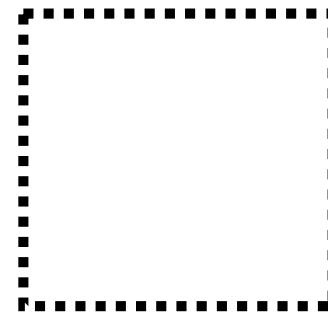
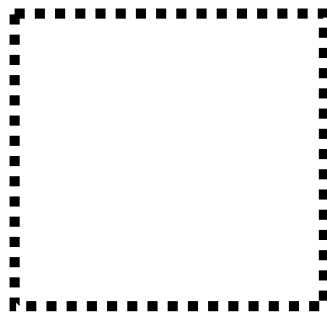
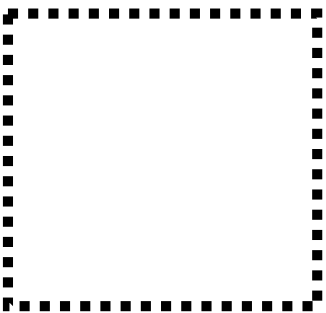
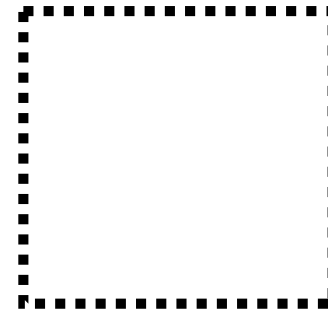
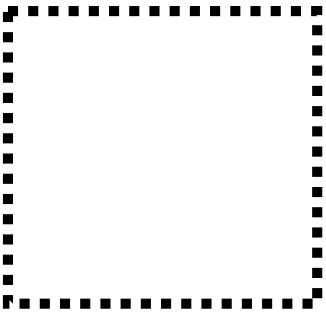
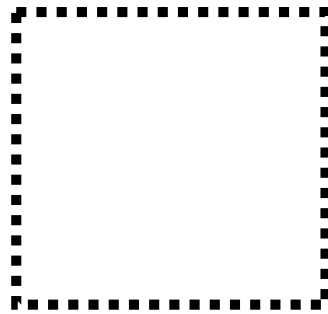
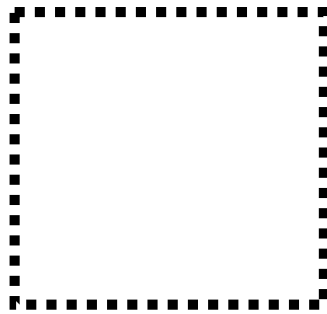
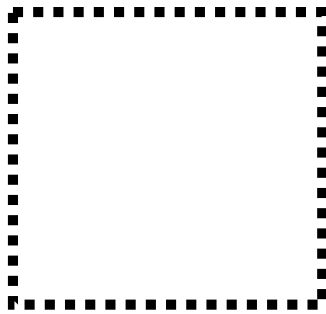
Extension

Can you think of any other drinks that are good or bad for you? Why not draw them on a blank grid.

Healthy
(Drink all the time)

Sort of Healthy
(Drink some the time)

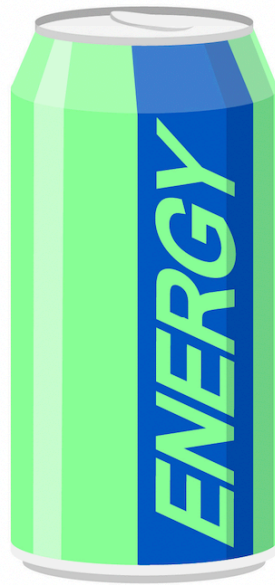
NOT Healthy
(Drink only as a treat)



Healthy Drinks Sorting – Physical Pictures



Water



Energy Drink

Pictures Designed by Brgfx, pch.vector, macrovector © [freepik.com](https://www.freepik.com)



Orange Squash



Milkshake

Pictures Designed by Brgfx, pch.vector, macrovector @ [freepik.com](https://www.freepik.com)



Apple Juice



Fizzy Water

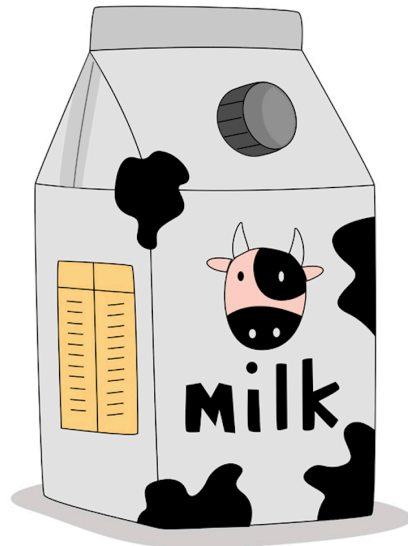


Coke Cola



Fruit Smoothie

Pictures Designed by Brgfx, pch.vector, macrovector @ [freepik.com](https://www.freepik.com)



Milk

Pictures Designed by Brgfx, pch.vector, macrovector @ [freepik.com](https://www.freepik.com)

The Water Quiz! What have we learnt?

Objectives

1. To summarise the weeks learning and fill the gaps of uncompleted activities.

Lesson Outline and Activities

- Share the 5th whiteboard animation video. Pause video when prompted to the answer questions. Perhaps you could even keep a track of many questions the class get right?
- Introduce that this lesson is to complete the activities that might not have been completed in the week.
- For children who have finished all the activities, set them an activity to complete a 'Fluid Fun Fact Book'.



Resource List

Day 5 Animation Video
Fluid Fun Fact Writing



EYFS Curriculum Links

Writing
Word Reading
Comprehension
Managing Self
Creating with Materials

NC Links

Art and Design
Writing
Comprehension



Appendix 8: Study 2 Ethical Approval Confirmation



Mr Joshua Williamson

School of Psychology and Life Sciences

Faculty of Science, Engineering and Social Sciences

13th May 2022

Dear Joshua

Confirmation of ethics approval: Children's and Teachers' Understanding of Fluid Intake.

Your ethics application complies fully with the requirements for ethical and governance review, as set out in this University's Research Ethics and Governance Procedures, and has been approved.

You are reminded that it is your responsibility to follow, as appropriate, the policies and procedures set out in the [Research Governance Framework](#) and any relevant academic or professional guidelines.

Any significant change in the question, design or conduct of the study over its course will require an amendment application, and may require a new application for ethics approval.

It is a condition of approval that you **must** inform ethics@canterbury.ac.uk once your research has completed.

Wishing you every success with your research.

On behalf of

Faculty of Science, Engineering and Social Sciences Ethics Panel

ping.zheng@canterbury.ac.uk

Appendix 9: Study 2 Teacher/Child Participation Information Sheet



Children's and Teachers' Understanding of Fluid Intake – Study 2 Pilot

TEACHER AND CHILD PARTICIPANT INFORMATION

This is a PhD research study conducted at Canterbury Christ Church University (CCCU) by Josh Williamson

Please refer to our [Research Privacy Notice](#) for more information on how we will use and store your personal data.

Background

The purpose of the project is to create and assess the efficacy of a education hydration pack in schools. Research indicates that young children demonstrate a significant lack of knowledge of the recommended daily intake of water they are required to drink and have a lacking knowledge of their own thirst response to drinking before dehydration occurs (Williamson and Howells, 2019). Compacting this, further research suggests that teachers are inconsistent in their encouragement of children's consumption and self-reportedly drink below World Health Organisation guidelines (Howells and Coppinger, 2020).

To improve children's knowledge of the health benefits of rehydration, teachers could play an instrumental role in developing a shared understanding of the importance of rehydration to child development. It is here where the research aims to address this by creating a pack of education hydration resources to be used by teachers.

What will you be required to do?

With signed consent from the EYFS teacher participants, in this study the teachers will be required to deliver the prepared content of an education hydration pack and complete a short post-delivery questionnaire to highlight the strengths and weaknesses of the teaching resources on the children's, and your own, knowledge and understanding of fluid intake.

With the signed consent from the school gatekeeper and verbal assent individually from the children. The children in your class will be required to partake in two fluid knowledge and understanding questionnaires (one before education hydration pack delivery and one after). These will be conducted on a 1:1 basis with the lead researcher, Josh Williamson.

To participate in this research you must:

- Be a teacher who holds Qualified Teacher Status (QTS).
- Be currently teaching in an Early Years Foundation Stage or KS1 setting.
- Be a child aged 4-5 years of age in a EYFS class.

Procedures

This is a three-week phase study. In the 1st week, the lead researcher (Josh Williamson) will conduct baseline fluid knowledge and understanding questionnaires with the children in your class and assist the teacher in preparing the classroom(s) for the intervention week, and

Appendix 9: Study 2 Teacher/Child Participation Information Sheet (2 of 3)

provide training of how to implement the hydration interventions. In the 2nd week the lead researcher will remain off-site while the teacher participants deliver the hydration resources.

In the 3rd week, the lead researcher will repeat the fluid knowledge and understanding questionnaires from week 1 with the children, and ask the teacher participants to complete a short online google form questionnaire about their experiences delivering the resources.

Feedback

Feedback will be given by email when disseminating the results after write-up in late 2022 / early 2023.

Confidentiality and Data Protection

The following categories of personal data (as defined by the [General Data Protection Regulation](#) (GDPR)) will be processed:

- Generic Data

We have identified that the public interest in processing the personal data is:

- To enable the study to assess the efficacy of educational impact of the education hydration pack on children's and teachers understanding of fluid intake. Generic personal data will be used and processed within the Statistical Package for the Social Sciences software (SPSS). This data will be anonymised.

Data can only be accessed by, or shared with:

- Myself (Josh Williamson)
- PhD Supervisors (Dr Kristy Howells and Dr Damian Coleman)
- Internal Examiner (TBC)
- External Examiner (TBC)

The identified period for the retention of personal data for this project:

The data will be retained for the duration of the project and deleted after thesis submission and the VIVA examination period.

If you would like to obtain further information related to how your personal data is processed for this project please contact the lead researcher; Josh Williamson (j.williamson784@canterbury.ac.uk).

You can read further information regarding how the University processes your personal data for research purposes at the following link: Research Privacy Notice - <https://www.canterbury.ac.uk/university-solicitors-office/data-protection/privacy-notices/privacy-notices.aspx>

Dissemination of results

- By PhD Thesis at the Canterbury Christ Church University repository
- Academic Journals such as the International Journal of Nutrition

Appendix 9: Study 2 Teacher/Child Participation Information Sheet (3 of 3)

Process for withdrawing consent to participate

You are free to withdraw your teacher consent and the ability for the children to provide verbal assent to participate in this research project at any time, without having to give a reason. To do this please simply email the lead researcher; Josh Williamson (j.williamson784@canterbury.ac.uk).

You may read further information on your rights relating to your personal data at the following link: Research Privacy Notice - <https://www.canterbury.ac.uk/university-solicitors-office/data-protection/privacy-notices/privacy-notices.aspx>

Further Reading

If you wish you read more on the topic of children's and teachers' understanding of fluid intake. Please see the signposted literature below.

Coppinger, T. and Howells, K. (2019) "International Comparison of Children's Knowledge, Barriers and Reported Fluid Intake Across the School Day.," *International Journal of Nutrition*, 4(1). doi:10.14302/issn.2379-7835.ijn-19-904.

Howells, K. and Coppinger, T. (2020) "Teachers' Perceptions and Understanding of Children's Fluid Intake," *International Journal of Environmental Research and Public Health*, 17(11). doi:10.3390/ijerph17114050.

Williamson, J. and Howells, K. (2019) "Young Children's Understanding of Fluid Intake.," *International Journal of Nutrition*, 1(4). doi:10.14302/issn.2379-7835.ijn-19-3006.

Williamson, J. and Howells, K. (2021) "The Influence of Siblings on Young Children's Understanding of Fluid Intake," *International Journal of Nutrition*, 6(3). doi:10.14302/issn.2379-7835.ijn-21-3709.

Any questions?

Please contact the principal researcher; Josh Williamson (j.williamson784@canterbury.ac.uk) or alternatively the project's first supervisor Dr Kristy Howells (kristy.howells@canterbury.ac.uk).

Appendix 10: Study 2 Parent Information Sheet



Children's and Teachers' Understanding of Fluid Intake – Study 2

PARENT INFORMATION SHEET

This is a PhD research study conducted at Canterbury Christ Church University (CCCU) by Josh Williamson.

Please refer to our [Research Privacy Notice](#) for more information on how we will use and store your personal data.

Background

The purpose of the project is to create and assess the efficacy of a education hydration pack in schools. Research indicates that young children demonstrate a significant lack of knowledge of the recommended daily intake of water they are required to drink and have a limited understanding of their own thirst response to drinking before dehydration occurs (Williamson and Howells, 2019).

To improve children's knowledge of the health benefits of rehydration, teachers could play an instrumental role in developing a shared understanding of the importance of rehydration to child development. The research aims to address this by creating a pack of education hydration resources to be used by teachers.

What the teachers and your child will be required to do during the research?

With signed consent from the EYFS teacher participants. In this study the teachers will be required to deliver the prepared content of an education hydration pack and complete a short post-delivery questionnaire to highlight the strengths and weaknesses of the teaching resources on the children's knowledge and understanding of fluid intake.

With the signed consent from the school research gatekeeper [REDACTED] and individual verbal consent from your child. Each child will be asked to partake in two fluid knowledge and understanding questionnaires (one pre and one post-education hydration pack delivery), conducted on a 1:1 basis with the lead researcher, Josh Williamson. Josh was a past trainee teacher at [REDACTED] in 2015/16 at CCCU and returned in 2019 to conduct a similar study for his Master's.

After the children have completed the pre-hydration pack fluid questionnaires, a fluid fact sheet will be sent home for parents to gather an insight into what your children will learn about fluid intake.

Research Procedures

This study will be conducted over 3 weeks. In the 1st week (WC 6th June), the lead researcher will conduct pre-hydration pack delivery fluid knowledge and understanding questionnaires with the children in class. In addition, the teachers will be assisted by the lead researcher in preparing the classroom(s) for the hydration pack week.

In the 2nd week (WC 13th June), the lead researcher will remain off-site while the teachers deliver the hydration resources (this is where the fluid fact sheet will also be provided to parents).

Appendix 10: Study 2 Parent Information Sheet (2 of 3)

In the 3rd week (WC 20th June), the lead researcher will repeat the fluid knowledge questionnaires with the children. The teachers will also be asked to complete a short-online Google form questionnaire about their experiences of delivering the resources, so final modifications can be made.

Parental process for withdrawing consent for your child to participate

If you would not like your child to participate in this research project, you are free at any time to withdraw your permission for your child to be questioned and opt-out from your child giving verbal consent, without having to give a reason. To do this please contact your class teacher, where they will inform the researcher of your decision to not question your child.

You may read further information on your rights relating to your personal data at the following link: Research Privacy Notice - <https://www.canterbury.ac.uk/university-solicitors-office/data-protection/privacy-notices/privacy-notices.aspx>

Feedback

After the results have been written-up in late 2022 / early 2023, the core findings of the research will be shared with the school.

Confidentiality and Data Protection

The following categories of personal data (as defined by the [General Data Protection Regulation \(GDPR\)](#)) will be processed:

- Generic Data

We have identified that the public interest in processing the personal data is:

- To enable the study to assess the efficacy of educational impact of the education hydration pack on children's and teachers understanding of fluid intake. Generic personal data will be used and processed within the Statistical Package for the Social Sciences software (SPSS). This data will be anonymised.

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Appendix 10: Study 2 Parent Information Sheet (3 of 3)

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- Academic Journals such as the International Journal of Nutrition

Further Reading

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Coppinger, T. and Howells, K. (2019) "International Comparison of Children's Knowledge, Barriers and Reported Fluid Intake Across the School Day.," *International Journal of Nutrition*, 4(1). [doi:10.14302/issn.2379-7835.ijn-19-904](https://doi.org/10.14302/issn.2379-7835.ijn-19-904).


Williamson, J. and Howells, K. (2019) "Young Children's Understanding of Fluid Intake.," *International Journal of Nutrition*, 1(4). [doi:10.14302/issn.2379-7835.ijn-19-3006](https://doi.org/10.14302/issn.2379-7835.ijn-19-3006).

Williamson, J. and Howells, K. (2021) "The Influence of Siblings on Young Children's Understanding of Fluid Intake," *International Journal of Nutrition*, 6(3). [doi:10.14302/issn.2379-7835.ijn-21-3709](https://doi.org/10.14302/issn.2379-7835.ijn-21-3709).

Any questions?

Please contact the principal researcher; Josh Williamson (j.williamson784@canterbury.ac.uk) or alternatively the project's first supervisor Dr Kristy Howells (kristy.howells@canterbury.ac.uk).

Appendix 11: Study 2 Teacher Consent and Gatekeeper Assent Forms



CONSENT FORM GATEKEEPER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 2 |

Name of Researcher: Josh Williamson

Contact details:

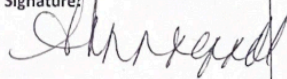
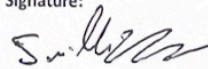
Address: Faculty of Science, Engineering and Social Sciences
North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.	<input checked="" type="checkbox"/>
2. (If applicable) I confirm that I agree to any audio and/or visual recordings.	<input checked="" type="checkbox"/>
3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University Research Privacy Notice	<input checked="" type="checkbox"/>
4. I understand that my participation is voluntary and that I am free to withdraw my participation or the children at the school's participation at any time, without giving a reason.	<input checked="" type="checkbox"/>
5. I agree for the children at the school to give verbal assent to take part in the above project.	<input checked="" type="checkbox"/>

Name of Participant: Teacher 1 / Gatekeeper	Date: 7.6.22	Signature: 
Name of person taking consent <i>(if different from researcher)</i>	Date:	Signature:
Researcher: Josh Williamson	Date: 7.6.22	Signature: 

Copies: 1 for participant
1 for researcher

Appendix 11: Study 2 Teacher Consent and Gatekeeper Assent Forms (2 of 3)



CONSENT FORM TEACHER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 2 I

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
 North Holmes Rd,
 Canterbury,
 CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

- 1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.
- 2. (If applicable) I confirm that I agree to any audio and/or visual recordings.
- 3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University [Research Privacy Notice](#)
- 4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason.
- 5. I agree to take part in the above project.

Name of Participant: Teacher 1	Date: 7.6.22	Signature: <i>[Handwritten Signature]</i>
Name of person taking consent <i>(if different from researcher)</i>	Date:	Signature:
Researcher: Josh Williamson	Date: 7/6/22	Signature: <i>[Handwritten Signature]</i>

Copies: 1 for participant
 1 for researcher

Appendix 11 - Study 2 Teacher Consent and Gatekeeper Assent Forms (3 of 3)



CONSENT FORM TEACHER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 2 |

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
 North Holmes Rd,
 Canterbury,
 CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

- | | |
|--|-------------------------------------|
| 1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions. | <input checked="" type="checkbox"/> |
| 2. (If applicable) I confirm that I agree to any audio and/or visual recordings. | <input checked="" type="checkbox"/> |
| 3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University Research Privacy Notice | <input checked="" type="checkbox"/> |
| 4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason. | <input checked="" type="checkbox"/> |
| 5. I agree to take part in the above project. | <input checked="" type="checkbox"/> |

Name of Participant: Teacher 2	Date: 7.6.22	Signature: <i>La Perry</i>
Name of person taking consent <i>(if different from researcher)</i>	Date:	Signature:
Researcher: Josh Williamson	Date: 7/6/22	Signature: <i>S. Williams</i>

Copies: 1 for participant
 1 for researcher

Appendix 12: Study 2 Children's Questions

Children's Questions PhD - Study 2



Thanks for your participation. We would like your help by asking you some questions about your drinking habits.
There are no right or wrong answers.

0 - Research Notes - Child Name

Short answer text
.....

0 - Researcher Notes - Child Number *

Short answer text
.....

1) What is the name of your school? *

Short answer text
.....

2) Are you a boy or a girl? *

Boy

Girl

Other...

3) How old are you? *

4

5

6

7

8

Other...

Appendix 12: Study 2 Children's Questions (2 of 6)

4) What month is your birthday?

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

5) How many brothers or sisters do you live with? (Older, Younger or Twins?)

Short answer text

6) Do you like drinking water?

- Yes
- No
- Don't Know
- Other...

6a) Why do you feel like that?

Long answer text

Appendix 12: Study 2 Children's Questions (3 of 6)

7) Why do you think we should drink water?

Long answer text
.....

8) During the school day, when do you really feel like you want to have a drink?

Short answer text
.....

8a) Are you allowed to drink at this time?

- Yes
- No
- Don't Know
- Other...

8b) Doing what kind of things make you want to have a drink?

Long answer text
.....

Appendix 12: Study 2 Children's Questions (4 of 6)

9) If you had to guess, how many of these bottles of water do you think you drink A DAY?

None (0ml)

Half a bottle (250ml)



One bottle (500ml)



Two bottles (1L)



Three bottles (1.5L)



Four bottles (2L)



More than four bottles



Don't know

Appendix 12: Study 2 Children's Questions (5 of 6)

10) If you had to guess, how many of these cups for you think you usually drink at lunchtime?

None (0ml)

Half a cup (100ml)



1 cup (200ml)



2 cups (400ml)



3 cups (600ml)



4 cups (800ml)



More than 4 cups



Don't know

Appendix 12: Study 2 Children's Questions (6 of 6)

11) From the moment you wake up, when do you have your first drink of the day?

- Before school
- When you get to school
- Morning snack
- Later than morning snack
- Don't know

12) Can you tell me all the people who tell you when to drink?" (Need to prompt if there is anyone else?)

Long answer text
.....

13) Is there ever a time at school you are not allowed to drink? If so when? Need to prompt to ask if there anyone else?)

Long answer text
.....

14) If you really wanted a drink before playing, would you rather play first to get more time or have a drink?

- Drink First and then play
- Play First to get more time
- Don't know

14a) If you really wanted a drink in the middle of playing, would you carry on playing or stop to have a drink

- Carry on playing
- Stop playing to have a drink
- Don't know

Appendix 13: Study 2 (and Study 3) Visual Water Bottles and Toy



**Appendix 13a: Study 2 Data Collection Mean Average High / Low Temperatures:
(Timeanddate, 2022)**

Pre-Water Week (7th June – 9th June 2022): **H:19.5°c / L:14.3°c**

Water Week Delivery (13th – 17th June 2022): **H:21.6°c / L:16.4°c**

Post-Water Week (20th June 2022): **H:17.5°c / L:14.5°c**

5-Month Follow-up (22nd - 23rd November 2022): **H:11°c / L:8.5°c**

Appendix 14: Study 2 Teacher Interview Questions

Teacher's Questions PhD - Study 2

Thank you for delivering the education hydration pack and for your time to fill out the post intervention questionnaire. Below is a set of simple questions to help the study fine tune the resources to ensure there are not any changes that need to be made before the full scale study. If you have any questions regarding the questions please don't hesitate in emailing Josh on j.williamson784@canterbury.ac.uk

1. How did the education hydration pack support your water week?

Long answer text
.....

