Bridging Technology and Educational Psychology:

An Exploration of Individual Differences in Technology-assisted Language Learning within an Algerian EFL Setting

by

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Abstract

The implementation of technology in language learning and teaching has a great influence on the teaching and learning process as a whole and its impact on the learners' psychological state seems of paramount significance, since it could be either an aid or a barrier to students' academic performance. This thesis therefore explores individual learner differences in technology-assisted language learning (TALL) and when using educational technologies in higher education within an Algerian English as a Foreign Language (EFL) setting.

Although I initially intended to investigate the relationship between TALL and certain affective variables mainly motivation, anxiety, self-confidence, and learning styles inside the classroom, the collection and analysis of data shifted my focus to a holistic view of individual learner differences in TALL environments and when using educational technologies within and beyond the classroom. In an attempt to bridge technology and educational psychology, this ethnographic case study considers the nature of the impact of technology integration in language teaching and learning on the psychology of individual language learners inside and outside the classroom. The study considers the reality constructed by participants and reveals multiple and distinctive views about the relationship between the use of educational technologies in higher education and individual learner differences. It took place in a university in the north-west of Algeria and involved 27 main and secondary student and teacher participants. It consisted of focus-group discussions, follow-up discussions, teachers' interviews, learners' diaries, observation, and field notes. It was initially conducted within the classroom but gradually expanded to other settings outside the classroom depending on the availability of participants, their actions, and activities.

The study indicates that the impact of technology integration in EFL learning on individual learner differences is both complex and dynamic. It is complex in the sense that it is shown in multiple aspects and reflected on the students and their differences. In addition to various positive and different negative influences of different technology uses and the different psychological reactions among students to the same technology scenario, the study reveals the unrecognised different manifestations of similar psychological traits in the same ELT technology scenario. It is also dynamic since it is characterised by constant change according to contextual approaches to and practical realities of technology integration in language teaching and learning in the setting, including discrepancies between students' attitudes and

teacher' actions, mismatches between technological experiences inside and outside the classroom, local concerns and generalised beliefs about TALL in the context, and the rapid and unplanned shift to online educational delivery during the Covid-19 pandemic situation.

In the light of the findings of the study, there are a number of implications for educators in terms of catering for learners' individual differences through appropriate and context-dependent technology integration in EFL teaching and learning. The study suggests additions and alternatives to certain teaching practices and institutional strategies to move forward in terms of technology use and educational psychology, such as the need for more awareness and responsiveness to students' individual differences, the need for a context-based approach to technology integration, the need for technology integration as a means to differentiate and tailor instruction according to the students' requirements, and the need to consider the lessons learnt from the Covid-19 online learning experience in relation to taking care of the psychology of the learner.

The study may therefore be of interest, not only to Algerian teachers and students, but also to academics and institutions in other contexts through considering the complex and dynamic impact of TALL and technology integration at higher education on individual differences, and to academics in similar low-resource contexts by undertaking a context approach to technology integration.

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Dedication

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List of abbreviations

BA- Bachelor's degree

BYOD- Bring Your Own Device

CALL- Computer-assisted Language Learning

CBA- Competency Based Approach

EFL- English as a Foreign Language

ELT- English Language Teaching

ESP- English for Specific Purposes

GVC- Global Virtual Classroom

ICT- Information and Communication Technologies

IT- Information Technology

IWB- Interactive White Board

L1- First Language

L2- Second Language

LMD- Licence, Masters, Doctorate

MA- Masters degree

MALL- Mobile-assisted language Learning

MOOCs- Massive Open Online Courses

PhD- Doctor of Philosophy

TALL- Technology-assisted Language Learning

UK- United Kingdom

CHAPTER ONE

1. INTRODUCTION

Language learning is a highly complex process encompassing a sophisticated interaction between the learning process, teachers' actions, students' individual personalities and backgrounds, the learning environment, and a range of other variables. The interplay between these variables inevitably results in a multitude of effects on the teaching and learning situation. Nowadays, the teaching and learning process is entwined with technology use to an ever greater extent. Students, teachers, schools, and institutions expect the use of technological aids in education in general and language learning in particular. These expectations need to be accompanied by an understanding of the efficacy of technology in the language learning classroom which in turn requires a consideration of the impact of technology integration on the students' internal processes and differences. In other words, the focus should not only be on how technology can support, accelerate, and amplify the pedagogy, but also on the impact of the use educational technologies at higher education on the learners themselves, their characteristics, psychological state, and individual differences as a whole. Thus, this thesis considers both technology and the psychology of the language learner then explores the impact of TALL and technology integration in EFL learning on students' individual differences within an Algerian EFL setting.

This study, which was carried out over a period of three and a half months, took place in a university located in the north-west of Algeria, and involved 17 main and 10 secondary teacher and student participants. In order to answer my research questions, listed in section 1.3, I used an ethnographic case study to help me gain a deep understanding of the impact of technology integration in language learning on the psychology of individual learners. This study was mainly designed based on students' focus group discussions, follow-up discussions, teachers' interviews, diaries, observation, and field notes, all of which helped me tackle the relationship between educational technology use and individual learner differences from different angles These are discussed in detail in section 4.3.

The overarching finding of the study concerns the complex and dynamic impact of technology integration in EFL learning on individual learner differences. It is 'complex' in the sense that it has an impact on the learners and on the learners' differences. There are different positive and negative influences on learners derived from both students' and teachers' reflections about technology integration in language learning in the Algerian context. Such different opinions are based on a number of attitude determinants: students referred to their level, the novelty of the technological experience, and their teachers' strategy of implementation, teachers, however, consider perceived students' needs, the students' misuse of technology, the utility of the experience, and their status. Furthermore, there are different psychological reactions among students to the same technology integration experience. The study also emphasises the unrecognised impact of technology integration on the learners' differences which is represented in different manifestations of similar psychological constructs within the same ELT technology scenario. The impact is 'dynamic' in the sense that it is characterised by constant change according to the contextual approaches to and practical realities about technology integration in the setting. Contextual realities about technology integration in the setting include the discrepancies between students' views and teachers' actions, the mismatch between the technological experience inside and outside the classroom, the generalised beliefs about technology integration in the context, and the rapid and unplanned shift to online educational delivery during the Covid-19 pandemic. All of these realities about technology integration in the setting confirm an impact on individual learners and their learning experience in general.

This chapter begins by stating the problem in section 1.1 and discussing the rationale for this study and my potential contribution in section 1.2. Then, it discusses the development of research questions and objectives in section 1.3. Section 1.4 provides an account of the linguistic background and the ELT situation in Algeria. Section 1.5 presents basic terminologies and finally the structure of the thesis is outlined in section 1.6.

1.1. Statement of the problem

The availability of new technologies and internet connectivity around the world has changed classroom practice and has become normalised in many classrooms across all educational sectors. In this line of thought, Howard and Scott (2017, p. 51) suggested that:

> Ongoing developments in e-learning, improved internet accessibility and increased digital citizenry provide exciting opportunities to integrate

> effective classroom pedagogies with online educational technologies, creating mixed-mode courses to enhance student engagement and facilitate greater autonomous learning.

For this reason, both students and teachers need to be familiar with information and communication technologies (ICT) and it seems crucial to incorporate technological aids in the teaching /learning process and language learning is no exception. In addition to this, it is often assumed that the process of language learning is influenced by a number of psychological variables and language learners frequently experience different degrees of motivation, anxiety, self-confidence, autonomy and other individual differences. Ushioda (2013, p. 4) claims that 'in the end, it is the pedagogical need to attend to and nurture students' underlying personal motivations and perspectives that remains of paramount importance as it does for all learning environments'. For this reason, it seems fundamental to address the thoughts, feelings, and differences between language learners in the same classroom and under the same conditions.

In the same vein, Hockly sheds light on the relationship between technology integration in English language learning and students' motivation and she stresses the fact that technology requires careful planning and skillful implementation. She (2017, p. 13) addresses teachers:

> It's important not to assume that technology will automatically motivate all students; the main thing is to try out a range of available technologies and tasks, provide variety and choice, and to ask your students what they think.

In other words, technology alone does not guarantee positive effects on the psychology of all students. Thus, it is worth trying out a range of educational technologies with our students to see how technologies can make them more or less motivated, more or less anxious, more or less confident and how these technologies can be suitable for their different learning styles.

The feature of distinctiveness among learners attracted my attention and motivated me to link it to technology integration in the language teaching and learning process. The present research aims at investigating how TALL and educational technologies including computer-assisted language learning and mobile-assisted language learning can influence the psychology of language learners and what relationships might exist between the use of technology and individual learner differences which confirm a strong influence on students' academic achievements.

1.2. My rationale for the study and potential contribution

Exploring individual differences in TALL and when using educational technologies at higher education is motivated by a strong interest in the field which first appeared early in my undergraduate studies and has now evolved into an ambition and the pursuit of a career in the field.

I consider a number of personal experiences as the source of motivation to undertake the present research. In April 2016, I attended the British Council's third international English Language Teaching (ELT) conference entitled 'From Theory into Practice in the ELT classroom' held in Algeria. After having a look at the conference schedule, without a thought, I selected workshops that revolve around technology integration in EFL learning. Among the sessions I joined, 1 plenary, 1 keynote speech, and 5 workshops addressed TALL experiences, including mobile learning. It was a rich learning experience which made me aware of my particular interest in technology-mediated learning. Later, my interest in TALL shifted from ambition to action in the field of education and research. In 2017, a classmate and I, when conducting the MA research on the use of MALL in learning vocabulary, concluded that using smartphone applications helps students recall vocabulary better than paper-based materials, not only achieving better scores but in terms of motivation and positive attitudes towards learning new vocabulary as well.