2. From your perspective how did the education hydration pack enhance your own knowledge and understanding of fluid intake?

Long answer text
.....

3. In your opinion, which resource was the most effective for developing your understanding of fluid intake?

Long answer text
.....

3a. In your opinion which resource was the least effective for developing your understanding of fluid intake?

Long answer text
.....

4. How has the education hydration pack changed your drinking habits, if at all? (Please explain your reasoning)

Long answer text
.....

Appendix 14 – Study 2 Teacher Interview Questions (2 of 3)

5. In your opinion, can you all order / rank the resources from 1 - 12 for effectiveness to develop children's understanding of fluid intake (1 being the most effective and 12 being the least effective) - Please don't give multiple resources the same number. *

	1	2	3	4	5	6	7	8	9	10	11
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Wat...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hea...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hea...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blin...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wat...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boo...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hyd...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stic...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wat...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wat...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5a. Why did you think number 1 was the most effective for developing children's understanding of fluid intake?

Long answer text

5b. Why did you think number 12 was the least effective for developing children's understanding of fluid intake? How could the least effective resources be enhanced?

Long answer text

Appendix 14 – Study 2 Teacher Interview Questions (3 of 3)

6. In what ways did you adapt the education hydration pack to meet the needs of all your learners? Or would like to adapt if you repeated the water week? (Please state if you didn't make adaptations / wouldn't make any)

Long answer text

.....

7. On repeating water week again, what resources would you discard from the education hydration pack? And why do you discard these?

Long answer text

.....

8. Do you think delivering the education hydration pack, via a water week, met the curriculum aims of what constitutes a healthy diet, which includes fluid intake? If not, why?

Long answer text

.....

9. Outside of water week, what resources would you continue to use? Why?

Long answer text

.....

10. Do you think the education hydration pack will encourage the children to change their drinking habits? (In what ways? / How can it be enhanced?)

Long answer text

.....

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Appendix 15: Study 2 Teacher Transcripts
Study 2 - Teacher 1 Post Intervention Structured Questionnaire
A: Teacher 1 J: Josh (Researcher)

Context: 1:1 interview with researcher. Based within the teaching planning and preparation room.

J: So for the recording, this is the study two Teacher Questionnaire with Josh Williamson and (NAME OMMITED). (NAME OMMITED), is it ok if I record the meeting?

A: That's okay

J: Ok cool, right. I'm going to ask you about 10 questions and we will go from there.

A: (Agreement)

J: So, (NAME OMMITED). How did the hydration education pack support your water week in terms of the general scope?

A: Yeah. Errm the children really enjoyed the videos. In fact, they would say every morning. When are we doing The water wizard video? So we found the song really catchy and they were singing it by the end of the week. Errrm They liked finding out all the disgusting facts. You know, stinky, stinky yellow wee is the favourite thing in the whole wide world. So Yeah. Yeah. They really, really enjoyed the videos. We did the bling the bottle. We did the sorting of the drinks. We did the replenishing fluids activity as well. So we did them. I don't think we necessarily needed them to be honest. I think the videos were appropriate enough for their age group and they, errrm had lots of chat. You know, we pause video every time you mentioned it. And yeah, lots and really good feedback from the kids. The thing they did love most of all was the chart and the stickers. Some of them were supposedly drinking 5 bottles of water a day kind of thing, but even today, you know I've had, errm you know, the selection children have drunk everybody about 3 bottles already this morning.

J: Ok cool!

A: Yeah, which is really good. Yes it has made them much more aware of just going to get a drink when you need to drink (Researcher agreement). Even though they have always been allowed to anyway. Errm Yeah, they're very, very, very much aware of it now, which is good.

J: I suppose they just they realised that they need to drink water rather than...

A: I think because of highlighting it to them. And obviously you've backed it up with your Wonderful research. You know, it's really made them aware of it and they're different using the words like hydrated, dehydrated, rehydrated even. Errm Somebody today I need to rehydrate myself and feeling very hot.

47 J: That's nice to hear as obviously that's actually like a recognition of that. So Thank you. So
48 from your perspective, how did the hydration education pack enhance your own knowledge
49 of fluid intake as you as a person, as a teacher?
50

51 A: I mean for teaching it to the children, it definitely made us more aware of you know
52 teaching in a very obvious nice way that they were thinking about it and like I said I think
53 that's what made them remember the vocab maybe a bit more, which is great. And just think
54 of it in in that science-y way rather than us just saying in effect. And you know, they're
55 looking at each other. Yesterday somebody was playing outside and he still had his jumper
56 on. And said he oh can I go inside now and have a drink. Where I said of course you can my
57 lovely. Where I said I think you need to take you jumper off aswell as you have a really red
58 face!. Just made them more, much more aware and so it's made it more of a teachable topic,
59 I suppose, rather than just a conversation.
60

61 J: right? So where as you did it on the side previously its more focused like you say.
62

63 A: Yeah
64

65 J: But in terms of what have YOU learnt anything from the pack?
66

67 A: Oh Sorry. Still good. So going off on a tangent. Em. Yeah I think most of the stuff we
68 were talking about already (laughs)
69

70 J: haha. So in your opinion, which resource was the most effective for developing your
71 understanding your you personally cause there's a few about you, and then there's all about
72 children's.
73

74 A: Yeah, again, I think the video as it made us all stop, all think, all have a chat. So yeah, the
75 children answers were very interesting. Yeah, so it's good. Yeah, the video is definitely the
76 best.
77

78 J: Right. So where we, so. So in terms of the resource, you'd say the videos?
79

80 A: Yeah,
81

82 J: So, so in your opinion, which resource has been least effective for developing your
83 understanding?
84

85 A: PAUSE errrr.
86

87 J: Of the one that you used.
88

89 A: errrrm, I mean, I was quite aware everything we were we were doing with them. Wasn't
90 learning anything new necessarily. Yeah, it's probably the one that the children found the
91 trickiest was actually the drink sorting which was quite interesting. So that's what probably
92 highlighted to me that they learned something. And maybe taught me the most that they
93 didn't understand at the start. There was blurred lines shall I say? Things like fizzy water.
94 They didn't get that if that was good for you or not so good for you, or whether it's bad. Cos
95 before enjoying the video. We did say that fizzy drinks are normally bad. You know, so most

96 fizzy drinks aren't good for your teeth. When the pictures came out they were like, oh there's
97 fizzy water, what does it mean? Milk is good for you, so you can give blurred line like with
98 smoothies and milkshakes.

99
100 J: And yeah, I suppose. Or apple juice is not... Yes, there's an apple juice is not necessary bad
101 for you but to drink that every time as your drink. That awful for your teeth, ias it reacts with
102 the body in a similar way to refined sugars.

103
104 A: Yeah, me. So that was quite good. You know, the fact that when you said about the
105 frequency of drinking drinks... It is nice word to describe it to the children about there being
106 some drinks that you can drink once a day, but maybe drink a meal. Apple juice, fruit juice
107 I'll drink with breakfast. And then saying other drinks that are good to drink such as at
108 Parties or celebrations. So that was that was actually nice way to describe it to them.

109
110
111 J: haha yeah, I'll take that as a compliment! Yeah. So how has the hydration education pack
112 changed your drinking habits, if at all?

113
114 A: Yeah, I think you know during the summer. if to do with the pack or not I don't know.
115 You are far more aware of what you're drinking, how much you drink. errrm It's probably
116 made me have my water near me. I mean, as you know, we have a tickly throat anyway, so I
117 always have water near me but. The children also help me to understand if I sound horse or
118 something. Where they go – "Have you got the dry throat? Go and get you a drink" You
119 know? So that's quite nice and obviously, you know, I've got a dry cough, but you know,
120 that's nice they're thinking, you know.

121
122 J: Nice.

123
124 A: Yeah, yeah. And you know, we all definitely all have a drink on the go I'l say

125
126 J: OK. So in terms of changing, that's probably the one thing that he's probably add is that?
127 So in your opinion, could you rank? All the resources that you used. So what we're trying to
128 do is that we'll do it on here and I'll take a screen shot below.

129
130 A: Yep,

131
132 J: Because I've to type in your reply, so I've gotta do that afterwards. But we can do that here,
133 I think screenshot it so I don't lose what you put. So in terms, so can you rank them from one
134 being the most effective to 12 being the least effective. Obviously if you didn't use it. Then
135 just ignore it.

136
137 A: So so. What word animation series I presume that videos?

138
139 J: Yes, yes.

140
141 A; Big fat one.

142
143 ***TEACHER TOOK THE TIME TO FILL OUT THE RANKING QUESTION.***

144

145


146


147

148

149

	1	2	3	4	5	6	7	8	9	10	11	12
Whiteboard Animation Series	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teacher Lesson Pack	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Tray Dehydration Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Healthy Drinks Sorting (Cut/Stick)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Healthy Drinks Sorting (Hoops)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bling Your Bottle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Poster Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Book / Drama	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydration Driving Licences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stickers and Sticker Chart	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Tracker Chart	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Song	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 This question requires at least one response per row



150

151

152

153 J: So why did you think number one was the most effective for developing children's
154 understanding of fluid intake just to reiterate, know you touched upon it but just to reiterate?

155

156 A: yeah. So it is really, really clear the video was great, they really enjoyed it. They looked
157 forward to it everyday. They were able to recall what we've done. The quiz they absolutely
158 aced it. You know, it said more than probably you needed and wasn't being noted down, but
159 yeah, you know, they were able to remember so so much, it was really good!

160

161 J: And what about 12 or the one you put as least?

162

163 A: So bring your bottle. Yeah it was basically a colouring activity for them.

164

165 J: What would you say is more like a filler?

166

167 A: Yeah, almost. Yeah.

168

169 J: Not to put words in your mouth but...

170

171 A: yeah, no, I mean, as we wouldn't be talking about the measure inside of that. You know, if
172 you had year 1s or year 2s and you could do it as a class, yeah. Yeah. But you know that they
173 could do. Not necessary the videos, but they can do the activities.

174

175 J: OK, so in what ways did you adapt the hydration education pack to meet the needs of all
176 your learners, or would like to adapt if you repeated the water week.

177

178 A: I think the videos were great, we were able to stop it and ask them questions and rephrase
179 it if need be. Maybe if someone didn't get it we could stop and pause, but they actually all
180 did! You know, there were very good at picking up on the vocabulary and understand what it
181 was they had to do and basically just the lure of sticker can get you very far too. You know,
182 that was a really, really good thing. Errrm. Like I said, I probably just wouldn't necessarily do
183 the activities.

184

185 J: So that brings me quite nicely onto...on repeating in the Water Week again what resources
186 would you discard from the hydration education pack and why would you discard those?

187

188 A: Yeah, that's it really, stick with the video, I thought the videos were great. I understand
189 why you gotta pack those things and why you're offering people those different opportunities
190 but I don't think for what we needed to achieve with them, being so young. I think the video
191 did that. It was a really easy thing to them to do, they enjoyed it looked forward to it, you
192 know. So that was really good, I think sometimes. You know, if you're later in the point of it.
193 If you have slightly older children that could be good. But they didn't need it. Some of them
194 did it and it was fine and they would then continue to chat about it and things. But Yeah, you
195 know, cause they can't read necessary the little things on the cards. So you know they just

196 worked out that blue edged cards where the good things. The things that would dehydrate you
197 and in the end they just sorted by colour in end.

198

199 J: But obviously that's partially why I did it as that, so that you got is more inclusive feel to it
200 where? Some of the words are quite complicated. So some children literally just do that and
201 work out or that looks like someone is running away.

202

203 J: So in terms of your setting then just to sort of confirmed what you said, so you would
204 essentially just keep the whiteboard animation videos, the sticker chart. And moving the
205 names down?

206

207 A: Yeah. They like doing that. It was definitely the stickers and the videos they liked the
208 most.

209 J: OK

210

211 A: So you know the first day they were really into moving their names. The second day, a
212 few had forgotten,

213

214 J: So really, You would almost say just the stickers, chart and also the videos for you setting
215 are the one? Which isn't as structured as some other settings as with early years some places
216 are different.

217

218 A: Yeah.

219

220 J: So do you think that delivering this hydration education pack via a water week met the
221 curriculum aims of what constitutes a healthy diet, which includes fluid intake?

222

223 A: Yeah. I mean in early years, it's just choice of what's good choice and what's not so much
224 a good choice and what we're eating and drinking, but yeah, absolutely.

225

226 J: So outside of the water week. What resources would you continue to use? Still up for the
227 stickers? I mean, we did it before we start carrying on doing it now. They put their stickers on
228 their bottle. So that's great. I mean, you know, sort of have to get a chart again. So that
229 another chance. Quite tricky for some special time that's Friday trying to follow your name
230 line across in there though, so I think that's why lots of them on the image that I sent you.
231 You know there's a load in Monday. But I think that's because basically they just didn't put
232 them in Tuesday.

233

234 J: How would you go about changing that in terms of? Because I can I can see the problem
235 that caused. How would you go about changing?

236

237 A: Maybe, so that you column different colours? Monday have or different tones of blue. Or
238 yellow, You could be really gross. Really dark yellow at the beginning of the week, as you
239 don't understand, as you don't drink so much and hopefully by Friday. You're drinking lots
240 where it goes very pale. Or just do it with blue. (Laughter)

241

242 J: So. So you say colours so that you can quite clearly see the different days.

243

244 A: Yeah, I mean, you know, if it [the sticker chart] was complete different colours like
245 yellow, blue, red, whatever, it would be very, very obvious. Orange Column says Tuesday,
246 that sort of thing.
247
248 J: That sort of makes sense and it is probably easier to to tell the children where to put the
249 sticker. Rather than you doing it as well then,
250
251 A: Oh no they were definitely doing it, but that's what I'm saying. It was just hard for them to,
252 especially coz there are different heights. So if you are the youngest, you happen to be at the
253 bottom, but then that's probably the trickiest as its not in your eyeline.
254
255 J: OK. Last question. So do you think the hydration education pack will encourage the
256 children to change their drinking habits?
257
258 A: I think so, I think it really has.
259
260 J: So in what ways, in what ways do that's happened?
261
262 A: They are definitely drinking more the definitely more aware of why they're drinking their
263 differently more aware of the signs? They need to drink. Again, dehydrated the using them
264 the vocab more. Yeah, you know, add added to your thing. I will say when you have to drink,
265 it's like, you know your watering your brain. Your brain's growing all the time and learn lots
266 and lots of new things. Just like we did to water the plants where they are aware of that. We
267 are a big sponge, maybe in one of your videos have a sponge expanding as you add more
268 water? This is like our brain growing and getting bigger and bigger and clever and clever in
269 classroom..
270
271 J: Yeah its just quite difficult as watering flower like it is a brain is quite difficult with the
272 software. Could have see I've got no animation skills. I've only do what the software allows
273 me to do so in terms of making that slightly bigger. But you could just expand it I suppose.
274 But yeah, okay, that's cool. So pretty much pretty much exit us done! Right, okay. Thank
275 you. I will stop them recording there.
276
277 END OF TRANSCRIPTION
278
279

Study 2 Teacher 2 Post Intervention Structured Questionnaire

T: Teacher 2

J: Josh (Researcher)

Context: 1:1 interview with researcher. Based within the teaching planning and preparation room.

J: So this is the second post intervention interview with Jean Perry and also Josh Williamson. Gene is OK if I record the interview.

T: Yes

J: That's okay. Thank you. So, Jean, how did the hydration education pack support your water week as almost like running it as a general scope?

T: Oh, it underpins the whole thing. I don't think I would have been able to get off to the right start without it. Yeah, essential. I love the variety of resource is I think it needed the little visual impartially did that. And it was great that Monday morning, everything was ready. My water hydration, bottle chart, hello. And my sticker chart. They love sticker charts so absolutely.

J: It's almost like it is underpinned. It gave you the oomph to get going.

T: yes, yes.

J: ok Thank you. So from your perspective, how did the hydration education pack enhance your own knowledge and understanding of fluid intake, if at all, in terms of your personal interest and your knowledge?

T: It did. I didn't realise the benefits. That's why I didn't realise, we as adults are more adults are generally aware aren't we and you know you'll get the headache if you don't have an extremely busy day. You don't drink enough. You realise, you pay for it the next day. But no, I didn't know. But things about that 10% of improving your, errrm, your industry is such in class and...

J: learning potential.

T: That's the phrase you used! No, that was absolutely brilliant. And the two love that was it anyway. And children, the two minute that you would benefit within two minutes. You benefit from intake..

J: Yes cognitively, but physically it's like 45 minutes if you're dehydrated to get to a point of hydrated it takes about 45 minutes. Physiologically, but in terms of brain wise it only takes two minutes.


T: So yes, there was plenty move is in there for me too!

328 J: That's cool, thank you. Yeah, so. In your opinion, which resource was the most effective
329 for developing your own understanding? Not the children at the moment, just you.
330
331 T: Videos really. I know they are aimed at the children but I really need videos and the
332 teacher's pack just set us up. Yeah, I mean, that resource [teachers guide] you are so kind to
333 have made them but we could you know if you had an advance you could do that. But the
334 guidance the teacher pack was just giving out a structure. I think I preferred it as a week
335 rather than a session over five weeks, I know you suggested that once upon a time maybe.
336 But it could have been a weekly thing, but it really worked and the week we did it we have a
337 heatwave the week we did it just magically there was a heatwave.
338
339 J: Yeah, it was almost like it was supposed to happen, Main character vibes are they say. So
340 in your opinion, which resource was the least effective, almost like it was useless for
341 developing your understanding for me for you personally.
342
343 T: *Pause/Hesitancy*
344
345 J: If it all.
346
347 T: I just don't think I can be that harsh. I liked them. I don't know because in a way it led me
348 to instigating conversations with my own older cohort, he knows I mean about Dad, dad or
349 something my dad runs marathon something all this and that, and the other way Dad puts
350 potions in his water when he's running or whatever it's sort of... Yeah. Nothing negative.
351 Really. Thank you.
352
353 J: Thank you. So how has the hydration education pack changed your drinking habits if at
354 all?
355
356 T: I still love tea, of god a confession. It's the Irishman's my in my genes going? I think the
357 heatwave possibly had more effect that..., but I'm just bold. I'll be honest, I'm a bad example,
358 I wish I would drink water, although I did find you know, the heatwave week. I drank more
359 when I got home last year. I think here powered by carbs I'll be honest and tea at work. It's
360 just a habit is a bad habit.
361
362 J: It's still had a hydrating effect tea. It's just also a diuretic. So also makes you pee more.
363
364 T: Yeah, but it did in fact. And there were evenings for again possibly help weather where I
365 will drink tea from morning to midnight. But in the evenings I was fizzy water. Fizzy water.
366 The water maker thing. So I didn't drink more so it probably tipped me off. I felt bad about
367 drinking tea. But I don't drink bold drinks. You know I don't drink fizzy tat, or that kind of
368 thing. I'm not drinking wrong... but apart from tea
369
370 J: How do you have your tea?
371
372 T: How? Just milk?
373
374 J: No sugar?
375

376 T: oh gosh! No sugar! Can you imagine! And weirdly, when I get out of bed, the first thing I
 377 do is hydrate with tea, but really I just have a glass of water with lemon or something when
 378 it's super hot, only when it's super hot. When I leave the tea I'm sorry.

379
 380 J: So for the video for the recording question 5, Jean answered that before the start due to
 381 logistical time consuming factors.

	1	2	3	4	5	6	7	8	9	10	11	12
Whiteboard Animation Series	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teacher Lesson Pack	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Tray Dehydration Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Healthy Drinks Sorting (Cut/Stick)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Healthy Drinks Sorting (Hoops)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bling Your Bottle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water Poster Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Book / Drama	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydration Driving Licences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stickers and Sticker Chart	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Tracker Chart	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Song	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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382

383 J: OK, so. 5a, Why? Why did you think number one was the most effective for developing
384 children understanding of fluid intake. So you put the wipe board animation videos. So we
385 are talking about the children's knowledge now, so why is that the most useful for children,
386 erm the videos?

387

388 T: I think because it's. I think it gave us it, sort of. It was a super introduction raw. I think
389 they get a lot of my teacher waffle. We are all guilty of waffling at them too much and I think
390 what it was you either lots of tips it in and 'we'll have a pause now and have a chat" so it
391 really scaffolded the chat, it's only a 5 minute video, that's all it is, but it just scaffolded the
392 chat and it really directed the focus for today I think otherwise I could have done a little too
393 much revision almost everyday, but each video had a new full felt like we had a new focus
394 and you would tell us that the beginning today, now we are thinking about this, that or the
395 other. So I liked that and possibly as well, my cohort. It echoes the style of our phonics
396 sessions, where there's a little bit of video intro and I think maybe I mean this isn't, I'm just
397 made guessing this. The iPad generation there used to little visual stimuli, you know, but then
398 some of them like the discussion or they want to get up and move as they are kinetic learners
399 or whatever. But that felt like it got the ball rolling for us. It was my favourite, videos were
400 my favourite.

401

402 J: So it sparked something?

403

404 T: Yeah.

405

406 J: Ok, why did you put the last one? It wasn't number 12, but why did you put number 9 is
407 number 9. So that was the bling your bottle. So why was it the least effective for developing
408 children?

409

410 T: Just for us in the early years, I thought earlier about year two class, where I can see how
411 that would be a perfect follow on. Yeah, I have taught a few year two classes in my time. But
412 whereas you could see that the video will that in the talk and the discussion will be the intro
413 and then you breakaway to many groups and go to your table. They were exhausted by the
414 end of the mini talking to me [after the videos]. But was that whether it was after lunch,
415 depending on the weather we were boiling, or whether we were doing this at about 1:00
416 o'clock in the afternoon, so have come in pretty sweaty from lunch. So they just don't, just
417 don't concentrate for five or six minutes. That's all we had. So it just didn't lend itself to those
418 type of activities. But that's not to say they couldn't have been put up for me if we were more
419 organised, we could never range for more to be available during free-flow activities that
420 aren't teacher directed. But some of them may have needed a teacher or an adult to direct
421 them perhaps anyway. So just for me, last week they weren't my most useful resource. But
422 that's not to say that they're not useful.

423

424 J: Ok, so in terms... it's almost just the setup of the classroom and oversee, then the
425 situational impacts of that cause it was hot and the way the children were last week.
426 Potentially were dehydrated during the first day as well. So OK, so your saying is wasn't
427 useful. It's just it's just the least useful of that a bunch,

428

429 T: It's super! However, we couldn't. We couldn't engage with that much content in a way in
430 in a week, unless we had abandoned all of the curriculum and we emersed ourselves fully,
431 which I'd love to have done, really in a water week. That would be really cool to do. Maybe
432 we'd have more freedom, say at the end of July, to do it. Yes, okay you're prepping them for
433 the summer holidays, but then we're not really benefiting it from it as teachers throughout the
434 year so maybe not the best idea.

435

436 J: Yeah. OK so. That's one thing where you could do the study. You could do it in September
437 where you haven't quite got the teaching pressures potentially.

438

439 T: Yes, but then you wonder would they have the maturity. Thinking nursery, kiddies. Some
440 are still three and some have just turned four. I'm not even sure it would have had as much as
441 a positive effect. It has had this time around, so I like that. I think the timing for the early
442 years is perfect - In the summer. We just sort, it would be lovely if you would just gone to
443 permission to abandon phonics. It would all lender self as a journey will lend itself. The
444 whole process would lend itself to phonics, as we we're talking bout phonemes and working
445 wizard and sorting, we're cutting, fine motor skills. Some of the activities encompass many
446 things. So there we go.

447

448 J: No, thank you. So in what ways did you adapt the hydration education pack to meet the
449 needs of all learners? Or would like to adapt if you repeated it?

450

451 T: Do you mean the teacher pack or like the...?

452

453 J: Everything involved so for instance like I know you mentioned earlier that the water bottle
454 (tracker chart) could be supersized?

455

456 T: I think it was almost I think we could see it as adults. We could see the vision. But I think
457 they just, with their little hands, they needed a supersize monster sized bottle for the tracker.
458 So that would have been even more effective, they did love it and the people who got the
459 hang of it, did it. But I was finding myself looking at bottles, calling our names to then go
460 move their name. Some weren't getting it to necessarily move themselves. That the tracker
461 sticker (sticker chart). They absolutely loved the stickers and however, what they would the
462 end up doing was wanting a sticker every time they finished a bottle. I couldn't say that when
463 they had drunk another bottle that they couldn't have second sticker, so we went a bit
464 bananas. Day one we were drinking and then we talked about that if you drink too much
465 water, that wouldn't be good for you either. So were overdoing it. So they loved more than
466 one sticker was great. So that we finish bold sticker. It just needed to be bigger. Their eyes,
467 their little eyes couldn't track from their name from say, Angela to Friday. There was too
468 much there, too many skills involved. I think you're year two; no bother. You know they use
469 the data charts, and it would do. That's where off and many of our awards in class are there
470 quite they've all growth like jewel in the jar, sticker on your jumper. They don't often have to
471 find such exact spots to play something they put good training. Lots of them did manage it.
472 Yeah, but the majority couldn't. And they were, you know, needed assist. I had earlier six
473 people, which helped. So she would. I would call on her, otherwise it just led, and I didn't
474 mind. I know I don't mind the interaction, but there were a lot of interest that I've finished.
475 Bottle OK and then it needs to be allowed to go, put the sticker on, but they're just teething
476 problems. Or maybe they have their own personal sticker chart, or it could be a for a class. It

477 could have been that Green team had a sticker chart, red team had a sticker chart, or could
478 have 4 sticker charts. Slightly chunkier and they would find a more easily.

479

480 J: So on repeating the water again, what resources would you discard for the hydration
481 education pack? And why? If you'd do any?

482

483 T: For us, I think the bling your bottle, you had so many examples so wouldn't discard them,
484 but we just chose one choose. Our favourite, we went with the handwriting one. That's what
485 we're on. We went with that. We didn't feel the need to save the for the next next day. But
486 you could have done that, could have been left out as a provocation. So and discard that. For
487 us, it's possibly the almost where will call the extension those extra activities that we just for
488 our little people, it needed an adult which I didn't have, or I was busy doing the assessments
489 or phonics or reading was reading day or something. So we possibly didn't need as many
490 supplementary activities for us. The video, that chart, the discussion, the physical acts of it
491 was for us a physical act. That was the week, the water week. But that's just for five year
492 olds. That what I thought.

493

494 J: So it sounds it sounds to me that. Almost me asking THE HEADTEACHER before we
495 started almost two to go into a year two class that would be fascinated as well as reception
496 again.

497

498 T: I think that where we would use it, that pack will come into its own, it's like an entire
499 science week. That's what you're looking at, that's what a teacher needs. But that's what a
500 year two teacher wants, they do this – “right you've got an hour to get to that point”. Whereas
501 for us [in EYFS] we were trying to shoehorn things in a way and quickly at speed because
502 they were hot after lunchtime, but also they just can't listen for very long. Some of them can
503 that you met, but some of the characters can't. Some can hold wonderful conversations. * but
504 others are just off this planet and not with us at all. So yeah, it covered in a way, it covered
505 early years and key stage one for me.

506

507 J: OK so. Do you? Do you think delivering the hydration education pack via a water week
508 met the curriculum aims of what constitutes a healthy diet, which includes fluid intake.

509

510 T: For fluids, yes, yes. We didn't touch upon the foods, but you weren't going to.

511

512 J: So in terms of the curriculum it suggest that there needs to be understanding about all fluid
513 intake as part of a healthy diet so as part of that, so we'll see where you got the healthy...

514

515 T: very comprehensive

516

517 J: CONT - healthy Drinks with ideas etc. So outside the water week, what resources would
518 you continue to use and why?

519

520 T: I would put the water, what we call water bottle tracker thing?

521

522 J: Water tracker chart overall.

523

524 T: Yeah, I would love that all the time. Will keep that. It is only from my class that the
525 tracker with the stickers wasn't ideal because of the children just climbing over the carpet.

526 They wanted to do it though! I might just maybe have a set of them available nearby? I might
527 adapt that. I think you need it for water because you want to see the focus. And then I could
528 also keep an eye as the day went by, there were some really reluctant water drinkers. You
529 know, I know they go home with and they've had four sips all day and maybe a teeny sip at
530 dinner time. So that was really handy. And I could see it was really good for me as another
531 visual, I could glance from far across the room and seek out with my class, I'll know of a
532 couple of names I would know, and I would direct them. And they were like it ok but wasn't
533 the walk of shame. But they didn't know. And then I said, you find a tricky and they do. We
534 talked about some people just find it trickier to drink and its water only at school we don't
535 allow Ribena's or squashes and things. There we go. So water tracker, keep stickers, They
536 loved it. You'll hear (NAME OMMITED). He's still going on about it. And the song, maybe
537 if this song was available on this sort of....

538
539 J: It's all available on Spotify. I think I put the link in somewhere is actually in the video.

540
541 T: I could see this! Cause it's like you were accrediting the woman. Yeah. And I would
542 almost use that in early years.

543
544 J: Amanda's action club is called.

545
546 T: Will do that coz it was usually you put that on and even without speaking they would
547 know and there go it's like it's the water break. We need to break. For me it's a great moment
548 just refreshed by getting tired. But I still have more work to let have our fruit and water.

549
550 T: Yeah, that's cool. So last question, do you do you think that the hydration education pack
551 will encouraged children to change their drinking habits and in what ways?

552
553 T: Yes, for those who love water, I think they are.... Completely motivated by the water
554 tracker bottle, the giant one, and the sticker chart, it just worked. I mean, it was too good at
555 times. As I say, we had to rein it in on Monday and Tuesday as they were drinking so much
556 water they were going to explode. We had a couple of accidents where they wet themselves.
557 They just overdone it. You just have to have that chat. You need to go and remove yourself in
558 the bathroom needed to go and go for your wee. It was tricky. I got to the end and I have just
559 one or two who were really reluctant drinkers. And it helped a bit. But it was. But it was good
560 because it highlighted the challenge for them, but it was still a proper challenge by Friday.
561 They could see the tracker. They could see the stickers, but they just wanted so much. To
562 drink one whole bottle was an absolute mission. But it was great because it just kept the focus
563 on it. So I liked to. I think it's needed because I don't know how you do motivate those little
564 drinkers. How do you do that?

565
566 J: So much to learn response that you go through life. So you go from entire childhood, not
567 really drinking a lot and, but then even adults don't drink enough! So yeah, it's, it's, it's sort of
568 a untouched part of education.

569
570 T: It really is because every year you have a parent at the gate. They promised them a toy if
571 they get home. We've had those kinds; can you make sure he drinks? Oh, I know. I was just
572 water. Yeah, but it was a great discussion of just listening to your body. That what you're
573 doing is actually listening to your body. You know, you're cranky because you're not, you
574 need little snack too. And you can see in them within the cost when they failed to go diver

575 fruit. Yeah. I mean, thank God bless the free fruit that we get from the government for them.
576 Errrm, I don't know milk is free, but only until your five, which is slightly awkward so that is
577 another way we get all know everyone's mad about milk. I know it's another great way of
578 hydrating them, but as soon as your five then if you're five in October too bad, you're not
579 getting milk for the rest of the year. So there we go! It was a great launchpad for my reluctant
580 drinkers, but that would be something I would love to think about more. How do I and I don't
581 mean by offering Ribena, orange squash like it's just water. That's the deal. Going through
582 this school. Something manageable, but they were inspired a little more than they ever were.
583 But I should maybe keep an eye it out. It will be interesting for me to keep an eye on those
584 reluctant drinkers to the next few weeks as we journey to the end of term. That might be too
585 well, they just slip back into their own ways.

586
587 J: It would be interesting. See, that's where potentially for the full scale study, it might be
588 where I come back in three weeks' time. And. See how see how things get on, but also in
589 terms of just do one more round of those questionnaires. So that means I'm not taking much
590 of the children's time is about two or three minutes per child. So and then you've got the
591 medium term attention on knowledge as well. So that potentially one looking at if I haven't
592 got a large. Sample size. If I've got an in depth analysis or a deeper analysis of it, and
593 potentially that might be something I'll be looking at the full scale is one option. One of the
594 options so yeah.

595

596 END OF TRANSCRIPTION

597

Appendix 15a: The reasons for why the children drink water / health reasons – Study 2

KEY: **Green** = Liked Water / **Orange** = Sometimes Liked Water / **Red** = Did not Like Water / No Text = Did Not Participate

<i>Children's Drinking / Health Reasons: Study 2</i>	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 1</i>	Keeps me hydrated	Make me bigger and keep me hydrated	Because it makes my hydrated and I can get bigger	Cos it hydrated	Makes you big and strong	Keeps me hydrated
<i>Child 2</i>	Have a sticker sometimes	Help us grow	Cos it's no lemons in it	Because it's good for us	Cos it's fresh and doesn't have anything in it	So don't get sick often
<i>Child 3</i>	Makes you strong	Because it's healthy	Because it's healthy	Because it makes you feel nice	Because it's healthy	Because we can be big and strong
<i>Child 4</i>	Like drinking together	Cos it's good for you	Because it's hydrated	Because you won't get dehydrated	Because if I'm thirsty I can have a drink	Because if we don't drink water we won't stay alive
<i>Child 5</i>	When I get hot	Cos it's healthy	Because it's healthy	Because don't want	Because it's healthy	Can't remember
<i>Child 6</i>	Cos it has no taste	Cos it's healthy for you	Because it's healthy	Can't remember	Cos it has no flavour	To stay hydrated
<i>Child 7</i>	Cos it keeps me hydrated	Cos it keeps us healthy	Keep me hydrated	So don't get dehydrated	Because it makes me hydrated	Because it will make us hydrated and if you are hydrated you are healthy
<i>Child 8</i>	Cos it's healthy	Cos it's very good for you	Cos it's good or you	Cos it's healthy and good for you	Cos don't like other drinks that much	Cos it healthy
<i>Child 9</i>	When I feel hot I like to drink it	Keep hydrated	Because it keeps you hydrated	So won't get dehydrated	Because sometimes I have a sore throat	Helps us when have dry throat
<i>Child 10</i>	Because it hydrated you	Because it's it's hot you have to hydrate	Cos it's tasty	Make you hydrated and if you don't it will make you all sweaty	Cos it makes you healthy	Cos it's really good for you
<i>Child 11</i>	Cos it's healthy	Cos it makes you more bigger	Cos it's healthy	Makes you feel better	Cos it's healthy	Cos it helps us stay strong
<i>Child 12</i>	Cos I get thirsty	Cos it good	Cos it's make be very thirsty	Cos it's good for you	Keeps me healthy	If you don't drink water you might die
<i>Child 13</i>	Cos it makes you healthy	Don't know	Cos it healthy	Don't know	Cos it's healthy	Don't know

<i>Child 14</i>	Cos it's so healthy	Cos it's healthy for you	Because it's healthy	Because it will help you grow up and make you feel better	Not sure	Cos it's healthy
<i>Child 15</i>	Don't know	Don't know	Don't know	Don't know	Cos I like it	Not sure
<i>Child 16</i>	Drink a lot of water so I don't die	Cos it's good for you	Cos it's healthy and no sugar	Cos it's really healthy for you and makes you clever	Because it's healthy and good for you	And when got really bad tummy it helps you and keeps you hydrated
<i>Children's Drinking / Health Reasons: Study 2</i>	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 17</i>	Cos I like it	Cos it's good to be drinking	Cos it's good	Cos it's healthy	Not sure	Cos it's healthy and has no sugar in it
<i>Child 18</i>	Helps me to run around	Helps you to not get poorly	Helps me to not get dehydrated	So don't get dry mouth	Because my friends drink it	Cos it helps us
<i>Child 19</i>	Because it's my favourite drink	Keep up cool when it's a hot day	Because it's my favourite and I love it	So don't get red face and stinky yellow wee, and headache	N/A	N/A
<i>Child 20</i>	Cos I only drink it	Cos it make you energy	Because it saves us energy	Because it's healthy	Cos there's no other drinks that I like	Because it's healthy for me
<i>Child 21</i>	Cos I like it	Because it keeps us hydrated	Because it keeps me hydrated	To fill the body up with water	Cos it keeps healthy and not thirsty	Cos it keeps us healthy
<i>Child 22</i>	Don't know	Don't know	Cos it's healthy for you	To get hydrated	I like drinking strawberry water	Stay healthy
<i>Child 23</i>	Water Makes you alive	Not sure	Cos it's healthy	Keeps you alive	Don't know	Because it's good for you
<i>Child 24</i>	Makes me grow	Makes us healthy and grow	Cos it makes me healthy	Makes you grow	Cos it keeps me healthy	cos it keeps me hydrated
<i>Child 25</i>	Makes me feel yummy	Cos it's good for drinking	Cos it makes my throat thirsty	Helps to get healthy	Makes me feel not thirsty and it's good for body	Cos it's healthy
<i>Child 26</i>	When it's hot it cools me down	Because it's digests really well	Because if I don't it will dehydrate my body	Cos we get hydrated	Because it keeps you healthy	Cos it's healthy and helps brain
<i>Child 27</i>	Cos it doesn't taste nice	Because if you don't it will dehydrate your body	Because it's digests really well	Cos we will dehydrate	Cos it's nice and I like the taste	So we don't dehydrate

<i>Child 28</i>	Don't know	Healthy for you	It's healthy for you	Don't know	Cos it's healthy	Cos it helps
<i>Child 29</i>	Cos it's healthy	Cos it's good for you	Cos it's healthy	Help our bodies but lose it by running and exercise	Cos it's healthy	Cos it's healthy
<i>Child 30</i>	Cos I do	Cos it's healthy	Cos it's good for you	Don't know	Don't Know	Not sure
<i>Child 31</i>	Cos I would like to get fit	If we don't drink water necks might get dry	Cos it makes you have some more energy	Cos might need to go wee	Cos it Makes orange squash	Cos it's good for you
<i>Children's Drinking / Health Reasons: Study 2</i>	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 32</i>	Because I like drinking it	Because it's good for your tummy	Cos it's good for you	Not sure	Not sure	Not sure
<i>Child 33</i>	Cos it feels so good for my neck	Cos it makes you come alive	Cos it's good for us	Cos it for our bodies	Cos it tastes nice	Cos it keeps you stay alive
<i>Child 34</i>	Because it makes me nice and cold	Because it healthy	Cos it makes me hydrated and I like it	Cos it keeps you hydrated	Cos then won't get thirsty	Cos it's good for you
<i>Child 35</i>	Makes me cooler	Get healthy	When it's hot it makes you cold	Because it's good for you	Not sure	Helps us be healthy
<i>Child 36</i>	It's refreshing after been doing lots of running	So we don't get dehydrated	Cos it's good for our bodies	So don't get dehydrated	Cos it's healthy for you	Cos we can get dehydrated
<i>Child 37</i>	Because I don't want to be thirsty	Don't know	Cos it makes feel hydrated	Don't know	Because it's makes hydrated	Keeps you hydrated
<i>Child 38</i>	Make me healthy	Because it's good for us	Makes you healthy	Makes your body grow	Because it keeps you healthy	Cos it keeps you fit and strong
<i>Child 39</i>	Because it makes you big strong	Cos it makes you really big	Cos water makes you healthy	Because it's good for you	Cos it's healthy	Not sure
<i>Child 40</i>	Don't know	If you don't drink anything you die	Cos it's healthy	Otherwise mouth will get too dry	Because it's healthy	So can be big and strong
<i>Child 41</i>	Cos I like water	So grow big	Don't know	To grow big	Because you need to hydrate	To get big
<i>Child 42</i>	Because it healthy for you	Healthy for your body	Because it's healthy	Don't know	Cos it's healthy	Not sure
<i>Child 43</i>	So I'm not thirsty	So don't get thirsty	Cos my mum likes water	So don't get too hot	So don't get hot	Don't know

<i>Child 44</i>	Because it's makes healthy and hydrated	Make our lungs feel good	Because it makes hydrated	Cos it makes our bodies good and healthy	N/A	N/A
<i>Child 45</i>	Because I get thirsty	Not sure	Not sure	Not sure	Not sure	Not sure



KS1

List of Water Week Resources

- 1. Teachers Guide Lesson Plan Pack**
 - 1a. Bling your bottle
 - 1b. Water tray dehydration activity
 - 1c. Extremely Thirsty Cricketer Drama / Role-Play / Drawing
 - 1d. Healthy vs Non-healthy drinks sorting (physical and cut/stick)
 - 1e. Poster Design Example
 - 1f. Water Song

- 2. Whole Class Drinking Visual Register Tracker**
- 3. Sticker chart with Water Week stickers**
- 4. Hydration driving licences**
- 5. 5 Whiteboard Animation Videos**
- 6. Teacher / Parents Information Fact Sheet**

Version 3: Water Week Video Series Links

<p>Water Week 1 Why do we have to drink? How much do we have to drink?</p> 	<p>Video 1: https://www.youtube.com/watch?v=XAofSjVUXPM</p>
<p>Water Week 2 The signs of dehydration How to know when to drink!</p> 	<p>Video 2: https://www.youtube.com/watch?v=IuOKNaJn7Cg</p>
<p>Water Week 3 How we can all help each other to drink!</p> 	<p>Video 3: https://www.youtube.com/watch?v=rZKJO_7bPaI</p>
<p>Water Week 4 Healthy and Non-Healthy Drinks</p> 	<p>Video 4: https://www.youtube.com/watch?v=lBr2OphZRfs</p>
<p>Water Week 5 The Water Quiz!</p> 	<p>Video 5: https://www.youtube.com/watch?v=DUI9shX4X3c</p>







Water Week

TEACHER / PARENT INFORMATION FACT SHEET

This week at school your children have been learning all about water consumption. But the learning doesn't stop here! Below is an abridged summary of the things they have learnt so teachers and parents can help too! **You could even watch the water week video series!?**

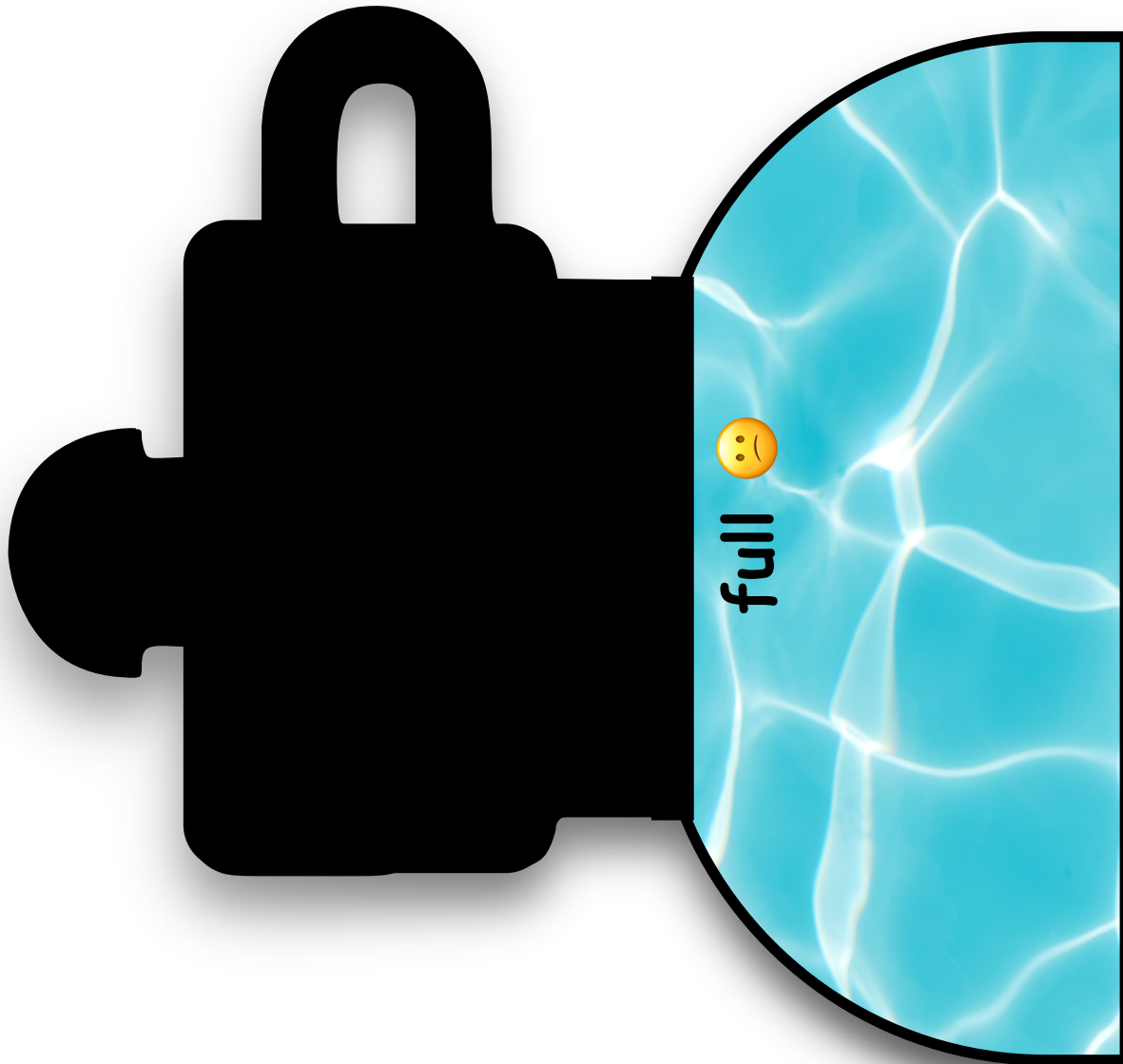
FLUID FUN FACTS!