In addition to this and in an attempt to help beginners of English in my hometown, I used to give them voluntary classes, in which I tried to use simple technology in a variety of ways aiming to make the learning process diverse and engaging and to contribute to a successful learning experience. It was a one-year teaching and learning experience in which my students were encouraged to use their smartphone applications to learn vocabulary, play language games, listen to native speakers, and watch instructional videos. In doing so, students showed high levels of attention, motivation and performance. The number of students in the group was gradually increasing and encouraging feedback was provided by their parents. Though, all the above-mentioned positive attitudes were due to the novelty of the technological experience for these students, I could easily notice their active engagement and increased interactivity during the whole year. This was another drive to conduct a study in the field and mainly explore the impact of technology integration in language classes on the psychology of the learner. So, it is because of this background as a student and a would-be teacher that I wanted to pursue a PhD in the field of educational technology and individual learner differences.

The value of this line of inquiry, which aims at investigating how instructional technologies can influence the psychology of the language learner, is twofold. Firstly, it will advance knowledge of technology integration in teaching and learning, provide a unique case of Algerian university students' experience using instructional technologies inside and outside the language classroom, and consider the way technology integration may affect the students' psychology in general rather than exploring the impact of TALL on isolated individual differences. Secondly, technology-based language learning is still in its infancy and there is a shortage of research in the field in Algeria. Although, the majority of Algerian universities have computer labs and internet access in order to offer better learning opportunities, meaningful exploitation of existing technological devices is rare. This has raised my motivation to investigate the relationship between technology integration in EFL learning and the psychology of language learners and the extent to which a wise use of educational technologies contributes to the consideration of students' individual differences.

1.3. Research questions and objectives

The main objective in conducting this research is to demonstrate that individual differences in the affective dimensions of learning are related to some of the core issues in language learning and that they can be significantly coupled with technology integration in language learning. The emphasis of the study, however, changed over the process of data collection and initial data analysis from covering only situations inside the classroom to moving to environments outside the classroom. I came to understand that I would need to look for students' individual use of technology and the reason behind the mismatch in the technological experience between inside and outside the classroom. At early stages of my research, I had focused on learners' individual differences only under certain technological circumstances created by me as a researcher and I had tended to neglect the students' actual use both inside and outside the classroom, what motives are behind their use, and what factors are allowing lack of interest in technological aids. Furthermore, at the beginning of my research process, I had focused on certain individual variables mainly motivation, anxiety, self-confidence, and learning styles and neglected others. My initial research questions, therefore, were originally as follows:

1. How is the use of technology perceived in a particular sample of Algerian university students and teachers?

2. What relationships might exist between students' motivation, anxiety, self-confidence and the use of technology?

3. How can technology accommodate students with different learning styles?

Later as my objectives changed and after using an ethnographic case study, besides looking at learners' actions inside the classroom, I tried to see, hear and question learners' behaviours and attributes in a broader setting inside and outside the classroom taking into consideration their ideas and social behaviour. Additionally, during initial analysis of the data I realised that there are contextual realities and local considerations about technology integration in the setting which affect learners' individual differences and impede differentiated instruction. Accordingly, the new form of my research questions is:

1. How is the use of technology in EFL learning perceived by Algerian university students and teachers?
2. What is the impact of technology integration in EFL learning on the psychology of individual learners?

3. To what extent do local beliefs and contextual approaches to technology integration take account of individual learner differences?

The next section describes the status of English among other languages in Algeria.

1.4. English in a multilingual Algeria

This section is intended to describe the linguistic situation in the context where the study is conducted. It includes a brief overview of the languages and varieties of languages used there, namely Arabic, French, Algerian Arabic, and Berber in addition to a more detailed description of the status of the English language and English users in the Algerian context.

The choice and the decision about language policy in a nation is a critical and complex issue, linked to culture, religion, history, and identity. Being colonised and French-controlled for around 132 years greatly affected the linguistic situation in Algeria. The French presence aimed to make French the official language and the only language of instruction and administration, and put an end to Arabic. However, after independence in 1962, the first president of independent Algeria Ahmed Ben Bella (1963-1965) initiated 'the policy of Arabization' which means the replacement of French by Arabic as the official language in all fields. Later, Arabization achieved great attention during Houari Boumediene's presidency which lasted

from 1965 until 1978. He sought to introduce standard Arabic as the only language in the country. However, this was problematic because of the linguistic pluralism that characterises Algeria (Algerian Arabic and Tamazight) and the inherited French of colonisation. The Arabization policy was slowly narrowed between 1977 and 1979, when French was established as a first foreign language taught in the fourth grade of primary school and English as the second foreign language taught in the second grade of middle school, by the minister of education Mohamed Cherif Kharroubi. In 2001 and in response to the demands of recognising the Berber culture and language, Tamazight was officially identified as a national language and introduced in the Algerian educational system.

Accordingly, one may say that the linguistic situation in Algeria is varied and complex in the sense that the Algerian speech community uses both languages and varieties of languages namely: Standard Arabic, Algerian Arabic, Berber, and French. Standard Arabic is used for written and spoken purposes in formal settings; it is the language of religion, culture, and as the first language of instruction. Algerian Arabic, also called 'Darja', is used in Algerians' everyday interaction. The Algerian dialect seems to share many similarities with standard Arabic, but there are also significant differences at the lexical, morphological, phonological, and syntactic level. Concerning Berber or Tamazight, although it is used by a minority of Algerians, it has recently been accorded the status of national and official language. French has the status of first foreign language in the country. However, French colonialism and the wide-spread use of the French language in Algeria in the twentieth century has resulted in a domination of this language in many domains including science, technology, business, tourism, media and private and higher education.

English, the second foreign language, is neither a national nor an official language in Algeria. English was introduced in the third educational reform in 1993 as an attempt to enhance the teaching of foreign languages at an early stage of education. Parents were given the opportunity to select between French and English as a compulsory foreign language for their children in the primary school. English was introduced only in some primary schools, but stopped since the majority of parents preferred French (Rezig, 2011). So, it is still taught starting from the first year in middle school in public schools. However, due to its wide-spread use as an international language, English began to gain a higher status in Algeria as well and 'it was felt that English (…) in the Algerian context would be able to play the modernising role that was hoped for from French but without the colonialist and non-Islamic associations that French had' (Coleman, 2010, p. 13)

Although it is not socially used, it was hoped that English would be accepted by all parties in the country. In fact, it started competing French and spreading gradually in the country, especially among the younger generation. In this regard, Sahraoui (2020, p. 30) assets that:

> It is true that French is strongly present in formal and informal settings in the country; it is also integrated into the different spoken dialects. But English is slowly but surely emerging and it may be only a matter of time to see it supplant French.

It is noticeable, therefore, that the spread and the development of the English language in the Algerian context are described as an ontological reality, rather than an outcome of the socio-historical background of the country. Not only the Algerian citizens but also people in charge of education in Algeria are showing a great interest in the English language and attempting to take advantage of its popularity in the world and revitalize the past discussions about replacing French with English.

Indeed, Belmihoub (2018) provides a description of different cultural and academic programmes offered by the British and American embassies which encourage the spread of English in the Algerian competitive linguistic environment such as: Study of the United States Institutes-Global Student Leaders Program (SUSI), The Near East and South Asia Undergraduate Exchange Program (NESAUGRAD), and Erasmus Mundus. He focuses on the growth of English in Algeria and mentions its various uses such as 'conveying prestige, interpersonal communication in formal and professional settings and serving regulative, creative, innovative, and instrumental functions' (2018, p. 11- 17). This can be clearly noticed among administrators when communicating with foreigners with whom there is no other mutual language, and among a high number of adolescents and social media users who speak and share content in English or code switch or borrow from English to express themselves. He also outlines the forces that shape the formation of Algerian groups of English users as follows: professionals in the oil and gas industry, government investors in the quality of English instruction, youth using internet, social media, and YouTube platforms, groups of school teachers and university students, groups of Algerian scientists, journalists and elites, groups of administrators, and tourism professionals (Belmihoub, 2018).

The following section describes the English language teaching situation in Algeria.

1.5. ELT in Algeria

The national curriculum concentrates on the ability to communicate in English and considers it one of the fundamental capacities students should acquire in their educational career. English is currently taught in all middle schools, secondary schools, private schools and all universities, either in English departments as a specialty or in other departments as an English for Specific Purposes (ESP) module. In addition to this, it is now suggested that it should be taught as a subject in primary school, either in the third or the fourth grade.

Nowadays, the EFL teaching methodology and the educational system as a whole in Algeria is embracing the Competency Based Approach (CBA) which 'is stressing what learners can do with language not what they know about language. The curriculum, the syllabus, the teaching strategies, and assessment tools are organised around competency development rather than language knowledge' (Bader and Hamada, 2015, p. 9).

Starting with middle school, pupils are taught the basic structure of English for 4 years. The educational reform witnessed in 2016 brought a newly designed textbook for first year level, though the textbooks of the remaining levels date back to 2004. Teaching English in middle school does not exceed four hours per week.