1. Children aged 4-8 need between 1.1L - 1.3L of fluid a day (not including the fluid we get from food! Most fruit and vegetables have a really high content of water!)
2. Women need around 2L and Men, 2.5L!
3. Drinking enough does bring some benefits though!
 - Feeling of being alert and awake.
 - Learn 10 percent more effectively.
 - Satiates hunger and aids weight loss / weight maintenance.
4. However, there are many downsides! The early signs of dehydration include:
 - Feeling of being tired and lethargic.
 - Really yellow urine! Where you pee less than 4 times a day
 - Headaches, dry lips, dizziness

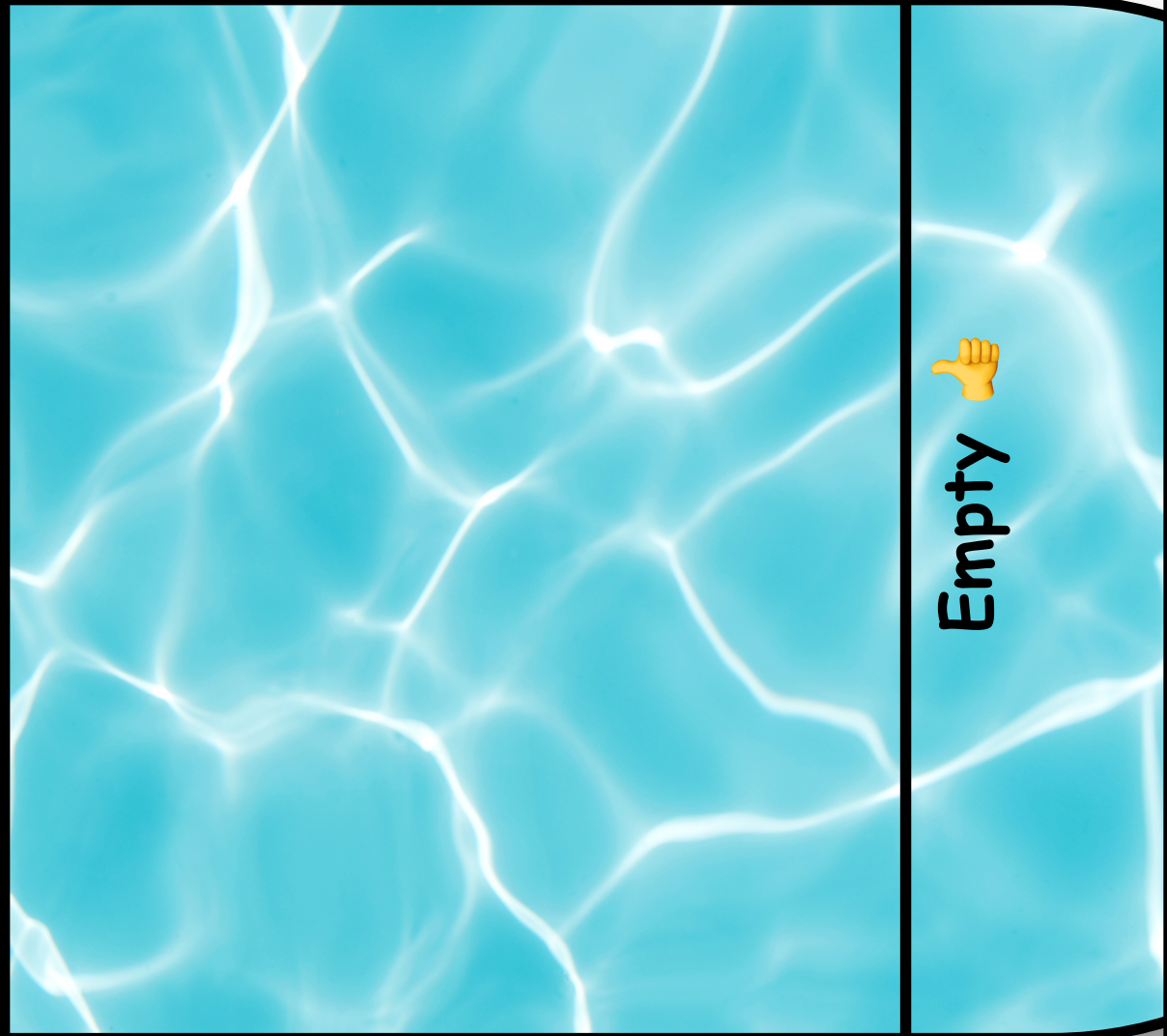
TIPS TO MAXIMISE CONSUMPTION

As you can see, it's really important that we all as human beings drink enough water. But children often do not know recognise these signs of dehydration and need support to drink enough water. Below are some tips to help our children!

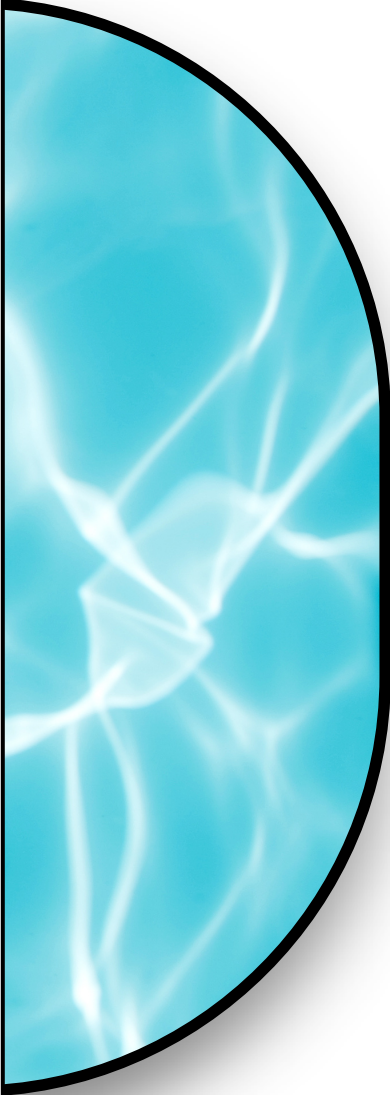
- Encourage drinking after periods of exercise and breaks in learning. It only takes 2 minutes from drinking to get cognitive benefit of fluid!
- At the very least, pack an empty bottle in your child's book bag. The schools can then fill them up and it avoids leaks if you're worried about that!
- Model drinking at home and in the classroom. Make it the norm to pause what you are doing and drink if you feel some of the signs of dehydration.
- Provide a reward system for drinking at home and in the classroom. If children were to drink one whole school water bottle at while at school, that'll go a long way to meeting the 1.1L - 1.3L they need a day! A sticker chart has worked well!
- Although it is the quantity that really matters. Drinking little and often is best!
- Finally, try and limit the times when children can't consume water. It really confuses some children to know when they are allowed to drink if there are times when they can't! At the very least, try and make it obvious when they can drink.



**Single
A3 (1 of 3)**



**Single
A3 (2 of 3)**



**Single
A3 (3 of 3)**



Water Week



TEACHER'S GUIDE

KEY STAGE 1





This guide is designed to provide a comprehensive overview of how to use the tools within the attached KS1 Water Week Education Resource Pack. The pack is not intended to provide every single activity you may wish to make available to your class during each directed session, but more simply to give the tools to effectively teach the various elements related to fluid intake.

If you have require any additional support in your delivery of the KS1 Water Week Education Resource Pack, have any further questions or constructive feedback, please do not hesitate in contacting us using the email attached below.

Best of luck using the pack!

All the best,

Josh Williamson

WaterWeekH2O@gmail.com

Contents

Day 1: ***Why do we have to drink water? How much do we need to drink?***

Day 2: ***The Signs of Dehydration - How to know when we need to drink?***

Day 3: ***How we can all help each other to drink!***

Day 4: ***Healthy and Non-healthy Drinks?***

Day 5: ***The Water Quiz! What have we learnt?***

Resource list

(1. Five Animation Videos) (2. Bling Your Bottle) (3. Healthy Drinks Cut/Stick & Large Pictures for Hoop Sorting) (4. Dehydration Water Tray Activity) (5. Water Visual Register) (6. Stickers) (7. Sticker Chart and Hydration Driving Licences) (8. Water Song link) (9. Teacher/Parents Fact Sheet) (10. Poster Example)(11. Drama Guide)

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Teacher Setup Tasks Checklist



- Print & Laminate A2 Daily Water Tracking Visual Register
- Print & Laminate Individual Class Names/Faces for Visual Register
- Print & Laminate Class Sticker Chart
- Write Names - Print & Laminate Hydration Driving Licences for Class
- Print / Ready the Practical Resources for Each Day

Things to Try and Remember

(Morning of Day 1) Explain to your class how to use the water tracking visual register (*i.e. children can move their name to 'empty' space once they have finished at least one bottle's worth*).

(Before teaching 1st lesson) Explain to your class that for every child that finishes one at least bottle, they will get one sticker at the end of the day to go onto the class sticker chart. Where finally, for all children that get a sticker every day this week will earn their very own hydration driving licence! *Please only give one sticker a day. Try to avoid giving more if children drink more, as some children will get a little too enthusiastic. And position the chart closer to the children.*

(During the week) If you can, try and remember to:-

1. Encourage the children to take their bottles to their tables.
2. Try and stop for a whole cohort drinks break after exercise (such as after playtime or lunchtime). ***This is a great time to play the water song! Or during snack time!***
3. Try to remember to drink fluids yourself in front of the children to show them how to do it! And to drink at the start of the day.

500ml should be consumed at school and 500ml at home



Why do we have to drink water? How much do we need to drink?

Objectives

1. To know and understand why drinking fluid is important.
2. To know much we need to drink.
3. To know and understand when is the best time to drink.

Lesson Outline and Activities

- Share the 1st whiteboard animation video at the start of the lesson. Pause the video when prompted to answer questions and check understanding.
- Share the bling your bottle activity and what children can do. Explain the concept of not all bottles are 500ml but if we drink one 500ml bottle while at school and then drinking before and after school at home then we can meet our hydration goals.
- **Extension** - Children can complete second bottle with higher volumes of fluid, different words etc.
- **Worth trying?** - Possibly this could be the start of a new class display on what the children have/will learn this week?



Resource List

Day 1 Animation Video
Bling Your Bottle Activity



NC Links

Volume
Writing
Art and Design

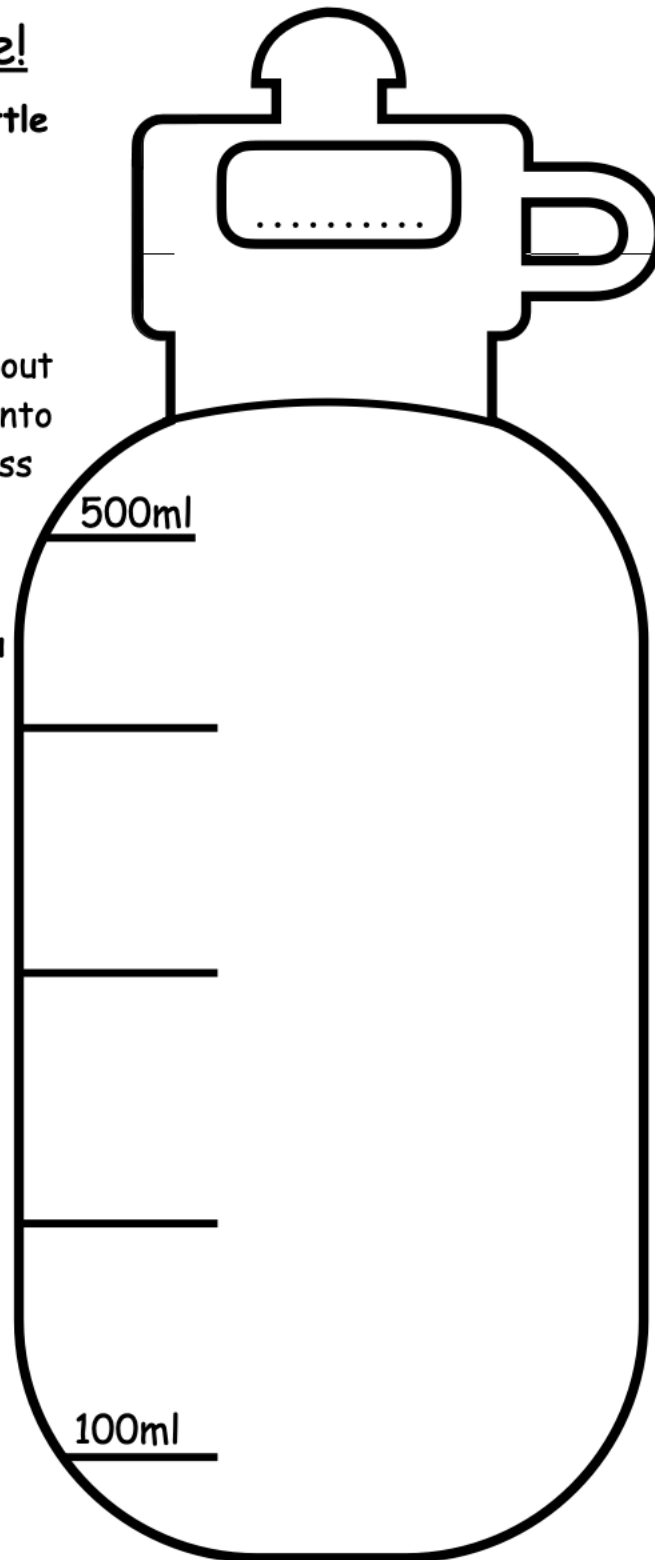


Bling Your Bottle!

Can bling your 500ml bottle
and fill in the missing
amounts of water
measurement?

When you are happy, cut out
your design and stick it onto
some card to make a class
display!

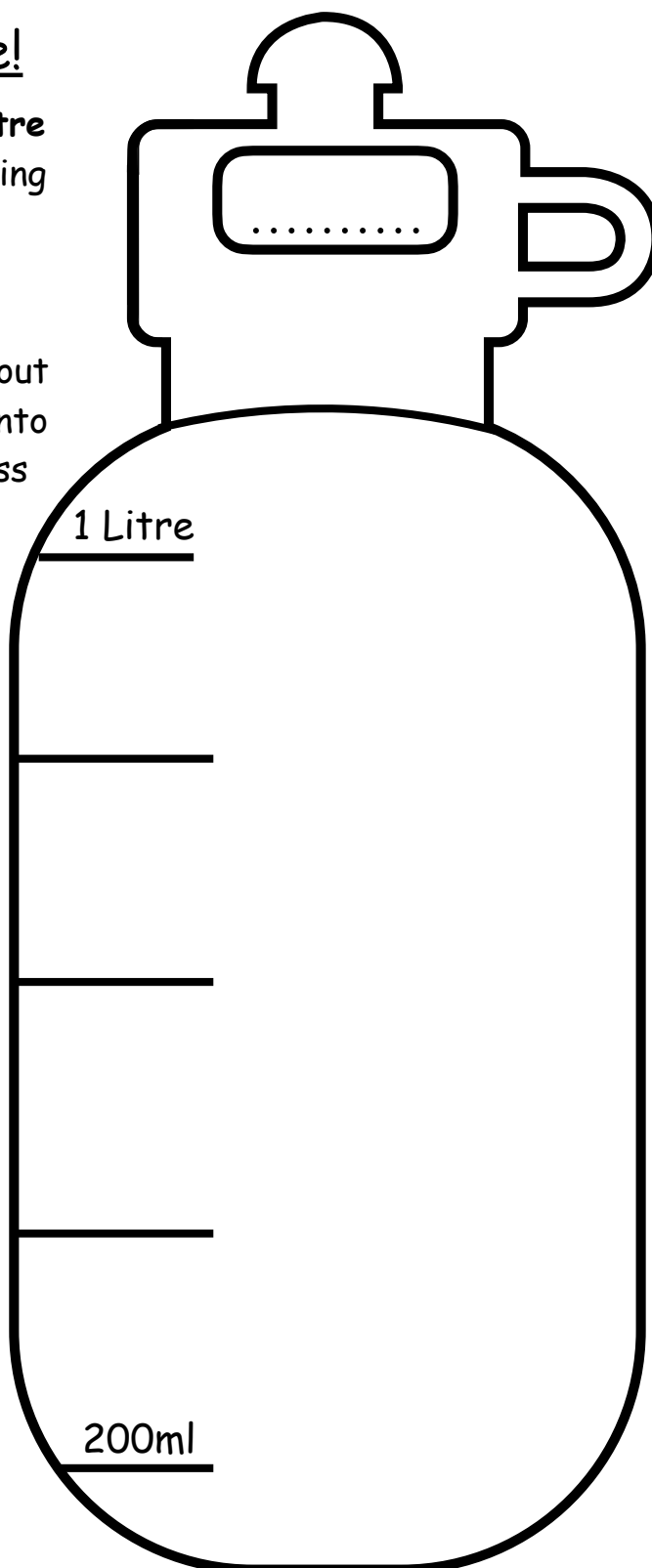
Remember, this is
the smallest amount you
need to drink at school!



Bling Your Bottle!

Can bling your bottle 1 litre bottle and fill in the missing amounts of water measurement?

When you are happy, cut out your design and stick it onto some card to make a class display!



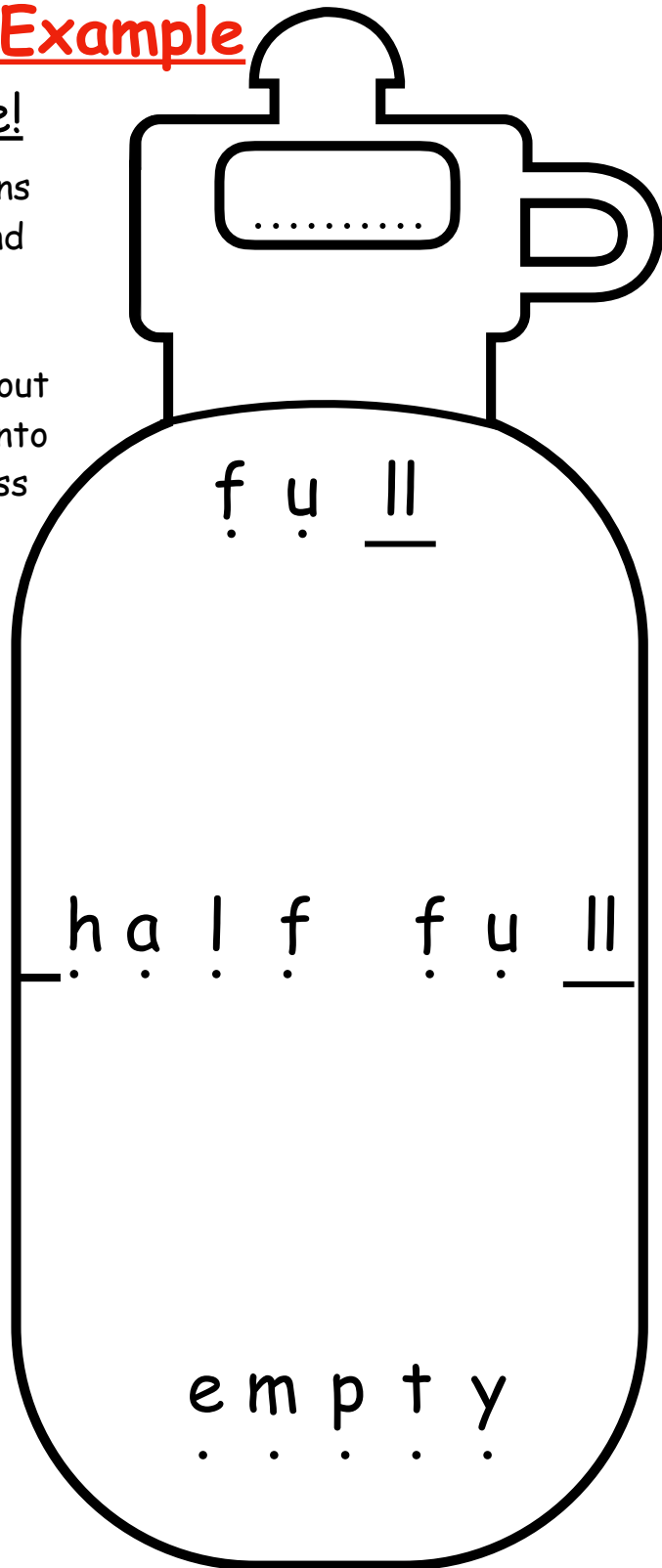
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Example

Bling Your Bottle!

Can use the sound buttons
to write full, half full and
empty?

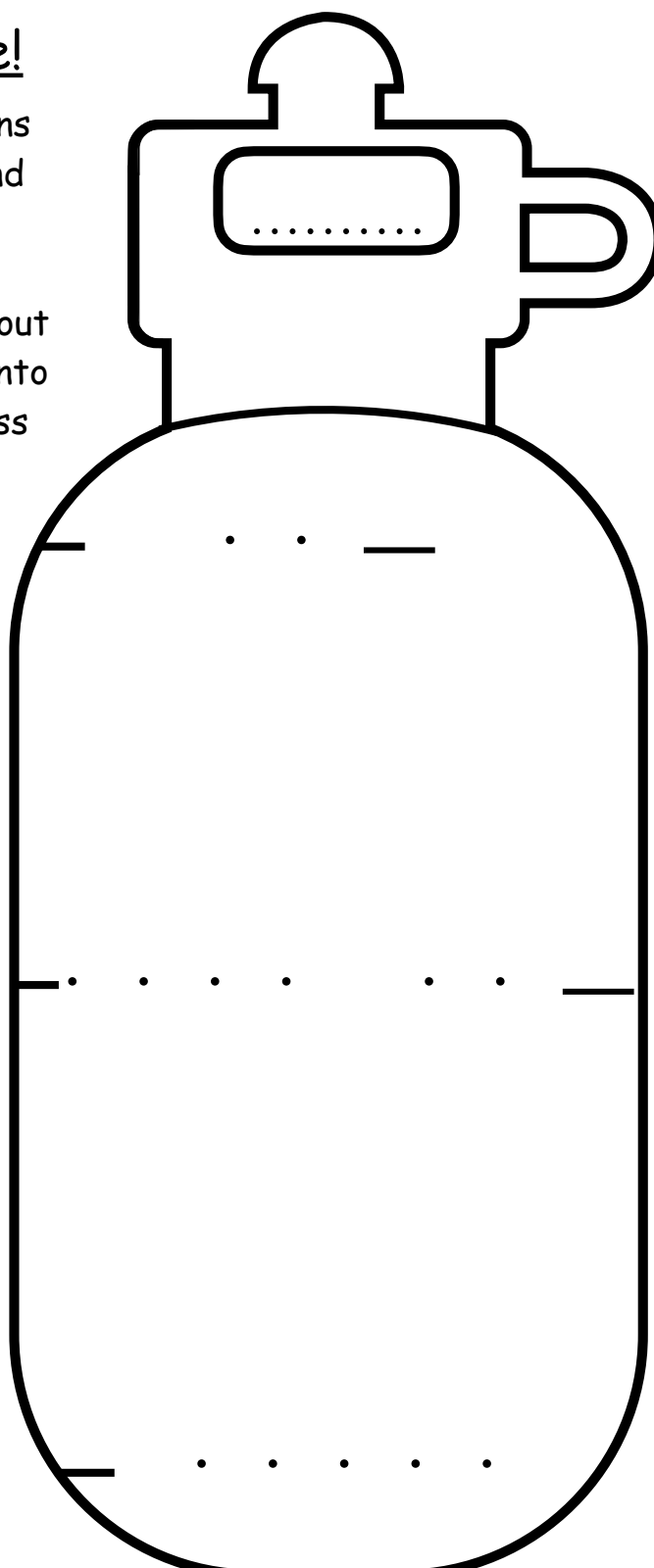
When you are happy, cut out
your design and stick it onto
some card to make a class
display!



Bling Your Bottle!

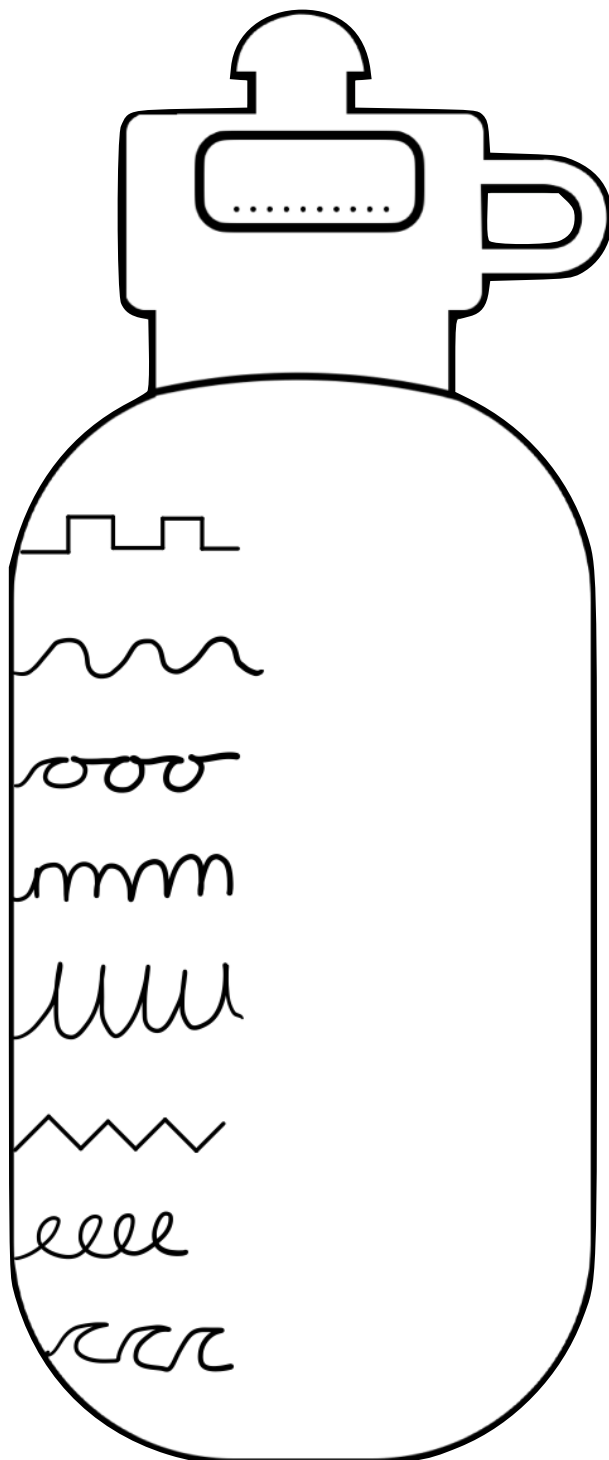
Can use the sound buttons to write full, half full and empty?

When you are happy, cut out your design and stick it onto some card to make a class display!



Bling Your Bottle!

Can use continue the handwriting patterns?
When you are happy, cut out your design and stick it onto some card to make a class display!



The Signs of Dehydration - How to know when we need to drink

Objectives

1. To know and understand what dehydration is.
2. To know and understand some of the things that make us dehydrated.

Lesson Outline and Activities

- Share the 2nd whiteboard animation video at the start of the lesson. Pause the video when prompted to answer questions and check understanding.
- See explanation of the water tray dehydration activity on the actual resource. State that 500ml is how much we need to drink at school and at least 500ml at home.
- If time, feel free to try the class drama activity in the Extremely Thirsty Cricketer Book?
- **Extension:**
- Children to draw and write their own drinks that hydrate and activities that dehydrate.
- Children could draw pictures for the pages in the class drama?



Resource List

Day 2 Animation Video
Dehydration Water Activity



NC Links

Volume
Writing
Healthy Eating
Art and Design
PE (lead healthy lives)



Dehydration Water Tray Activity



Teaching Guidance (Resource list: 1. Water tray 2. Laminated wizard + black/blue tiles.

3. Jug

1. Introduce to the children that doing certain things makes us sweat and lose body water. Stick the laminated water wizard onto a full jug of water and say this is us at the start of the day after we have had our breakfast.
2. Explain that by doing some of the different things listed below (black tiles) makes us lose body water. E.g. Running makes us sweat so we lose some water ***demonstrate this by pouring some water out of the jug***. Keep doing this with the different activities until there is less water in the jug. Hold a class discussion around what this means? What are the signs of dehydration? **Red in the face, Headache, tiredness dry lips, really yellow wee.**
3. What should we do to make sure we have enough body water to make sure we don't feel like this? **Drink some fluids.** Then demonstrate the opposite of the dehydrating activities by putting the laminated tiles into the jug and top up with water as you go. **You can also use a 500ml bottle and state that this is how much we need to drink at school to stay hydrated, we also need to drink at least another 500ml while at home.**
4. Children to play around with this process of losing and gaining water. Children can also create their own dehydrating activities and hydration sources.



Exercise



Running



Weeing



Pooing



Skipping



Learning Time



Breaktime



Cricket



Water Bottle

500ml



Orange Squash

250ml Glass



Milk

330ml Carton



Vegetables

Tomato
Cucumber
Lettuce

250ml Glass



Cup of Water

250ml Glass



Blackcurrant Squash

Apple
Handful of Grapes
Orange

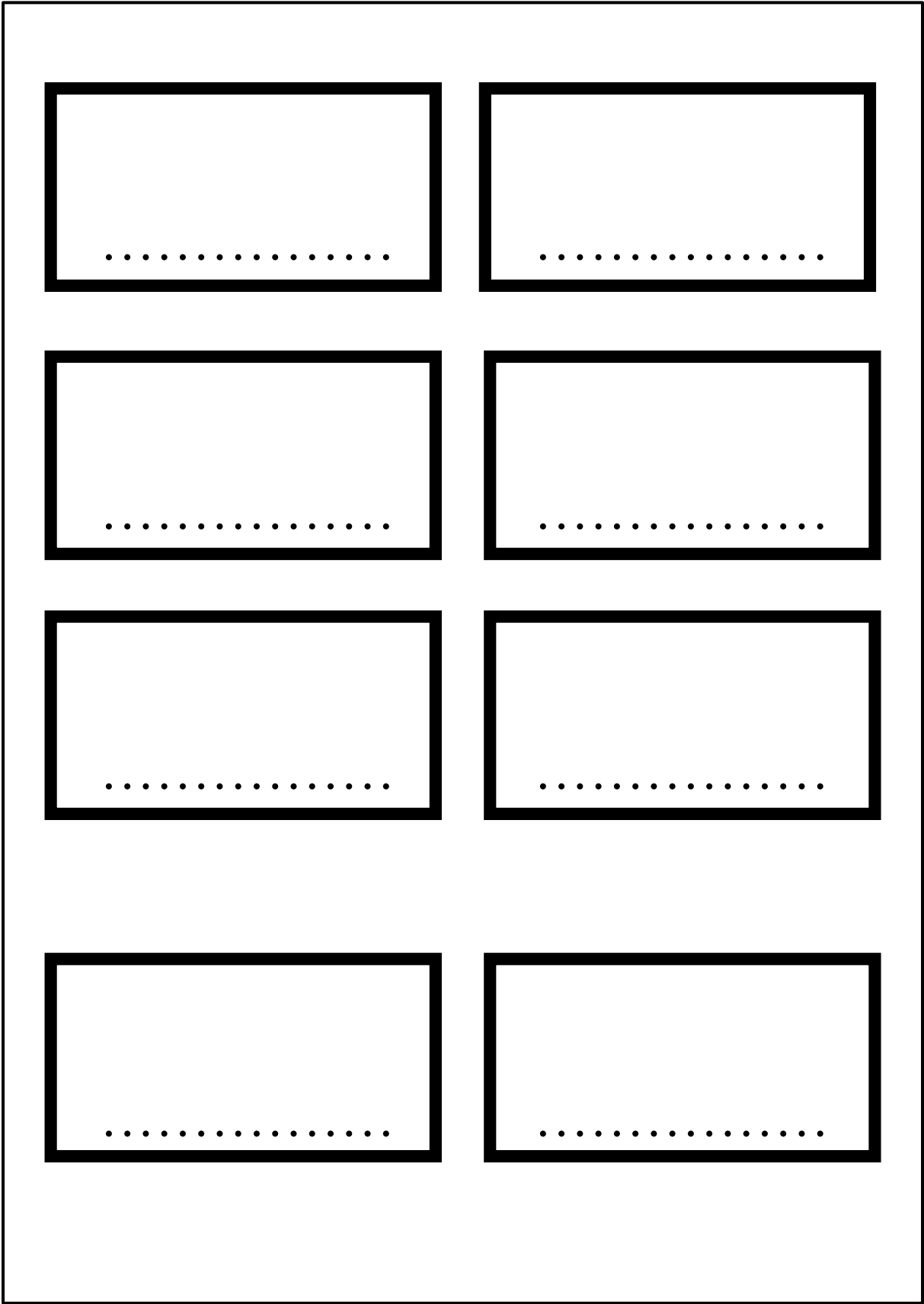


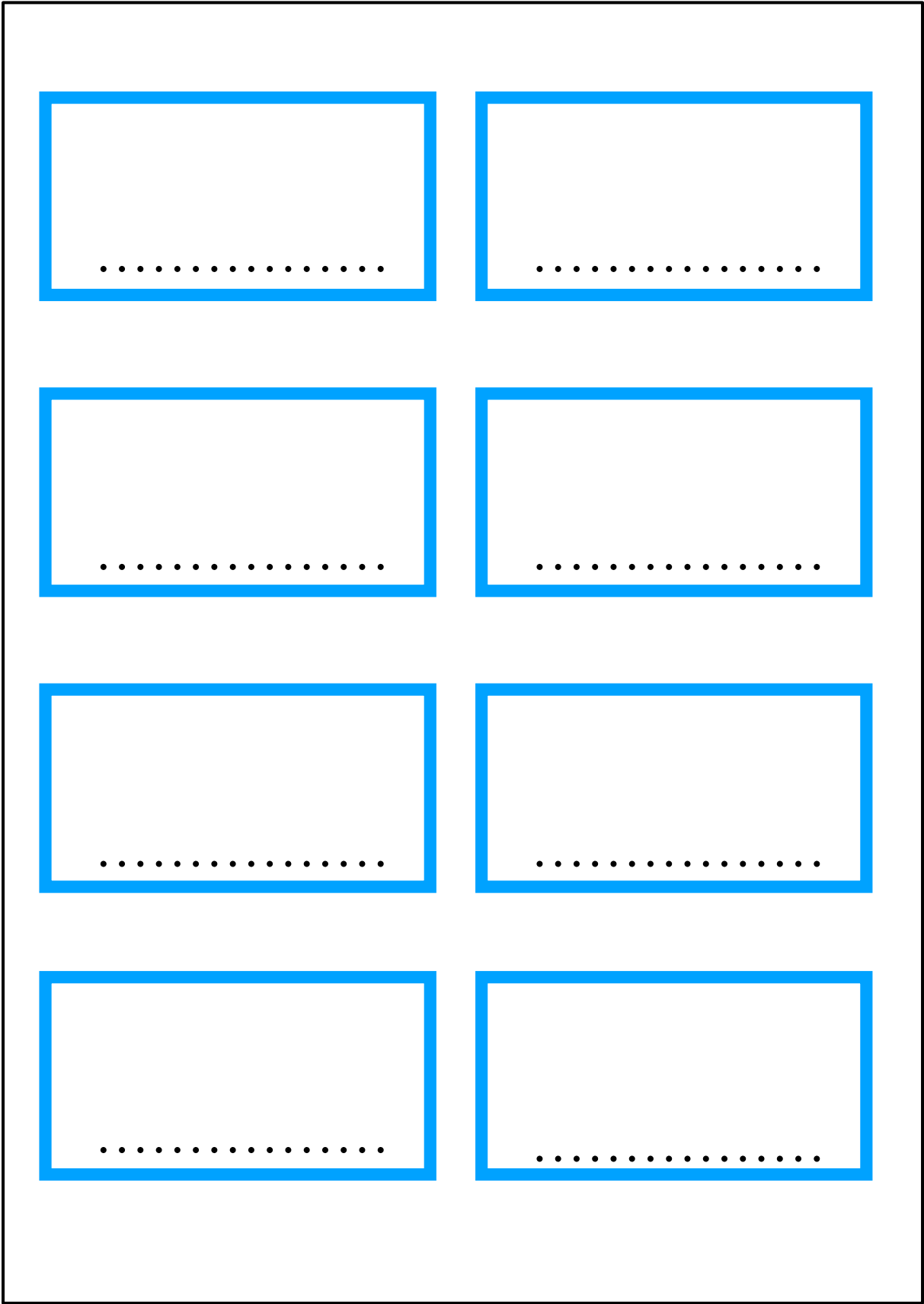
Fruit

250ml Glass



Apple Juice





The Extremely Thirsty Cricketer

Drama Role-Play Guide

Character List

Jim

The Tea Lady

Jim's Dad (The Scorer)

The Umpires

2 Teams of Cricket Players

This is Jim. Jim plays a game called cricket.

Hello Jim!

In cricket there are 2 teams, 1 team that bats and the other team that bowls.

These 2 parts of cricket are called an innings. In the middle of each innings, both teams stop for a drink of water.

"Why do you stop for a drink?" The tea lady cried!

"Because running around and doing exercise makes them thirsty!" The umpire bellowed from the middle of the pitch.

However, Jim decided that as he was having too much fun playing cricket and that he wasn't thirsty enough to drink!

"Do you think that is a good idea?" His teammate said. Jim nodded his head.

So Jim's Dad, who scores the game, ran onto the ground and cried *"even though you might not think you are thirsty enough to drink, you will be soon!"*

"You have a red face, you are sweating and probably have a headache too Jim!"

Jim thought he knew best so chose to ignore his Dad!

But Jim's Dad let his son get on with it and so Jim continued playing the game without drinking any water!

Jim was bowling. He was running to get the ball after the batsman hit it, but still would not drink any water!

Jim was starting to look a little dizzy and was losing all concentration!

Jim's Dad, again, ran onto the field, but this time with a big bottle of water. But he was too late! Jim fell to the ground as he was too dehydrated!

Jim's Dad was panicking! He did not know what to do! But the tea lady did!

She poured water on Jim so he could cool down and let him lie on the ground for a bit.

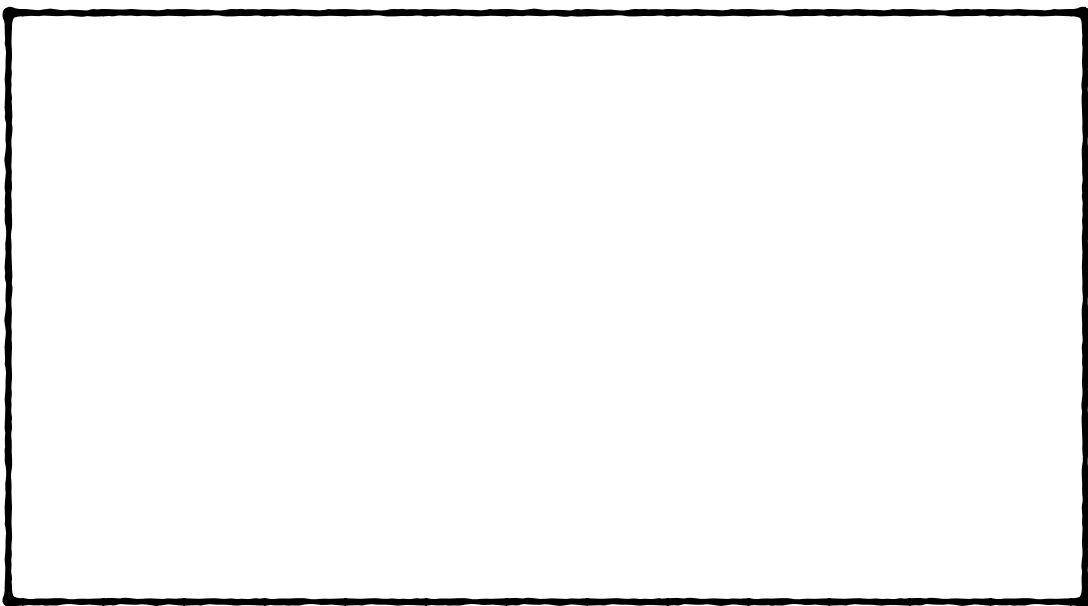
After a while, Jim was able to sit up and drink gallons of water! He knew he should have listened to his Dad!

Jim's Dad explained that even though you may not feel thirsty, drinking little bits of water often helps hydrate us. Choosing to not drink, even though we are having fun playing, is always a bad choice!

It helps us to keep our concentration, not have headaches, control how much we sweat and make us feel like new!

Jim's Dad asked "So when someone tells you to drink, even though you may not feel like it Jim, what are you going to do?"

Jim nodded and said *"Drink some water!"*



The End

How we can all help each other to drink!

Objectives

1. To know and understand how we can support each other to drink enough water.

Lesson Outline and Activities

- Share the 3rd whiteboard animation video at the start of the lesson. Pause the video when prompted to answer questions and check understanding.
- Show children the example poster design and demonstrate how they can make their own.
- Explore ways in which we can support each others drinking by regular reminding and thirst signals (*such as: dry throat, red in the face, after exercise, yellow wee*)
- If you have child-initiated time, encourage children to create tally charts or tick-off lists to check that their friends have had enough water.
- **Extension:** As a plenary, children can do a show and tell to explain their poster creations!



Resource List

Day 3 Animation Video
Poster Design



NC Links

Art and Design
PE (lead healthy lives)
Writing





Have **YOU** had enough
water today?

We need to drink water because...

1. It makes us less sleepy
2. It helps to think and learn
3. It means we don't get as hungry
4. It can stop us getting headaches

**Can you think of other things that
water helps?**

Healthy and Non-healthy Drinks

Objectives

1. To know and understand what fluids are healthy and un-healthy for us.
2. To know and understand that all drinks are ok in moderation.

Lesson Outline and Activities

- Share the 4th whiteboard animation video at the start of the lesson. Pause the video when prompted to answer questions and check understanding. FYI - Some children may have a misconception that carbonated water is unhealthy.
- Demonstrate to the children the cut and stick activity. And Hoop sorting
- If you wanted to make this more practical, you could also present the children with the real life versions of the drinks and red/amber/green hoops for the children to physically sort them.
- **Extension:** Perhaps children could even draw their favourite drink and see where it should be placed in the hoops as well?