Year of Study	**Textbook**	**Number of Hours / Week**
First Year	My Book of English (2016)	3 Hours
Second Year	The second English Course book (2004)	3 Hours
Third Year	Spotlight on English (2005)	3 Hours
Fourth Year	On the Move (2006)	4 Hours

Table 1: **English Textbooks and Number of Hours in Middle School**

Following the four years of English in middle school, students are taught English for three years in secondary school. At this stage, they are supposed to be familiar with the basic structure of the language and they will be dealing with the four skills, grammar, pronunciation, vocabulary, phonology, and language functions and forms. The time devoted to teaching English in secondary school differs from one stream to another.

Year of Study	Textbook	Number of Hours / Week	
		Scientific Streams	Literary Streams
First Year	All the Crossroads (2005)	3 Hours	4 Hours
Second Year	Getting Through (2006)	3 Hours	4/ 5 Hours
Third Year	New Prospects (2007)	3 Hours	4/ 5 Hours

Table 2: **English Textbooks and Number of Hours in Secondary School**

The teaching material used when teaching English in both middle and secondary schools is restricted to the board, chalk, pen, and textbooks. Projectors are absent in the majority of schools, and even if available, are rarely used in English classes.

When it comes to the university level, 'the ministry of higher education was the pioneer official administration that orders its different administrative sectors to embrace the use of English' (Rahmani, 2021, p. 1200). English in higher education is referred to as English as a Foreign Language (EFL) in the departments of English or as English for Specific Purposes (ESP) in other departments. When referring to the Algerian system in higher education, one should mention the implementation of the Licence/ Bachelor – Masters - Doctorate (LMD) reform which was applied in 2004 in the Algerian university. The LMD system is composed of the licence degree, which is the equivalent of the bachelor degree (BA) for 3 years (6 semesters), the Masters degree (MA) for two years (4 semesters) and the doctorate degree for 3 years (6 semesters).

During the first three years in EFL learning and in order to achieve the Licence/ Bachelor degree, students are required to complete compulsory courses of oral expression, written expression, grammar, phonetics, linguistics, literature, Anglo-Saxon civilization, didactics, study skills, research methodology, and cognitive psychology. By the end of the third year, students are asked to choose between language studies, literature and civilization, or didactics as a specialty in their MA studies.

The LMD system is based on a number of elements which brought change to the old classical system previously employed in Algerian higher education. It is based on 'semesterisation' i.e., the division is based on semesters rather than a whole year. It is also made up of different units,

namely the fundamental unit, the methodological unit, the discovery unit, and the transversal unit. Each 'teaching unit' corresponds to a number of 'credits', with 30 credits required each semester. It covers different 'domains' including other subjects, disciplines, and options suggested to students. It is based on 'tutoring' which facilitates teacher-student interaction beyond the classroom sessions. Additionally, the LMD system offers 'progressive orientation' to students towards other specialties during the formation period.

This system seems to be more beneficial than the classical system for both students and teachers since it 'offers internationally recognised degrees and a profound acquisition of English for students [and] it endorses improving teachers' professional, pedagogical knowledge and skills' (Sarnou et al., 2012). In order to guarantee these benefits, Mami (2013) lists a number of perspectives and measures which should be adopted at the level of curriculum design and integration. These perspectives connect to learners' needs and consider the role of technology integration in language teaching and learning. She suggests that the success of the system relies on the consideration and evaluation of students' needs, developing instructional technologies at the level of oral expression and vocabulary, creating listening cells and audits, enhancing students' learning through mobile learning, encouraging cooperation between universities (Mami, 2013, p. 913). By implementing the LMD system, the English department and Algerian universities as a whole aim to care about students, create innovation, follow technological growth, and keep pace with the world's educational system.

Despite the fact that the aims of the LMD system relate to both the quality of education and the students' needs, it is noticeable that the Algerian university paid more attention to the teaching structure including the content, the material, skills development, and assessment than the learners themselves. The introduction of the LMD system ensured Algerian universities would have a degree of equivalence with international diplomas, mobility and ICT use, the reduction of teaching hours and the number of students per group, as well as making students, teachers, and universities more autonomous (Hamadi, 2019). These efforts touched mainly the organisational requirements of the institution with limited focus on the philosophy of teaching and the students' needs and differences. Instructional decisions, therefore, were determined by the policy and the system and adopted a one size instruction with limited consideration of the local standards and the needs of different learners. This requires a call for a more student-centred approach and a differentiated classroom philosophy which fits all students.

In the following section, I provide some of the key terms that have been used and sometimes contextualised to fit within the framework of the present study.

1.6. Terminology

The psychology of learning / educational psychology: is a branch of psychology which deals with the psychological aspects of educational situations. It is used to refer to the application of psychological principles and techniques in the domain of education. It focuses on the behaviour, experiences, and personal features of students when learning and receiving instruction.