Resource List

Day 4 Animation Video
Healthy Drinks Cut/Stick
Health Drinks Physical Sorting



NC Links

Art and Design
Healthy Eating
PE (lead healthy lives)





Water



Coke Cola



Orange Squash



Fizzy Water



Energy Drink



Milk



Milkshake



Apple Juice



Fruit Smoothie

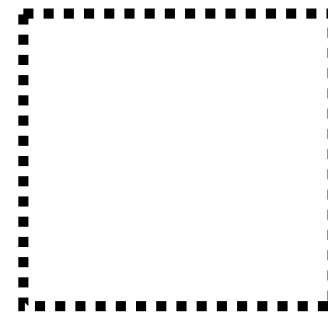
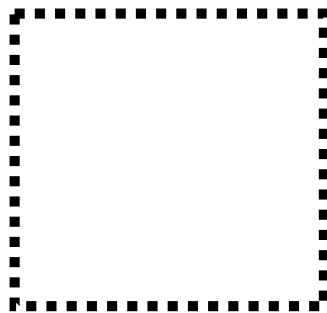
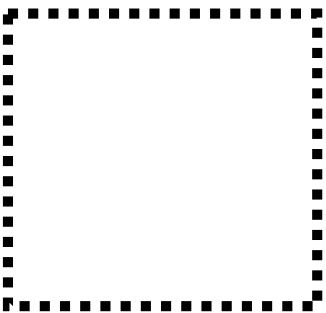
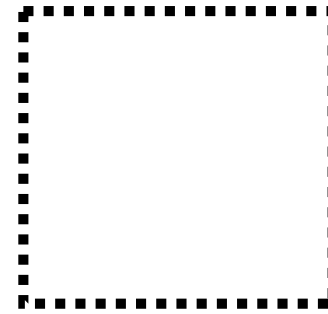
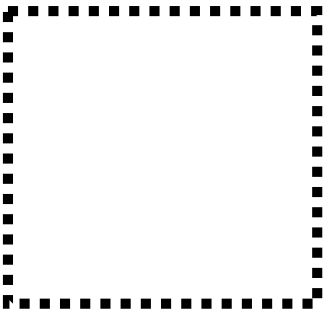
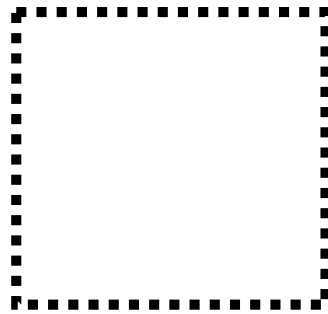
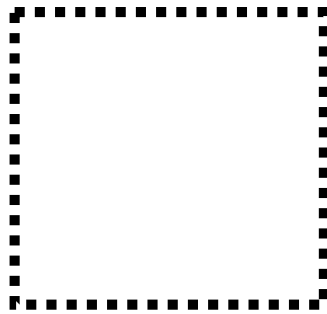
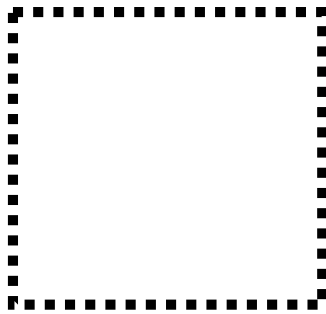
Extension

Can you think of any other drinks that are good or bad for you? Why not draw them on a blank grid.

Healthy
(Drink all the time)

Sort of Healthy
(Drink some the time)

NOT Healthy
(Drink only as a treat)





Water



Energy Drink

Pictures Designed by Brgfx, pch.vector, macrovector © [freepik.com](https://www.freepik.com)



Orange Squash



Milkshake

Pictures Designed by Brgfx, pch.vector, macrovector @ [freepik.com](https://www.freepik.com)



Apple Juice



Fizzy Water

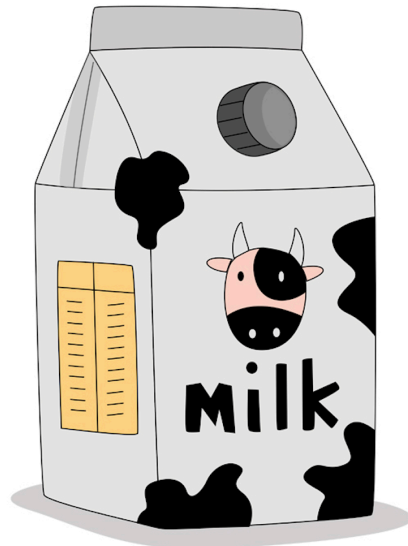


Coke Cola



Fruit Smoothie

Pictures Designed by Brgfx, pch.vector, macrovector @ [freepik.com](https://www.freepik.com)



Milk

Pictures Designed by Brgfx, pch.vector, macrovector @ [freepik.com](https://www.freepik.com)

The Water Quiz! What have we learnt?

Objectives

1. To summarise the weeks learning and fill the gaps of uncompleted activities.

Lesson Outline and Activities

- Share the 5th whiteboard animation video at the start of the lesson. Pause the video when prompted to the answer questions. Perhaps you could even keep a track of many questions the class get right?
- Introduce that this lesson is to complete the activities that might not have been completed in the week.
- For children who have finished all the activities, set them an activity to complete a 'Fluid Fun Fact Book'.



Resource List

Day 5 Animation Video
Fluid Fun Fact Writing



NC Links

Art and Design
Writing
Comprehension





List of Water Week Resources

1. **Teachers Guide Lesson Plan Pack**
 - 1a. Water tray dehydration activity
 - 1b. Extremely Thirsty Cricketer Drama / Role-Play / Drawing
 - 1c. Healthy vs Non-healthy drinks sorting (physical and cut/stick)
 - 1d. Water Song

2. **Whole Class Drinking Visual Register Tracker**

3. **Sticker chart with Water Week stickers**

4. **Hydration driving licences**

5. **5 Whiteboard Animation Videos**

6. **Teacher / Parents Information Fact Sheet**

Please Note – All information in the EYFS pack is the same as the KS1 as previously outlined, simply without the *Bling the Bottle* activity on day 1 and *Poster Creation* activity on day 3.

The EYFS teacher's guide has been presented below for reference.



Water Week



TEACHER'S GUIDE

EYFS





This guide is designed to provide a comprehensive overview of how to use the tools within the attached EYFS Water Week Education Resource Pack. The pack is not intended to provide every single activity you may wish to make available to your class during each day, but more simply to give the tools to effectively teach the various elements related to fluid intake.

If you have require any additional support in your delivery of the EYFS Water Week Education Resource Pack, have any further questions or constructive feedback, please do not hesitate in contacting us using the email attached below.

Best of luck using the pack!

All the best,

Josh Williamson

WaterWeekH2O@gmail.com

Contents

Day 1: ***Why do we have to drink water? How much do we need to drink?***

Day 2: ***The Signs of Dehydration - How to know when we need to drink?***

Day 3: ***How we can all help each other to drink!***

Day 4: ***Healthy and Non-healthy Drinks?***

Day 5: ***The Water Quiz! What have we learnt?***

Resource list

(1. Five Animation Videos) (2. Healthy Drinks Cut/Stick & Large Pictures for Hoop Sorting) (3. Dehydration Water Tray Activity) (4. Water Visual Register) (5. Stickers) (6. Sticker Chart and Hydration Driving Licences) (7. Water Song link) (8. Teacher/Parents Fact Sheet) (9. Drama Guide)

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- Print & Laminate Class Sticker Chart
- Write Names - Print & Laminate Hydration Driving Licences for Class
- Print / Ready the Practical Resources for Each Day

Things to Try and Remember

(Morning of Day 1) Explain to your class how to use the water tracking visual register (*i.e. children can move their name to 'empty' space once they have finished at least one bottle's worth*).

(Before teaching 1st lesson) Explain to your class that for every child that finishes one at least bottle, they will get one sticker at the end of the day to go onto the class sticker chart. Where finally, for all children that get a sticker every day this week will earn their very own hydration driving licence! *Please only give one sticker a day. Try to avoid giving more if children drink more, as some children will get a little too enthusiastic. And position the chart closer to the children.*

(During the week) If you can, try and remember to:-

1. Encourage the children to take their bottles to their tables.
2. Try and stop for a whole cohort drinks break after exercise (such as after playtime or lunchtime). ***This is a great time to play the water song! Or during snack time!***
3. Try to remember to drink fluids yourself in front of the children to show them how to do it! And to drink at the start of the day.

500ml should be consumed at school and 500ml at home



Why do we have to drink water? How much do we need to drink?

Objectives

1. To know and understand why drinking fluid is important.
2. To know much we need to drink.
3. To know and understand when is the best time to drink.

Day 1 Outline and Activities

- Share the 1st whiteboard animation video. Pause the video when prompted to answer questions and check understanding. *A great time to show this is after snack time if your setting is child-initiated oriented.*
- Hold class discussion about when and why we need to drink water.
- Encourage children to have their water bottle with them while in child-initiated time.
- *Fundamentally, this day is to open up a level of dialogue with your class to ease them into the week to allow them to gently form new habits.*



Resource List

Day 1 Animation Video



EYFS Curriculum Links

Managing Self
Writing
Numerical Patterns
Creating with Materials
Fine Motor Skills



The Signs of Dehydration - How to know when we need to drink

Objectives

1. To know and understand what dehydration is.
2. To know and understand some of the things that make us dehydrated.

Day 2 Outline and Activities

- Share the 2nd whiteboard animation video. Pause the video when prompted to answer questions and check understanding. *A great time to show this is after snack time if your setting is child-initiated oriented.*
- See explanation of the water tray dehydration activity on the actual resource. State that 500ml is how much we need to drink at school and at least 500ml at home.
- If time, feel free to try the class drama activity in the Extremely Thirsty Cricketer Book?
- **Extension:**
- Children to draw and write their own drinks that hydrate and activities that dehydrate.
- Children could draw pictures for the pages in the class drama?



Resource List

Day 2 Animation Video
Dehydration Water Activity



EYFS Curriculum Links

Managing Self
Self-regulation
Writing
Creating with Materials
Fine Motor Skills



How we can all help each other to drink!

Objectives

1. To know and understand how we can support each others drinking of fluid.

Day 3 Outline and Activities

- Share the 3rd whiteboard animation video. Pause the video when prompted to answer questions and check understanding. *A great time to show this is after snack time if your setting is child-initiated oriented.*
- Explore ways in which we can support each others drinking by regular reminding of the thirst signals (*such as: dry throat, red in the face, after exercise, yellow wee*)
- In child-initiated time, encourage children to create tally charts or tick-off lists to check that their friends have had enough water.



Resource List

Day 3 Animation Video



EYFS Curriculum Links

Writing
Creating with Materials
Being Imaginative
Managing Self



Healthy and Non-healthy Drinks

Objectives

1. To know and understand what fluids are healthy and un-healthy for us.
2. To know and understand that all drinks are ok in moderation.

Day 4 Outline and Activities

- Share the 4th whiteboard animation video. Pause the video when prompted to answer questions and check understanding. **FYI - Some children may have a misconception that carbonated water is unhealthy. A great time to show this is after snack time if your setting is child-initiated oriented.**
- Demonstrate to the children the cut and stick activity. And Hoop sorting
- If you wanted to make this more practical, you could also present the children with the real life versions of the drinks and red/amber/green hoops for the children to physically sort them.
- **Extension:** Perhaps children could even draw their favourite drink and see where it should be placed in the hoops as well?



Resource List

Day 4 Animation Video
Healthy Drinks Cut/Stick
Health Drinks Physical Sorting



EYFS Curriculum Links

Comprehension
Fine Motor Skills
Word Reading
Managing Self
Speaking
Listening/Understanding

The Water Quiz! What have we learnt?

Objectives

1. To summarise the weeks learning and fill the gaps of uncompleted activities.

Day 5 Outline and Activities

- Share the 5th whiteboard animation video. Pause the video when prompted to the answer questions. Perhaps you could even keep a track of many questions the class get right? *A great time to show this is after snack time if your setting is child-initiated oriented.*
- Introduce that this lesson is to complete the activities that might not have been completed in the week.
- For children who have finished all the activities, maybe set them an activity to complete a 'Fluid Fun Fact Book'.



Resource List

Day 5 Animation Video
Fluid Fun Fact Writing



EYFS Curriculum Links

Writing
Word Reading
Comprehension
Managing Self
Creating with Materials



Appendix 18: Study 3 Ethical Approval Confirmation



Mr Josh Williamson

School of Psychology and Life Sciences

Faculty of Science, Engineering and Social Sciences

20th February 2023

Dear Josh

Confirmation of ethics approval: Children's and Teachers' Understanding of Fluid Intake.

Your ethics application complies fully with the requirements for ethical and governance review, as set out in this University's Research Ethics and Governance Procedures, and has been approved.

You are reminded that it is your responsibility to follow, as appropriate, the policies and procedures set out in the [Research Governance Framework](#) and any relevant academic or professional guidelines.

Any significant change in the question, design or conduct of the study over its course will require an amendment application, and may require a new application for ethics approval.

It is a condition of approval that you **must** inform ethics@canterbury.ac.uk once your research has completed.

Wishing you every success with your research.

On behalf of

Faculty of Science, Engineering and Social Sciences Ethics Panel

ping.zheng@canterbury.ac.uk

Appendix 19: Study 3 Teacher and Child Participant Information Sheet



Children's and Teachers' Understanding of Fluid Intake

TEACHER AND CHILD PARTICIPANT INFORMATION

This is a PhD research study conducted at Canterbury Christ Church University (CCCU) by Josh Williamson

Please refer to our [Research Privacy Notice](#) for more information on how we will use and store your personal data.

Background

The purpose of the project is to create and assess the efficacy of a education hydration pack in schools. Research indicates that young children demonstrate a significant lack of knowledge of the recommended daily intake of water they are required to drink and have a lacking knowledge of their own thirst response to drinking before dehydration occurs (Williamson and Howells, 2019). Compacting this, further research suggests that teachers are inconsistent in their encouragement of children's consumption and self-reportedly drink below World Health Organisation guidelines (Howells and Coppinger, 2020).

To improve children's knowledge of the health benefits of rehydration, teachers could play an instrumental role in developing a shared understanding of the importance of rehydration to child development. It is here where the research aims to address this by creating a pack of education hydration resources to be used by teachers.

What will you be required to do?

With signed consent from the EYFS and KS1 teacher participants, in this study the teachers will be required to deliver the prepared content of an education hydration pack.

With the signed consent from the school research gatekeeper (Class teacher) and individual verbal consent from your child. Each child will be asked to partake in three fluid knowledge and understanding questionnaires (one pre-water week delivery, one post-water week delivery and another 3 months after water week delivery to assess what information was retained. These will be conducted on a 1:1 basis with the lead researcher, Josh Williamson. Josh was a past trainee teacher at CCCU, where he achieved QTS status. He returned in 2019 to conduct a similar study as the PhD for his Master's.

To participate in this research you must:

- Be a teacher who holds Qualified Teacher Status (QTS).
- Be currently teaching in an Early Years Foundation Stage or KS1 setting.
- Be a child aged 4-7 years of age in a EYFS or KS1 class.

Appendix 19: Study 3 Teacher and Child Participant Information Sheet (2 of 3)

Procedures

The first two data collection points of the study will be conducted over 3 consecutive weeks. In the 1st week, the lead researcher will conduct 1:1 pre-hydration pack delivery fluid knowledge and understanding questionnaires with the children in class. The teachers will also be assisted by the lead researcher in preparing the classroom(s) for the hydration pack week.

In the 2nd week, the lead researcher will remain off-site while the teachers deliver the hydration resources (this is where the fluid fact sheet will also be provided to parents).

In the 3rd week, the lead researcher will repeat the fluid knowledge questionnaires with the children.

1 or 2 months after the completion of the water week intervention (June/July 2023), the lead researcher will return to school to repeat the fluid knowledge and understanding questionnaires with the children, to assess what information and if any drinking habit change has been retained.

Feedback

Feedback will be given by email when disseminating the results after write-up in late 2023 / early 2024.

Confidentiality and Data Protection

The following categories of personal data (as defined by the [General Data Protection Regulation \(GDPR\)](#)) will be processed:

- Generic Data

We have identified that the public interest in processing the personal data is:

- To enable the study to assess the efficacy of educational impact of the education hydration pack on children's and teachers understanding of fluid intake. Generic personal data will be used and processed within the Statistical Package for the Social Sciences software (SPSS). This data will be anonymised.

Data can only be accessed by, or shared with:

- Myself (Josh Williamson)
- PhD Supervisors (Dr Kristy Howells and Dr Damian Coleman)
- Internal Examiner (TBC)
- External Examiner (TBC)

The identified period for the retention of personal data for this project:

The data will be retained for the duration of the project and deleted after thesis submission and the VIVA examination period.

If you would like to obtain further information related to how your personal data is processed for this [project](#) please contact the lead researcher; Josh Williamson (j.williamson784@canterbury.ac.uk).

You can read further information regarding how the University processes your personal data for research purposes at the following link: Research Privacy Notice -

Appendix 19: Study 3 Teacher and Child Participant Information Sheet (3 of 3)

<https://www.canterbury.ac.uk/university-solicitors-office/data-protection/privacy-notice/privacy-notice.aspx>

Dissemination of results

- By PhD Thesis at the Canterbury Christ Church University repository
- Academic Journals such as the International Journal of Nutrition

Process for withdrawing consent to participate

You are free to withdraw your teacher consent and the ability for the children to provide verbal assent to participate in this research project at any time, without having to give a reason. To do this please simply email the lead researcher; Josh Williamson (j.williamson784@canterbury.ac.uk).

You may read further information on your rights relating to your personal data at the following link: Research Privacy Notice - <https://www.canterbury.ac.uk/university-solicitors-office/data-protection/privacy-notice/privacy-notice.aspx>

Further Reading

If you wish you read more on the topic of children's and teachers' understanding of fluid intake. Please see the signposted literature below.

Coppinger, T. and Howells, K. (2019) "International Comparison of Children's Knowledge, Barriers and Reported Fluid Intake Across the School Day.," *International Journal of Nutrition*, 4(1). [doi:10.14302/issn.2379-7835.ijn-19-904](https://doi.org/10.14302/issn.2379-7835.ijn-19-904).

Howells, K. and Coppinger, T. (2020) "Teachers' Perceptions and Understanding of Children's Fluid Intake," *International Journal of Environmental Research and Public Health*, 17(11). [doi:10.3390/ijerph17114050](https://doi.org/10.3390/ijerph17114050).

Williamson, J. and Howells, K. (2019) "Young Children's Understanding of Fluid Intake.," *International Journal of Nutrition*, 1(4). [doi:10.14302/issn.2379-7835.ijn-19-3006](https://doi.org/10.14302/issn.2379-7835.ijn-19-3006).

Williamson, J. and Howells, K. (2021) "The Influence of Siblings on Young Children's Understanding of Fluid Intake," *International Journal of Nutrition*, 6(3). [doi:10.14302/issn.2379-7835.ijn-21-3709](https://doi.org/10.14302/issn.2379-7835.ijn-21-3709).

Any questions?

Please contact the principal researcher; Josh Williamson (j.williamson784@canterbury.ac.uk) or alternatively the project's first supervisor Dr Kristy Howells (kristy.howells@canterbury.ac.uk).

Appendix 20: Study 3 Parent Information Sheet



Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study

PARENT INFORMATION SHEET

This is a PhD research study conducted at Canterbury Christ Church University (CCCU) by Josh Williamson.

Please refer to our [Research Privacy Notice](#) for more information on how we will use and store your personal data.

Background

The purpose of the project is to create and assess the efficacy of a education hydration pack in schools. Research indicates that young children demonstrate a significant lack of knowledge of the recommended daily intake of water they are required to drink and have a limited understanding of their own thirst response to drinking before dehydration occurs (Williamson and Howells, 2019).

To improve children's knowledge of the health benefits of rehydration, teachers could play an instrumental role in developing a shared understanding of the importance of rehydration to child development. The research aims to address this by creating a pack of education hydration resources to be used by teachers.

What the teachers and your child will be required to do during the research?

With signed consent from the EYFS and KS1 teacher participants. In this study the teachers will be required to deliver the prepared content of an education hydration pack (water week).

With the signed consent from the school research gatekeeper (Class teacher) and individual verbal consent from your child. Each child will be asked to partake in three fluid knowledge and understanding questionnaires (one pre-water week delivery, one post-water week delivery and another 3 months after water week delivery to assess what information was retained. These will be conducted on a 1:1 basis with the lead researcher, Josh Williamson. Josh was a past trainee teacher at CCCU, where he achieved QTS status. He returned in 2019 to conduct a similar study as the PhD for his Master's.

After the children have completed the pre-hydration pack fluid questionnaires, a fluid fact sheet will be sent home for parents to gather an insight into what your children will learn about fluid intake.

Research Procedures

The first two data collection points of the study will be conducted over 3 consecutive weeks. In the 1st week, the lead researcher will conduct 1:1 pre-hydration pack delivery fluid knowledge and understanding questionnaires with the children in class. The teachers will also be assisted by the lead researcher in preparing the classroom(s) for the hydration pack week.

In the 2nd week, the lead researcher will remain off-site while the teachers deliver the hydration resources (this is where the fluid fact sheet will also be provided to parents).

Appendix 20: Study 3 Parent Information Sheet (2 of 3)

In the 3rd week, the lead researcher will repeat the fluid knowledge questionnaires with the children.

1 or 2 months after the completion of the water week intervention (June/July 2023), the lead researcher will return to school to repeat the fluid knowledge and understanding questionnaires with the children, to assess what information and if any drinking habit change has been retained.

Parental process for withdrawing consent for your child to participate

If you would not like your child to participate in this research project, you are free at any time to withdraw your permission for your child to be questioned and opt-out from your child giving verbal consent, without having to give a reason. To do this, please contact your class teacher, where they will inform the researcher of your decision to not question your child.

You may read further information on your rights relating to your personal data at the following link:
Research Privacy Notice - <https://www.canterbury.ac.uk/university-solicitors-office/data-protection/privacy-notices/privacy-notices.aspx>

Feedback

After the results have been written-up in late 2023 / early 2024, the core findings of the research will be shared with the school.

Confidentiality and Data Protection

The following categories of personal data (as defined by the [General Data Protection Regulation \(GDPR\)](#)) will be processed:

- Generic Data

We have identified that the public interest in processing the personal data is:

- To enable the study to assess the efficacy of educational impact of the education hydration pack on children's and teachers understanding of fluid intake. Generic personal data will be used and processed within the Statistical Package for the Social Sciences software (SPSS). This data will be anonymised.

Data can only be accessed by, or shared with:

- Myself (Josh Williamson)
- PhD Supervisors (Dr Kristy Howells and Dr Damian Coleman)
- Internal Examiner (TBC)
- External Examiner (TBC)

The identified period for the retention of personal data for this project:

The data will be retained for the duration of the project and deleted after thesis submission and the VIVA examination period.

Appendix 20: Study 3 Parent Information Sheet (3 of 3)

If you would like to obtain further information related to how your personal data is processed for this [project](#) please contact the lead researcher; Josh Williamson (j.williamson784@canterbury.ac.uk).

You can read further information regarding how the University processes your personal data for research purposes at the following link: Research Privacy Notice - <https://www.canterbury.ac.uk/university-solicitors-office/data-protection/privacy-notice/privacy-notice.aspx>

Dissemination of results

- By PhD Thesis at the Canterbury Christ Church University repository
- Academic Journals such as the International Journal of Nutrition

Further Reading

If you wish you read more on the topic of children's and teachers' understanding of fluid intake. Please see the signposted literature below.

Coppinger, T. and Howells, K. (2019) "International Comparison of Children's Knowledge, Barriers and Reported Fluid Intake Across the School Day.," *International Journal of Nutrition*, 4(1). [doi:10.14302/issn.2379-7835.ijn-19-904](https://doi.org/10.14302/issn.2379-7835.ijn-19-904).

Williamson, J. and Howells, K. (2019) "Young Children's Understanding of Fluid Intake.," *International Journal of Nutrition*, 1(4). [doi:10.14302/issn.2379-7835.ijn-19-3006](https://doi.org/10.14302/issn.2379-7835.ijn-19-3006).


Williamson, J. and Howells, K. (2021) "The Influence of Siblings on Young Children's Understanding of Fluid Intake," *International Journal of Nutrition*, 6(3). [doi:10.14302/issn.2379-7835.ijn-21-3709](https://doi.org/10.14302/issn.2379-7835.ijn-21-3709).

Any questions?

Please contact the principal researcher; Josh Williamson (j.williamson784@canterbury.ac.uk) or alternatively the project's first supervisor Dr Kristy Howells (kristy.howells@canterbury.ac.uk).

Appendix 21: Study 3 Teacher Consent and Gatekeeper Assent Forms

SCHOOL 1



Canterbury
Christ Church
University

CONSENT FORM GATEKEEPER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study

Name of Researcher: Josh Williamson

Contact details:

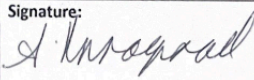

Address: Faculty of Science, Engineering and Social Sciences
North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.	<input checked="" type="checkbox"/>
2. (If applicable) I confirm that I agree to any audio and/or visual recordings.	<input checked="" type="checkbox"/>
3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University Research Privacy Notice	<input checked="" type="checkbox"/>
4. I understand that my participation is voluntary and that I am free to withdraw my participation or the children at the school's participation at any time, without giving a reason.	<input checked="" type="checkbox"/>
5. I agree for the children at the school to give verbal assent to take part in the above project.	<input checked="" type="checkbox"/>

Name of Participant: Teacher 1 / School 1 Gatekeeper	Date: 17.4.23	Signature: 
Researcher: Josh Williamson	Date: 17/4/23	Signature: 

Copies: 1 for participant
1 for researcher

Appendix 21: Study 3 Teacher Consent and Gatekeeper Assent Forms (2 of 9)



CONSENT FORM TEACHER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk


Please initial box

1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.
2. (If applicable) I confirm that I agree to any audio and/or visual recordings.
3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University [Research Privacy Notice](#)
4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason.
5. I agree to take part in the above project.

Name of Participant: Teacher 1	Date: 17.4.23	Signature: <i>[Handwritten Signature]</i>
Researcher: Josh Williamson	Date: 17/4/23	Signature: <i>J Williamson</i>

Copies: 1 for participant
1 for researcher

Appendix 21: Study 3 Teacher Consent and Gatekeeper Assent Forms (3 of 9)



CONSENT FORM TEACHER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.
2. (If applicable) I confirm that I agree to any audio and/or visual recordings.
3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University [Research Privacy Notice](#)
4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason.
5. I agree to take part in the above project.

Name of Participant: Teacher 2	Date: 17 th April 2023	Signature: <i>Lu Remy</i>
Researcher: Josh Williamson	Date: 17/4/23	Signature: <i>J. Williamson</i>

Copies: 1 for participant
1 for researcher

Appendix 21: Study 3 Teacher Consent and Gatekeeper Assent Forms (4 of 9)



CONSENT FORM TEACHER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.
2. (If applicable) I confirm that I agree to any audio and/or visual recordings.
3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University [Research Privacy Notice](#)
4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason.
5. I agree to take part in the above project.

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>

Name of Participant: Teacher 3	Date: 6/6/23	Signature: <i>AJHurn</i>
Researcher: Josh Williamson	Date: 6/6/23	Signature: <i>J. williamson</i>

Copies: 1 for participant
1 for researcher

Appendix 21: Study 3 Teacher Consent and Gatekeeper Assent Forms (5 of 9)



CONSENT FORM TEACHER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

- | | | | | | | |
|--|---|-----|-----|-----|----|----|
| <ol style="list-style-type: none"> 1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions. 2. (If applicable) I confirm that I agree to any audio and/or visual recordings. 3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University Research Privacy Notice 4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason. 5. I agree to take part in the above project. | <table border="1" style="border-collapse: collapse; width: 50px; height: 50px;"> <tr><td style="text-align: center;">ED.</td></tr> <tr><td style="text-align: center;">ED.</td></tr> <tr><td style="text-align: center;">ED.</td></tr> <tr><td style="text-align: center;">ED</td></tr> <tr><td style="text-align: center;">ED</td></tr> </table> | ED. | ED. | ED. | ED | ED |
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Name of Participant: Teacher 4	Date: 6 th June 2023	Signature: <i>clear Dan</i>
Researcher: Josh Williamson	Date: 6/6/23	Signature: <i>J. Williamson</i>

Copies: 1 for participant
1 for researcher

Appendix 21: Study 3 Teacher Consent and Gatekeeper Assent Forms (6 of 9)

SCHOOL 2



CONSENT FORM GATEKEEPER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.
2. (If applicable) I confirm that I agree to any audio and/or visual recordings.
3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University [Research Privacy Notice](#)
4. I understand that my participation is voluntary and that I am free to withdraw my participation or the children at the school's participation at any time, without giving a reason.
5. I agree for the children at the school to give verbal assent to take part in the above project.

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>

Name of Participant: Teacher 5 / School 2 Gatekeeper	Date: 24.4.23	Signature: J. Wate
Researcher: Josh Williamson	Date: 24.4.23	Signature: J. Williamson

Copies: 1 for participant
1 for researcher

Appendix 21: Study 3 Teacher Consent and Gatekeeper Assent Forms (7 of 9)



CONSENT FORM TEACHER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
North Holmes Rd,
Canterbury,
CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.
2. (If applicable) I confirm that I agree to any audio and/or visual recordings.
3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University [Research Privacy Notice](#)
4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason.
5. I agree to take part in the above project.

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>

Name of Participant: Teacher 5	Date: 24.4.23	Signature: J Wat
Researcher: Josh Williamson	Date: 24/4/23	Signature: J williamson

Copies: 1 for participant
1 for researcher

Appendix 21: Study 3 Teacher Consent and Gatekeeper Assent Forms (8 of 9)



CONSENT FORM TEACHER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study
 Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
 North Holmes Rd,
 Canterbury,
 CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.
2. (If applicable) I confirm that I agree to any audio and/or visual recordings.
3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University [Research Privacy Notice](#)
4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason.
5. I agree to take part in the above project.

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>

Name of Participant: Teacher 6	Date: 24/04/23	Signature: <i>[Handwritten Signature]</i>
Researcher: Josh Williamson	Date: 24/4/23	Signature: <i>J. Williamson</i>

Copies: 1 for participant
 1 for researcher

Appendix 21: Study 3 Teacher Consent and Gatekeeper Assent Forms (9 of 9)



CONSENT FORM TEACHER

Title of Project: Children's and Teachers' Understanding of Fluid Intake – Study 3 Main Study

Name of Researcher: Josh Williamson

Contact details:

Address: Faculty of Science, Engineering and Social Sciences
 North Holmes Rd,
 Canterbury,
 CT1 1QU

Tel: 01227 927700

Email: j.williamson784@canterbury.ac.uk

Please initial box

1. I confirm that I have read and understand the participant information for the above project and have had the opportunity to ask questions.
2. (If applicable) I confirm that I agree to any audio and/or visual recordings.
3. I understand that any personal information that I provide to the researchers will be kept strictly confidential and in line with the University [Research Privacy Notice](#)
4. I understand that my participation is voluntary and that I am free to withdraw my participation at any time, without giving a reason.
5. I agree to take part in the above project.

HC
HC
HC
HC
HC

Name of Participant: Teacher 7	Date: 24/4/2023	Signature: <i>[Handwritten Signature]</i>
Researcher: Josh Williamson	Date: 24/4/2023	Signature: <i>J Williamson</i>

Copies: 1 for participant
 1 for researcher

Appendix 22: Study 3 Children's Questions

Children's Questions PhD - Study 3

Thanks for your participation. We would like your help by asking you some questions about your drinking habits.
There are no right or wrong answers.

0 - Research Notes - Child Name

Short answer text
.....

0 - Researcher Notes - Child Number *

Short answer text
.....


0 - Year Group?


Reception

Year 1

Year 2

1) What is the name of your school?





2) Are you a boy or a girl?

Boy

Girl

Other...

3) How old are you?

4

5

6

7

8

Other...

Appendix 22: Study 3 Children's Questions (2 of 5)

4) What month is your birthday?

7) Why do you think we should drink water?

Long answer text
.....

8) During the school day, when do you really feel like you want to have a drink?

Short answer text
.....

8a) Are you allowed to drink at this time?

- Yes
- No
- Don't Know
- Other...

8b) Doing what kind of things make you want to have a drink?

Long answer text
.....

6) Do you like drinking water?

- Yes
- No
- Don't Know
- Other...

6a) Why do you feel like that?

Long answer text
.....

Appendix 22: Study 3 Children's Questions (3 of 5)

9) If you had to guess, how many of these bottles of water do you think you drink A DAY?

None (0ml)

Half a bottle (250ml)



One bottle (500ml)



Two bottles (1L)



Three bottles (1.5L)



Four bottles (2L)



More than four bottles



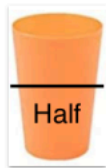
Don't know

Appendix 22: Study 3 Children's Questions (4 of 5)

10) If you had to guess, how many of these cups for you think you usually drink at lunchtime?

None (0ml)

Half a cup (100ml)



1 cup (200ml)



2 cups (400ml)



3 cups (600ml)



4 cups (800ml)



More than 4 cups



Don't know

Appendix 22: Study 3 Children's Questions (5 of 5)

11) From the moment you wake up, when do you have your first drink of the day?

- Before school
- When you get to school
- Morning snack
- Later than morning snack
- Don't know

12) Can you tell me all the people who tell you when to drink?" (Need to prompt if there is anyone else?)

Long answer text
.....

13) Is there ever a time at school you are not allowed to drink? If so when? Need to prompt to ask if there anyone else?)

Long answer text
.....

14) If you really wanted a drink before playing, would you rather play first to get more time or have a drink?

- Drink First and then play
- Play First to get more time
- Don't know

14a) If you really wanted a drink in the middle of playing, would you carry on playing or stop to have a drink

- Carry on playing
- Stop playing to have a drink
- Don't know

Appendix 22a: The reasons for why the children drink water / health reasons – Study 3

KEY: **Green** = Liked Water / **Orange** = Sometimes Liked Water / **Red** = Did Not Like Water

<i>Children's Drinking Reasons / Health Reasons: Study 3</i>	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 1</i>	Kind of tastes like elderflower	Need to be hydrated	Smells like lemon juice	Cos our heart wants juicy	To stay hydrated	To be healthy
<i>Child 2</i>	Cos it's so cold and makes not have a brain freeze	Need to drink when you get hot and cools breath down	Cos it's healthy	Cos it's good for your belly	Cos it's healthy	Makes our body feel good and not be dehydrated
<i>Child 3</i>	Cos it's cold	Don't know	Cos it's fresh	Can't remember	Cos it's cold and I like	Make you hydrated
<i>Child 4</i>	Cos it doesn't taste of anything	Keep you healthy	Cos it's plain and no taste	Cos it might stop a headache	Cos my mum tells me to	Cos if you haven't drunk enough you get a headache
<i>Child 5</i>	Cos it's good for	if you don't drink it	Cos it's healthy	Makes you think	Cos it's healthy for you	Not sure
<i>Child 6</i>	Not sure	Cos it healthy	Not sure	Makes you healthy	Cos it's healthy	Not sure
<i>Child 7</i>	Cos I drink a lot	Cos I get a sticker	Cos when I get hot I drink water	Cos helps headaches	Cos it makes me feel better	Makes you better when I'm ill
<i>Child 8</i>	Cos it's good for your body	It evaporates your body and it's good for you	Cos it's healthy for you	If you're hot	Cos it's good for you	Don't know
<i>Child 9</i>	Cos it's nice and fresh	To stay hydrated	Cos it makes hydrated and stay alive	Cos you might get dry, dry lips or get tired	Not sure	Makes you not sleepy or wee not yellow
<i>Child 10</i>	Cos it helps your muscles	Not sure	Cos it's so healthy for you	When you run out of air need to drink	Cos it's healthy for you	Don't know
<i>Child 11</i>	Don't know	Don't know	No reason, just like it	When get thirsty	Don't know	Don't know
<i>Child 12</i>	Cos it makes me thirsty	Cos it's healthy	Cos when I'm thirsty it wakes me up	Don't know	Cos it makes you hydrated	Cos when you get too hot you need to drink
<i>Child 13</i>	Like the taste of it	Not sure	Cos it tastes nice	Cos it's good for our brains	Cos it's yummy	To be hydrated

<i>Child 14</i>	Make me feel happy and tickly	Don't know	Makes me have a funny feeling in tummy	So you don't have stinky yellow wee	Cos it makes me happy	Don't know
<i>Child 15</i>	Not sure	Not sure	Don't know	Need to be hydrated	Cos I like the taste	To be hydrated
<i>Child 16</i>	Cos it makes me healthy	It keeps you alive	Cos it's healthy	Dry mouth	Cos it makes my hydrated	Don't know
<i>Child 17</i>	Cos I have a pink new water bottle	Cos it will make you strong	Don't know	If you get sweaty then need to drink water	Cos I get thirsty	Cos it's good for you
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 19</i>	Cos it's healthy for you	So you get bigger	Because if you don't drink water you don't have do wee's or poo's	So get healthy	Because it makes you hydrated	Helps us do a wee
<i>Child 20</i>	Like the taste of it	Cos we don't want to go to the hospital	Sometimes I get fruit and it tastes delicious	Cos you get yellow wee and it stinks if don't drink enough and get headaches	Cos it's nice and refreshing	So you get energy
<i>Child 21</i>	Cos I get backwash in it	Cos it makes you stronger	Cos it helps me	Not sure	Cos it makes me strong	Don't know
<i>Child 22</i>	Cos it's like plain	Cos it's good for your brain	Cos it's plain	Cos it keeps us alive	Cos it's cold and I like it cold	Cos it's good for our brain
<i>Child 23</i>	Cos it's hydrates me and I like being hydrated	Cos it makes me hydrated	Cos mummy says I can	Cos it makes me hydrated	Cos I like the taste	So can be nice and healthy
<i>Child 24</i>	Cos I like how fresh it is	Cos it's good for you	Cos I like it	Cos it's good for your body	Cos it's good for you	Not sure
<i>Child 25</i>	Cos it's healthy	Cos it makes you strong	Not sure	Cos it's healthy for you	Don't know	Helps you to grow
<i>Child 26</i>	Cos I get hot quite a lot	Cos you might burn and get very hot	Because it helps us	Cos you might get a headache	Cos it's healthy	Cos it's good for you and stops headaches
<i>Child 27</i>	Cos it makes your	Cos it's very	Cos it's very	Because cos it helps	Cos it tastes nice	Helps you run fast
<i>Child 28</i>	Cos it's healthy for you	Because you need to be strong	Don't know	When drink water need a wee	Helps me wake up	Helps us to wee and not be yellow
<i>Child 29</i>	Make me feel happy	Not sure	Cos it's good for you	Don't know	Cos it's good for you	Not sure

<i>Child 30</i>	Cos it's so tasty	Because it's strong	Cos it's tasty	Cos if you don't you	Cos it's healthy	Not sure
<i>Child 31</i>	Because it's healthy	Because you might die	Cos it makes you strong	Don't know	Cos it makes you healthy	Cos it's good for you and help us grow
<i>Child 32</i>	Cos it's good for you	You'll be thirsty	Cos I get thirsty and hot	Cos I get hot	Cos it makes me hydrated	Don't know
<i>Child 33</i>	It's from the tap and I like drinking it with juice	Cos it's healthy	Cos it tastes good	Cos it's healthy and good for you	Cos it's good for you	Cos get faster running
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 34</i>	Cos it's my favourite drink	Don't know	Cos it's my favourite drink	To keep you hydrated	Not sure	Keeps us hydrated
<i>Child 35</i>	Cos I get thirsty	Cos it's healthy	Cos I get thirsty sometimes	My brains tells me to drink	Makes your body healthier	Keeps you hydrated
<i>Child 36</i>	Cos it makes you strong.	So you can keep growing up	Cos it's important	It can make you strong	Cos it's healthy and makes you strong	So you can grow up and cos when you water plants it helps the grow so our brains are like that
<i>Child 37</i>	Cos it's healthy	Cos if you don't drink water you might die	Cos it's healthy	It can stop headaches	Cos it's healthy	Cos it's healthy
<i>Child 38</i>	Cos you can die if you don't drink water	Not sure	Not sure	Help us to not die	If you don't you will die	Don't know
<i>Child 39</i>	Don't like any other drinks apart from water	Because it's healthy	Cos it's my favourite drink	Cos it's healthy	Cos it's healthy and I like the taste	It's healthy
<i>Child 40</i>	Cos I like the taste	Makes us healthy	Mostly the only drink I drink and like plain water	Cos it healthy for us and keeps us hydrated	Cos it's the only drink I like	Cos it's healthy and stops dehydration
<i>Child 41</i>	Cos it's not that tasty	Cos you might be dehydrated and that's not good	Cos it's healthy	Helps us learn more and concentrate and gives us more energy to not be tired	Cos it doesn't have any flavour and it's good for you	Cos it's good for us and helps us to be hydrated
<i>Child 42</i>	Cos I have it when I feel hot	Don't know	Because if it's hot I like to drink it	Don't know	Cos it's healthy for us	Don't know

<i>Child 43</i>	Tastes a bit plain	Helps your brain	Feel like makes me a bit stronger and a bit fitter	Makes us not be dehydrated and learn 10% better	When it's colder it tastes so I like the taste	Helps us to learn 10 percent better
<i>Child 44</i>	Because I don't drink fizzy drinks so like water	Cos it healthy	Because my mum tells me	Stops headaches and it's healthy	Cos it's healthy	Cos if you don't drink enough you will be dehydrated
<i>Child 45</i>	Cos I like being healthy	Cos if you don't drink water it's bad for your body	Cos I like being healthy	Learn better	Cos it's healthy for your body	If don't drink enough your get headaches and dehydrated
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 46</i>	Cos it's good for you and it's nice	To stay healthy and be hydrated	Cos it's good for and hydrates you	Not get a dry mouth or headache	Cos it's good for you and hydrates you	Stops headaches and stops dry mouth
<i>Child 47</i>	Because it's healthy and cold	Helps bladder	Cos it's healthy and really like cold water on hot days	Cos don't get dehydrated	Cos it's healthy and refreshing	So don't have a tummy ache or be sick
<i>Child 48</i>	Cos it's good for you	Makes you healthy	Don't know	Makes you healthy and fit	Cos it's healthy	Don't know
<i>Child 49</i>	Cos it's refreshing	Need to drink to live	Cos it's refreshing	Helps us when we are sweaty	Cos it's refreshing	Cos it's healthy
<i>Child 50</i>	Cos I like drinking cold water as it's really nice	Cos it keeps us hydrated	If it's hot it can cool me down	So don't get dehydrated and stops dry mouth, red in the face, headache and stinky wee wee	Like it when it's hot so it's refreshing	So we don't get dehydrated
<i>Child 51</i>	No reason just like it	To keep you healthy	Just like it, no reason	To be hydrated	Just like it	Cos it's good for you
<i>Child 52</i>	Like the taste	Cos it's healthy	Cos don't like the taste of other drinks	Cos it's healthy, re-puts water back in	Don't like orange juice or blackcurrant	Cos it's healthy for you
<i>Child 53</i>	Cos I just like drinking water	Keeps you alive	Because it's yummy	Keeps you alive and not die. And if I drink milkshakes I'll be fat	Cos it's yummy	Cos it helps you to not be dehydrated
<i>Child 54</i>	Cos it's refreshing	To stop being thirsty	So can do what I want to do next quicker and not worry about not drinking enough	When we sweat we need to replace the fluids	Cos it's fresh and cold	Stops dehydration and healthy

<i>Child 55</i>	Need to keep healthy and fit	Cos it's good for us and helps our brain get more energy	To be healthy	If get too dehydrated you get sweaty head, dry mouth	Cos it's good for you	Won't make you dehydrated
<i>Child 56</i>	Cos it's healthy and it's nice	Cos it's healthy for you	Really healthy for you and like cold water	If don't drink then get dehydrated, sweaty and stinky wee	Cos it's healthy	To stop headaches
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 57</i>	Don't like the taste	To stay hydrated	Don't know	Keeps you hydrated and if you don't then gives you headaches and stinky wee	To stay hydrated	Makes us hydrated and to not have headaches and not have stinky wee
<i>Child 58</i>	Cos it tastes nice	Don't know	So it's tasty	Helps you concentrate	Cos it's refreshing and like the taste	Cos it's important and if you don't you will get sick
<i>Child 59</i>	Cos I only get one meal a day at school and want to make most of it	Cos it's good for our hydration	Cos don't want to be dehydrated	Get sweaty, have wee turn yellow	Like the taste and want to be healthy	Good for you
<i>Child 60</i>	Cos it helps my throat	Help you from dying	Because it helps me get food down at lunch	So it can help us be alive	Cos it helps my poorly throat	Can help our throat
<i>Child 61</i>	Cos it's hydrated	Don't know	Because it keeps you hydrated	So don't faint, and don't get dehydrated	Cos it keeps me hydrated	Might faint if don't drink enough and get dehydrated
<i>Child 62</i>	Because it's nice for you and refreshing	Cos it keeps our bodies alive	Because it's good for you	Because it keeps you alive	Cos it's good for me	Keeps you hydrated
<i>Child 63</i>	Cos it's healthy	Cos good for your body	Cos it's tasty	Cos it's healthy	Cos it's healthy	Keeps you cool when you are hot
<i>Child 64</i>	Cos it keeps you alive	Keeps you alive	Wake you up and helps to not sweat	Cos don't we don't die	So you don't get sweaty and sleep better	Makes us hydrated
<i>Child 65</i>	Some water tastes different to others	Cos it has nutrition in need	I like it cos I like my bottle	It's healthy and stops headaches	Cos it's healthy	So don't headaches
<i>Child 66</i>	Cos it doesn't taste as good as squash	To stay hydrated	Cos it's good for you	Don't know	Cos it's healthy	Keeps us hydrated