Technology-assisted language learning: this term is used to flexibly describe the approach in which technologies are used to support teaching and learning. It is used as defined by Ahmad (2016, p. 118) as an 'umbrella' term which includes 'numerous alternatives that have made their appearance in the last 15 years of English language teaching and learning which are: Computer Assisted Language Learning (CALL), Computer Mediated Language Learning (CMLL), Mobile Assisted Language Learning (MALL), Web Based Language Learning (WBLL) and so on'. In the present work, the term is generally mentioned to combine CALL and MALL approaches to teaching and learning. CALL 'was coined in the 1980s to refer to materials and learning processes carried out via computers. [It] has a rich research history in the field of technology, and continues to be used particularly in research circles. MALL, (however,) was coined to take into account the fact that much learning these days can be mediated via mobile devices like tablets and smartphones' (Hockly, 2017, p. 170).

ELT technology scenarios: the use of 'ELT technology scenarios' was inspired by the term 'educational scenario' or 'pedagogical scenario' which is widely mentioned in the literature. An 'educational scenario presents a learning activity initiated by a teacher in order to supervise the learning of his learners. It presents an approach aimed at achieving educational objectives and the acquisition of general or specific skills related to one or more disciplines' (Khaldi et al., 2020, p. 28). An 'ELT technology scenario', however, is used to describe an English language teaching and learning process with varying access to technology and resources. It refers to the form and the content of the teaching and learning experience which includes the use of instructional technologies.

Technology integration: I use the term 'technology integration' as defined by Davies and West (2014, p. 6) to refer to 'the effective implementation of educational technology to

accomplish intended learning outcomes'. So, in using this term, I am not referring to a random and an arbitrary usage of educational technology for the sake of using technology. Nevertheless, it is used to denote a purposeful and planned usage of educational technology to support curricular goals and learning objectives.

Educational technology: this term is used as suggested by Davies and West (2014, p. 6) to include both 'instructional technologies' and 'learning technologies'. It considers 'any tool, piece of equipment, or device—electronic or mechanical—that can be used to help students accomplish specified learning goals'. It takes account of instructional technologies which focus on 'technologies teachers employ to provide instruction' and learning technologies which focus on 'technologies learners use to accomplish specific learning objectives'.

Self-directed learning VS self-determined learning VS autonomous learning: these three concepts are used in this research work to refer to three different processes. Considered by some authors to be in a continuum, the three concepts have at least one distinct difference. I am aware of the similarities between the concepts and I am using them in my thesis to refer to three different learning experiences.

Self-determined learning is used to refer to formal learning situations when students take the initiative for identifying learning needs, formulating learning goals, identifying learning resources, implementing problem-solving strategies, and reflecting upon the learning processes (Blaschke, 2012). This concept is used to refer to learning experiences when learners have the freedom to decide about their learning and the choice about the content, the method, and the setting of learning. Teachers act as facilitators and students do not feel bounded by their teachers' restrictions.

Autonomous learning, however, refers to a learning experience in which learners have the power to control and regulate their learning. It is a learning situation in which students 'take some significant responsibility for their own learning over and above responding to instruction' (Griffiths and Soruç, 2020, p. 131). I used this concept to refer to the process in which students take responsibility, typically under the guidance of the teacher.

Self-directed learning, in the other hand, is 'the process by which individuals take the initiative, with or without the assistance of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources, choosing and implementing

appropriate learning strategies, and evaluating learning outcomes' (Knowles, 1975, p. 18). It is described as something that students can do at their own initiative, outside of formal education.

The above-mentioned terminologies are mentioned all over the thesis either by the researcher or the research participants, the following ones however, are used by both student and teacher participants as a local reference to other related terms and I have not changed them:

The data show: this is used repetitively by participants to refer to 'the data projector' which is defined in the oxford advanced learners dictionary as 'a piece of equipment that takes data and images from a computer and shows them on a wall or large screen'.

The amphitheatre: participants repeatedly used the word 'amphitheatre' to talk about 'the lecture theatre' or 'the lecture hall' which is defined in the oxford advanced learners dictionary as 'a large room with rows of seats on a slope, where lectures are given'.

1.7. Mapping the structure of the thesis

Having introduced the focus of my research, given the rationale for the study and its potential contribution, provided the research questions, objectives, and the linguistic and ELT background in the setting, I turn now to describe how this thesis is structured. Following this introductory chapter which introduces the research problem tackled in this thesis, the background of the study, and basic terminologies, there are seven further chapters organised in the following manner:

Chapter two explores literature on individual differences in second language learning. It sheds light on the importance and provisions for individual differences in the language classroom. Then, it presents different affective factors in language learning namely motivation, anxiety, and self-confidence. It also provides a description of other learner characteristics such as autonomy and collaboration. It offers an account of students learning styles, their importance and classifications. The chapter concludes by briefly reviewing the literature that surrounds individual differences research in the Algerian EFL context and establishing the relationship between technology integration and the psychology of the language learner.

Chapter three opens with a discussion from the existing literature of technology-assisted language learning environments. This chapter starts by reviewing relevant literature on TALL which tackles the twenty-first-century learning experience. It seeks to discuss integrating technology in practice and the way it empowers learning. It considers new ways of learning

and technology language learning scenarios. This section also contextualizes the literature by providing a description of the ICT situation in Algeria and an account of TALL research in the Algerian context.

Chapter four introduces the research methodology used in this study. It starts by setting out the research design taking into consideration constructivism, qualitative case study and ethnographic elements of my research. Then, it provides details of the research setting, access and the research participants. Following this, it gives a description of technology integration scenarios carried out in the university setting and which were the basis of a part of my data collection process which took place inside the classroom. A detailed description of the data collection instruments is provided, an overview of the data analysis process is presented, and my approach to the writing up process is described. At the end of the chapter, I move to discuss considerations of ethics and trustworthiness in my study.

Chapters five to seven present the data collected in this study and discuss the analysed data. Chapter five describes and analyses students' voices and teachers' reflection about technology integration in language teaching and learning. It presents determinants of both teacher and student participants attitudes towards technology integration in language teaching and learning. Then, it uncovers both efficiency and inefficiency features of educational technologies.

Chapter six describes the impact of technology integration on the psychology of language learners. It explores the relationship between technology integration and the different affective factors which influence the learners' learning process. It addresses features of pleasurable, affective, differentiated and powerful education by means of technology use.

Chapter seven looks at contextual approaches and mismatches in TALL inside and outside the classroom and their impact on individual learners. It explores features of TALL and the use of educational technologies inside and outside the classroom in the Algerian higher education context. It also shows the way contextual realities about technology integration affects provisions for learners' differences.

Chapter eight starts by summarizing key findings of the study and accordingly offers a number of implications for technology integration in low resource contexts and for contextual adaptation as well as for educational change.

The following two chapters review the relevant literature that surrounds the two fundamental areas in this study 'the psychology of the learner' and 'technology-assisted language learning'.

It seems more appropriate to start with the source -exploring of the psychology of the language learner- in chapter two and then move to explore TALL and ELT technology experiences covered in my study.

CHAPTER TWO

2. EXPLORING THE PSYCHOLOGY OF THE LANGUAGE LEARNER

This chapter demarcates the body of literature that surrounds the area of the psychology of the learner, which is a fundamental subject in this study. Despite the fact that technology is giving students an anytime and anywhere learning opportunity, this does not deny the teachers' and scholars' role in thinking about the way educational technologies are affecting students. Teachers need to closely monitor their students and regularly assess their behaviour. In addition to this, the rapid changes taking in place in the learning experience make up a solid rationale that drives researchers to consider the students' psychological states and needs.

The present research aims at investigating how technology integration in language learning inside and outside the classroom can influence the psychology of language learner and what relationships might exist between the use of technology and individual learner differences. But before investigating such a correlation, the construct of the psychology of the learner and the feature of distinctiveness in foreign language learning are discussed. This chapter represents a composite of both my theoretical delineation of individual differences in language learning, which was developed at initial stages of my research process and other variables to contextualise the constructs developed from the study.

In terms of the structure of the chapter, I start with an account of individual differences in second/ foreign language learning in section 2.1. I, then, move on to address the importance of and provisions for individual differences in the classroom in section 2.2. The fourth section (2.3) tackles a number of affective factors which influence language learning and which were developed prior to data collection. Section 2.4 addresses other learner characteristics constructed during data collection and analysis. Section 2.5 considers students' learning styles, their importance, and classifications. Finally, I review literature related to individual differences within the EFL Algerian context in section 2.6 and briefly summarise the content of the chapter in section 2.7.

2.1. Individual differences in second / foreign language learning

In this section, I address a key concept of the present study 'individual differences' and what can be included as an individual difference. A shared notion among some scholars about the

psychology of the language learner could be summarized in 'individual differences' (Dewaele, 2009, 2013; Dörnyei, 2005; Freiermuth and Zarrinabadi. 2020). Attention to individual differences has been drawn since the 1970s to the point where they became a key research area in SLA. A number of studies since then (Gardner and Lambert, 1972; Horwitz, 1986; Cheng et. al., 1999; Al-Hebaish, 2012; Rukanuddin et al., 2016; Siddiquei and Khalid, 2018) have shown that a possible relationship between learners' personalities and academic achievements.