<i>Child 67</i>	Keeps me refreshed	Don't know	Cos it's really good for you and it helps when I sweat	Stops headaches, don't get tired	Makes me refreshed and not hot	Stops headaches
<i>Child 68</i>	Cos it's healthy	Don't know	Cos can get lots of different flavours and prefer sparkling	Keeps you healthy and keeps you hydrated	Cos it's healthy	Keeps you hydrated
<i>Child 69</i>	Cos it keeps you healthy	If we don't have any our throat will get dry	Because it keeps you healthy	To not be dizzy and to not have a headache	Cos it keeps you fit and healthy	Can feel dizzy and sick if don't drink enough
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 70</i>	Cos my mouth gets dry and it tastes nice	To keep you alive	Cos it tastes nice	So stay hydrated	Cos I have an air up bottle so like the taste	Keeps us hydrated
<i>Child 71</i>	So get healthy and strong	In case we get hot	In case I get hot	Might get sick	In case I get hot	Don't get sick and good for health
<i>Child 72</i>	Cos it's good for you	When you get sweaty you need to drink water to put it back in	Cos it's healthy and when you sweat need to drink to put it back in	Need to drink to not have headaches or feel sleepy.	Cos it's healthy	To put back water into body when we sweat
<i>Child 73</i>	Cos it's good for you body	Don't know	Because it's good for you and keeps you hydrated	It cools us down and stops you from having headache	Cos it's good for you and keeps you hydrated	If you don't drink you can get really tired and get headaches
<i>Child 74</i>	Cos it's tasty	So you don't get dehydrated	Cos it's tasty	So you are not dehydrated	Cos it's tasty	So you don't get dehydrated
<i>Child 75</i>	Cos it's healthy	Otherwise you'll get dehydrated	Because it's healthy	Because you might get dehydrated	Cos it's healthy	Otherwise you will get dehydrated
<i>Child 76</i>	Because it's makes hydrated and makes me feel happy	So we can live and hydrated	So can stay healthy and be hydrated	So we can stay healthy and help us live	So it can keep my hydrated	Help us live and keep us hydrated
<i>Child 77</i>	Keeps me hydrated	Keeps us healthy	Makes me hydrated	Cos it's healthy	Not sure	Gives us energy and not be as tired
<i>Child 78</i>	Cos it's hygienic	Don't know	Makes me hydrated and like it when it's cold	Good for your body and if you stay dehydrated for too long you might faint	Cos it's hygienic	Cos it you don't drink enough it's bad for you and you can faint

<i>Child 79</i>	So it's healthy for you and need to be hydrated	Don't know	Cos it's good for you	To get hydrated	Because it can get you hydrated	Don't know
<i>Child 80</i>	Cos it's good for my energy and helps me be hydrated	Helps our body	Cos like the flavour	So don't get a dry mouth, red face, fall asleep,	So don't fall asleep in school	Cos it's healthy
<i>Child 81</i>	Cos it's good to hydrate	It's good to hydrate	Cos it doesn't have any taste	If we don't drink water we'll get dehydrated	Keeps me nice and hydrated	Cos if we don't we get burned
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 82</i>	Because it's healthy	Because you need to hydrate	Because it's fresh and nice	Because we have to be hydrated	Cos like cold fresh water and the taste	Cos get hydrated
<i>Child 83</i>	Cos it taste plain	Cos you need to be healthy	Tastes plain	It hydrates you	Cos it doesn't taste nice	Cos it hydrate you
<i>Child 84</i>	Not sure		Cos it's healthy	Not sure	Cos it's healthy	Don't know
<i>Child 85</i>	Helps it me	Cos it's healthy	Cos it's healthy for you	Has no sugar	Cos its healthy	Don't known
<i>Child 86</i>	Cos it hydrates me	Cos it's healthy	Cos it's healthy	Cos it hydrated you	Cos it hydrates me	To get healthy
<i>Child 87</i>	Don't know	Don't know	Don't know	Don't know	Don't know	Stay hydrated
<i>Child 88</i>	Cos it makes me healthy	Cos it makes our brain work	Cos it helps your brain	Cos it means we don't get headaches	Cos it's good for your brain	So you don't get headaches
<i>Child 89</i>	Cos it's very healthy for your body	So you stay alive	Cos it's healthy for your body	Helps us to not be dehydrated so brain can think	Cos it's healthy	It's good for your brain
<i>Child 90</i>	Makes me healthy	Makes us healthy	Makes you healthy	Helps our muscles	Makes us healthy	Makes us healthy
<i>Child 91</i>	Cos it's healthy for you	Cos it makes you feel big	Cos it's healthy for you	Good for our body	Because it's healthy for you	Cos it's good for your body
<i>Child 92</i>	Cos it makes hydrated	Cos it makes you hydrated and have energy	Makes me hydrated	Don't know	Makes you hydrated	Cos it's healthy
<i>Child 93</i>	Cos it has a nice taste	Cos it hydrates you	Keeps you hydrated	Keeps you hydrated to make sure don't	Just like the taste	Keep you hydrated

				get headache and get tired		
<i>Child 94</i>	Don't like the taste	Cos it makes you healthy and strong	Cos it tastes nice	Cos it keeps our bodies healthy and fit	Keeps your body hydrated	Gives us energy
<i>Child 95</i>	When I get hot	If I don't drink I won't be alive	So it makes me not hot when I'm hot	Cos it's healthy and doesn't have too much sugar	Cos I get hot	Stop us from being dehydrated
<i>Child 96</i>	Because it helps me	Because it hydrates you	When I'm hot it makes me cooler	Cos it hydrates me	Cos it's healthy for you	It hydrates you
<i>Child 97</i>	Cos I get thirsty all the time	Don't know	Because I get thirsty	To be hydrated	It's very good and good for when I get hot	Need to get hydrated
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 98</i>	Cos it's healthy	Not sure	Cos it's healthy	Cos might get headache if we don't	Cos it's healthy	So need to be hydrated
<i>Child 99</i>	Cos it makes you hydrated	Cos it's special and if you don't you die	Not sure	Not sure	Cos it's important	Don't know
<i>Child 100</i>	Cos it's really healthy for you	Cos it's gives energy	Cos it's healthy for you	When you get sweaty it means you have lost some water	Cos it's healthy for you	Helps us get energy
<i>Child 101</i>	Cos it's healthy	Not sure	Cos it's healthy for you	Don't know	Cos it's good for you	I don't know
<i>Child 102</i>	Cos it makes hydrated	Cos it's healthy	Cos it's healthy for you and. Akers you strong	Any other drink is probably bad for you	Because it can make you fit and strong	Cos it's healthy
<i>Child 103</i>	It's boring	Cos it's good for you	Cos it's taste is boring	Cos it's good for us	Cos it's boring	Cos it's good for you
<i>Child 104</i>	Cos it helps me to cool down	Get sweaty	Cos it helps me to cool down	Cos we sweat and need it	Cos it helps me to cool down	stops us from getting sun burned
<i>Child 105</i>	Cos it tastes really good	Cos it's healthy	Cos it tastes really good	Because it's healthy and keeps us hydrated	Because it's healthy	Helps us learn
<i>Child 106</i>	Don't know	Need to stay hydrated otherwise we might die	Cos I really like the taste of it	Helps our bodies to be hydrated	Cos it's healthy and tastes nice	Cos it healthy
<i>Child 107</i>	Cos it keeps me hydrated	Keep it keeps me hydrated	Keeps you hydrated	Keeps you hydrated	Helps you to be hydrated	To keep us fit

<i>Child 108</i>	Cos it's healthy	If you don't drink then you'll die	Cos it's healthy	Need to drink when get sweaty as that is a sign of dehydration	Because it's healthy for you	Because it doesn't have much sugar in it
<i>Child 109</i>	Cos it's healthy	Cos it helps your body grow stronger	Cos it's healthy for you and like the taste	Cos it's healthy and be hydrated	Cos it's healthy for you and I like the taste	Cos it's healthy
<i>Child 110</i>	Cos it's so healthy	Don't know	Cos it's so healthy	Can't remember	Cos it's healthy	Can't remember
<i>Child 111</i>	It gives me thirsty when I'm hot	When we get hot we need to drink water and get energy	Helps me be hydrated	Get healthy	Cos it's healthy and makes me stronger	Helps our strength
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 112</i>	Cos it's disgusting	So you can be healthy	Don't like the taste	Cos might get hot	Tastes good	Don't know
<i>Child 113</i>	Cos it keeps you healthy	Cos it keeps you healthy	Cos it keeps you healthy	Cos it keeps you hydrated	Cos it keeps you healthy and hydrated	To be strong
<i>Child 114</i>	Cos it's healthy	Cos we can survive longer with water	Not sure	Need to drink otherwise get dehydrated	Cos it's healthy	Cos it keeps you alive
<i>Child 115</i>	Cos it's good for you	Don't know	Because it's healthy	Give you more energy	Makes you strong	Makes you strong
<i>Child 116</i>	Cos I want to have loads of health	So get big and strong	Cos it gets me big and strong	Cos need to get hydrated	Makes you big and strong	Makes us grow
<i>Child 117</i>	Cos it gets boring	Cos it's healthy for you	Cos it's boring - the taste	Cos it's healthy	Cos it tastes different from orange and don't like the taste of it	Don't know
<i>Child 118</i>	Has no flavour and I don't like things that have no flavour	Cos it's healthy and good to hydrate	Cos doesn't have any flavour	Cos it's healthy and good for us and keeps us hydrated	It's plain taste	Cos it's good for us. It can stop us from getting dehydrate
<i>Child 119</i>	Cos it's healthy	It makes you grow more	Cos it's healthy for you	It makes you grow	Make you run fast	So don't get dehydrated
<i>Child 120</i>	Cos it's healthy for you	Cos it gives you protein and healthy for you	Cos it's healthy	Cos it's healthy, good for you and has vitamins	Cos it's healthy	Good for your body and brain
<i>Child 121</i>	Cos it gives you appetite	Not sure	Cos it keeps you hydrated	Don't know	Keeps you hydrated	Don't know
<i>Child 122</i>	Cos it's really healthy	Cos it helps you body to train	Cos it's healthy	Don't know	Cos it's healthy	Don't know

<i>Child 123</i>	Don't know	Not sure	Don't know	Cos it's healthy	Cos it's all watery	Cos it's healthy
<i>Child 124</i>	Don't know	Cos it's healthy	Cos it's good for you	Cos it hydrated you	Don't know	Cos it hydrated you
<i>Child 125</i>	Cos it hydrates my body	Cos it's healthy	Cos it's healthy	Cos it hydrated our body	Cos it hydrates you	Cos it's healthy
<i>Child 126</i>	Sometimes it tastes nice, sometimes it doesn't	To stay hydrated and healthy	Not sure	Cos it's healthy and keeps you hydrated	Like the taste	Keeps us healthy
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 127</i>	Cos it gives you more energy	Cos it's good for you	Cos I love the taste of it	Cos it keeps you hydrated	Cos like the taste of it	Gives you more energy
<i>Child 128</i>	Cos it tastes nice	Cos you need to be hydrated	Cos it's tasteless	cos it makes you hydrated	Tastes nice	Not sure
<i>Child 129</i>	Cos it keeps you hydrated	Cos it keeps you hydrated	So don't need to be thirsty	Cos it keeps hydrated and can pass out if don't drink for ages	Cos it's got a nice flavour to it	Cos you can survive without food for days but not water for long
<i>Child 130</i>	Cos sometimes it's fresh and sometimes not	Don't know	Cos it keeps us healthy	If you don't drink will get a dry mouth and a headache.	Because it's good for you	Can't remember
<i>Child 131</i>	Cos it gives you hydration	Don't know	Cos it's fresh	To keep us hydrated	Cos it's refreshing	Cos it hydrates you
<i>Child 132</i>	Don't know	Cos it's good for you	Don't know	Keep you hydrated	Don't know	So you don't feel sick and feel healthy
<i>Child 133</i>	Cos I like seeing the bottle finished	Cos need to get tummy full	Cos it helps us	Not sure	Cos it makes us healthy	Can't remember
<i>Child 134</i>	So I can be fast	Because you get hydrated	Cos it makes you grow	Cos you get hydrated	Ames you run fast	Cos you don't want to be dehydrated
<i>Child 135</i>	Cos water gives me more energy	Cos water makes us healthy	just like it	Water makes us hydrated	No flavour	Cos it's healthy
<i>Child 136</i>	Cos it makes you stronger	Don't know	Cos it's good for you	Stops you from being dehydrated	Cos it's healthy	Cos it helps you grow
<i>Child 137</i>	Cos it feels nice in my mouth	Cos keep it keeps me healthy	Like how it feels in my mouth	Make it makes you healthy	Tastes nice	Cos it's healthy and keeps us hydrated
<i>Child 138</i>	Don't know	Don't know	Cos it's healthy for you	It makes you feel healthy	Cos it's healthy	Helps keep body strong

<i>Child 139</i>	To stop being thirsty	Cos it's good for you	Cos it's healthy for you	Good for you and keeps you strong	Cos it's healthy	Makes you strong
<i>Child 140</i>	Cos it's healthy	Cos it's hydrated	Cos it's healthy	Don't know	Cos it's healthy	Don't know
<i>Child 141</i>	Cos it's healthy	Don't know	Healthy for you	Brings in fresh air for you	Cos it's healthy for you	Don't know
<i>Child 142</i>	Cos it's healthy	Don't know	Cos I just like it, no reason	Cos it's healthy	Cos it's healthy for you	Cos get hydrated
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 143</i>	When it's cold it makes me feel a bit good	Cos you might get poorly if don't	Don't know	So don't get poorly	Don't know	Don't know
<i>Child 144</i>	Cos I get stronger	Cos we get even more stronger	Cos it makes me strong	Don't know	Not sure	Makes us healthy
<i>Child 145</i>	Cos it's healthy	To keep hydrated	Cos it keeps you hydrated	Cos it's healthy and keeps us hydrated	Cos it keeps you hydrated	Don't know
<i>Child 146</i>	Cos it's healthy	Don't know	Because it's my favourite drink and like the taste	Not sure	Because it's healthy for you	Cos it helps keep blood flowing
<i>Child 147</i>	Cos my cat does	Cos it's healthy	Cos it's healthy	Cos it doesn't have much sugar in it and helps learning	Cos it's healthy	Cos it doesn't have much sugar in it
<i>Child 148</i>	Because it helps you cool down from the sun	Cos it's healthy for you and your throat	Helps your throat	Cos it's healthy and doesn't have sugar in	When you have a poorly throat it helps you get better	Helps you to be hydrated
<i>Child 149</i>	Just like it	Don't know	Makes me learn	Makes you hydrated	Make you feel less hot	Makes you have energy
<i>Child 150</i>	Cos it makes you healthy	Don't know	Cos it's healthy for you	Cos it keeps you hydrated	Cos it makes you hydrated	Because it helps me to write in the morning
<i>Child 151</i>	Don't know	Don't know	Not sure	To be hydrated	Don't know	Cos we can stay hydrated
<i>Child 152</i>	Don't know	Not sure	Don't know	Don't want to be dehydrated	Don't know	Cos we will get dehydrated if we don't
<i>Child 153</i>	Cos I think it's healthy	Cos it makes you big and strong	Cos I think it's healthy	Cos it's good for your body	Because it's healthy	Because it gives us lots of energy
<i>Child 154</i>	Cos it doesn't taste like anything	Cos it's healthy	Cos it stops you from doing stinky wee's	So don't get sick	Cos it's healthy	Don't know

<i>Child 155</i>	When it's hot it cools me down	To keep my hydrated	Sometimes cos then it hurts my belly after eating too much	So you are hydrated	Don't know	When we go to the toilet our wee won't be yellow
<i>Child 156</i>	Can see through it	Cos it's healthy	No because I like drinking Pepsi max	Cos it's healthy and doesn't have any sugar in	Cos it makes us hydrated	Helps our brain to learn 10 percent better
	Pre-Water Week Drinking Reason	Pre-Water Week Health Reason	Post-Water Week Drinking Reason	Post-Water Week Health Reason	Follow-Up Drinking Reason	Follow-Up Health Reason
<i>Child 157</i>	Cos I don't like the taste	Cos it's good for you	Cos it tastes a bit weird	So brain is ready for the day at school	Cos it's super cold and refreshing	Helps our brains
<i>Child 158</i>	Don't know	Not sure	Don't know	Don't get dry mouth	Don't know	To keep hydrated
<i>Child 159</i>	Not sure	Cos it's healthy	Not sure	Not sure	Cos it's cold	Cos it's healthy
<i>Child 160</i>	Cos it's healthy	So it's healthy	Cos it's healthy	Because if we don't drink water you can get a headache	Cos it's healthy	Don't know
<i>Child 161</i>	Don't know	Don't know	Don't know	Need to be hydrated	Cos it's nice and cool	So you don't dehydrate

**Appendix 23: Study 3 Data Collection Mean Average High / Low Temperatures:
(Timeanddate.com, 2023a; 2023b)**

EYFS

Reception Pre (17th-18th April 2023): **H:9.5°c / L:9°c**

Reception Water Week Delivery (W/C 24th April 2023): H: 11.8°c / L: 10.6°c

Reception Post (4th May 2023): **H:16°c / L: 14°c**

Reception 2-Month Follow-up (10th July 2023): **H: 23°c /L: 22°c**

School Year Group 1

Year 1 Pre (24th-26th April 2023): **H: 10.3°c /L: 9°c**

Year 1 Water Week Delivery (2nd- 5th May + 9th May 2023) H: 15°c /L: 13.2°c

Year 1 Post (10th- 12th May 2023): **H: 15°c /L: 12.3°c**

Year 1 2- Month Follow-up (W/C 4th and 5th July 2023): **H: 19°c /L: 1°6c**

School Year Group 2

Year 2 Pre (6th-7th June 2023): **H: 14.5°c /L: 12.5°c**

Year 2 Water Week Delivery (W/C 12th June 2023): H: 23°c /L: 20.4°c

Year 2 Post (20th June 2023): **H: 22°c /L:20°c**

Year 2 1 Month Follow-up (10th-11th July 2023): **H: 22.5°c /L: 20.5°c**

Late April / Early May Delivery Average Temperature

Average Temp PRE-water week data collection: **H: 9.9°c /L: 9°c**

Average Temp TEACHING OF WATER WEEK: **H: 13.4°c /L: 11.9°c**

Average Temp POST-water week data collection: **H:15.5°c /L: 13.2°c**

Average Temp FOLLOW-UP water week data collection: **H: 21.5°c /L: 19.5°c**

Early June Delivery Average Temperature

Average Temp PRE-water week data collection: ***H: 14.5°c / L: 12.5°c***

Average Temp TEACHING OF WATER WEEK: ***H: 23°c / L: 20.4°c***

Average Temp POST-water week data collection: ***H: 22°c / L: 20°c***

Average Temp FOLLOW-UP water week data collection: ***H: 21.5°c / L: 19.5°c***

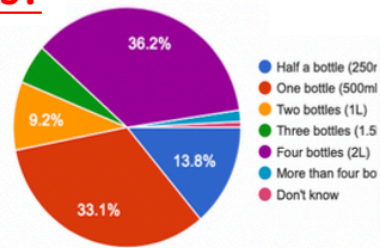
Appendix 24 – Research Schools Dissemination Letter

Creation, Modification, Implementation and Assessment a Hydration Education Pack (HEP). To Develop Children's and Teachers' Knowledge and Understanding Of Fluid Intake.

Using a 3-phased study design, this PhD created, implemented and tested if the HEP Water Week was useful to impact knowledge and understanding of fluid intake. Study 1 interviewed teachers to initially modify the HEP. Study 2 assessed the individual resources in the HEP to inform what needed to be modified for the final study. Study 3 tested the overall efficacy and impact, on a larger scale, to form final conclusions for future teaching practice and research.

Why research this?

Williamson and Howells (2019) found that 46.9% of Reception aged children believe they drink 500ml or under a day. This is well under World Health Organisation guidelines of 1.1-1.3L a day for young children.



10%>

Edmonds and Burford (2009) found that children perform 10% more effectively at school if they are hydrated.

Howells and Coppinger (2020) found that 45% of teachers report that they do not actively encourage consumption in the classroom. And only 10% report to drink enough for an adult. Men need 2.5L and women need 2L (WHO, 2004)

45%

of teachers **Do Not** actively encourage children's consumption

Due to these issues, the All-Party Parliamentary Group on Fit and Healthy Childhood (2020) recommended that the development of a hydration pack of teaching and learning resources be created and tested for educational impact.

What was found?

Study 1 found that the HEP be taught via a Water Week, whereby videos should act as the core part of information delivery, with activities, a drinking tracker chart and a reward system be used to supplement this.

After study 2 with Reception children and their teachers. It was found that the video series was confirmed as the best resource to capture children's interest of wanting to learn about fluid intake and initially impart the core facts of what, when, and how much to drink. It was concluded that two water week packs should be created: a EYFS and a KS1 pack as some of the activities in the study 2 pack do not suit an EYFS classroom.



List of Water Week Resources

1. Teachers Guide Lesson Plan Pack
 - 1a. Bring your bottle
 - 1b. Water tray dehydration activity
 - 1c. Extremely Thirsty Cricketer Drama / Role-Play / Drawing
 - 1d. Healthy vs Non-healthy drinks sorting (physical and cut/stick)
 - 1e. Poster Design Example
 - 1f. Water Song
2. Whole Class Drinking Visual Register Tracker
3. Sticker chart with Water Week stickers with Stickers
4. Hydration driving licences
5. 5 Whiteboard Animation Videos
6. Teacher / Parents Information Fact Sheet

Study 3 questioned children before the introduction of the water week, the week directly after the water week and 1 or 2 months after. This was dependent on whether they were the April/May Delivery or June Delivery.

11%

Of children reported to drink enough where they weren't previously in the week after water week delivery.

22%

Increase of children's stating that their teacher supports their intake in the week after water week delivery.

10%

Difference of children reporting to drink water or knew that the main reason why we need to drink was due to health imperatives.

(Top left) It was found 11.2% more children reported to drink an adequate amount of fluid after the delivery of the water week where they weren't previously. This impact was most significant in children in year 2, where there was almost a 30% difference of reported level of adequate levels of drinking post-water week when compared to pre-water week.

(Top right) There was a 21.7% difference increase of children reporting that their teacher supports their consumption at school when compared to pre-water week.

(Centre) There was a 10% difference of children stating they drink water due to health benefits or knew that drinking water was beneficial to their health after the water week when compared to their pre-water week.

So What does this mean for teachers, children and schools?

The two key messages are:

1 - That the future delivery and rollout of the KS1 water week education hydration pack should be advised. Although this should be delivered to KS1 children in early June. This will avoid SATs and ensure the water week is delivered over 5 days.

2 - Teachers need to continue the suggestions endorsed within the water week. This includes: the active encouragement of fluid consumption after playtimes and lunchtimes due to the increased possibility of fluid loss after activity and teachers need to drink themselves in-front of their children to support consumption through non-verbal modelling, as well as continued use of the water tracker chart.

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