A straightforward definition of individual differences gathers personal features specific to each individual. Dörnyei and Ryan (2015, p.2) refers to them as 'characteristics or traits in which individuals may be shown to differ from each other (…) They concern anything that marks a person as a distinct and unique human being'. More recently, Griffiths and Soruç have attempted to give a more precise definition to the concept with reference to the language classroom. They define individual differences as 'characteristics which make learners different from each other and which affect the way they behave in the classroom and beyond' (Griffiths and Soruç, 2021, p. 341). This resonates with my own view of 'individual differences' as distinctive personal features which influence students' actions and achievements in learning and could be influenced by different teaching and learning practices inside and outside the classroom.

At first glance, it might seem that despite the fact that students have much in common in one classroom, i.e., having the same teacher, the same textbook and the same learning experience, we still notice dramatic differences in the level of success reached by students. In view of this, Johnson (2018) mentions that these differences are one of the ways in which mother tongue learning and second/ foreign language learning are different. According to him, all children, regardless of their circumstances and abilities, acquire their first language early except some cases which may take longer than others. A parallel statement, however, could not be made about foreign or second language learning. Such a process is largely conscious and dependent on a number of characteristics such as personality. These characteristics have been researched widely in second/ foreign language studies and the most important result from these investigations is the assumption that there are key factors which assist learners in exceling within the learning process (Johnson, 2018). In addition to this, Rukanuddin et al. (2016) highlight that individual learner differences are considered the reason behind the existence of distinct learning abilities. They believe that in addition to cultural and linguistic diversity, classrooms encompass students with different cognitive abilities, different background knowledge and different learning preferences (Rukanuddin et al, 2016).

Such discussions link to debate around which variables should be included in individual differences. Griffiths and Soruç reveal that 'what should be included as an individual difference is far from universally agreed, even among those who are considered experts and who have published in the subject' (2020, p. 2). Skehan (1991) included foreign language aptitude, motivation, learner strategies, and learner styles. Later, Dörnyei and Ryan (2005; 2015) dealt with personality, language aptitude, motivation, learning styles and cognitive styles, learning strategies and self-regulation, and other learner characteristics such as anxiety, creativity, willingness to communicate, self-esteem, and learner beliefs. Rukanuddin et al. (2016) included age, aptitude, intelligence, cognitive style, motivation, attitude, and personality. More recently, Griffiths and Soruç (2020) list age, sex/ gender, race/ ethnicity, aptitude, personality, learning style, language learning strategies, autonomy, beliefs, affect, and motivation.

It is noticeable from the previous lists that the constructs of individual differences differ to include either different cognitive and affective factors or a combination of cognitive, affective, and social factors.

2.2. The importance and provisions for individual differences

In this section, I provide a brief overview of the importance of individual differences in the language teaching and learning process and consider provisions for these differences within and beyond the classroom setting. The capacity of acquiring a second language cannot be considered universal (Dörnyei, 2015). Thus, the feature of distinctiveness enriches the learning environment and affects the academic success of the student. Students' individual differences play a central role in education and foreign / second language learning in particular. In this respect, Selinker believes that 'a theory of second-language learning that does not provide a central place for individual differences among learners cannot be considered acceptable' (1972, p. 213).

Knowledge of students' individual differences is necessary for language teachers since they help them decide what practical activities and material may be optimal for learners' achievements. If teachers take into account the individual differences of students, they will be able to select the appropriate teaching methods, determine their students' level of readiness, and realise their achievements (Kubat, 2018). In the same line of thought, Griffiths and Soruç state that:

> If they [teachers] become aware of learner differences in their classrooms, they can develop material, change their teaching style, adopt new instructional strategies, and give feedback considering all the learner differences in the classroom (2020, p. 2).

Following the aforementioned significance of being aware of students' differences, one may wonder how to determine such differences in the classroom. Kubat (2018) conducted a qualitative research using semi-structured interviews with a group of fourteen science teachers to identify what they are doing to determine their students' individual differences during the teaching/learning process. He lists a number of ways that help teachers identify the individual differences of the student including the use of "tests, homework, observation, projects and drawing individual daily differences by taking notes of the students" (2018, p.34).

It is generally not easy for teachers to determine individual learning attributes in each student and teach each one absolutely in a way that suits those attributes especially in an over-crowded classroom. However, teachers who know about their learners' differences and try to vary their strategies will be capable of teaching the language in a way that is adequate and satisfactory to different students. Teachers need to develop an understanding that not all students learn the same way and take these differences into consideration in the teaching and learning process. In this vein, Kubat (2018, p.30) mentions 'when planning teaching, it is more likely that a plan based on the learning style and speed of the students, rather than the collective instruction, will lead to a more efficient learning environment'. To put it another way, students who differ in ability and achievement necessitate different tasks and assignments which should be selected appropriately according to the students' level and character.

A report by the Australian Capital Territory (2016) stresses the fact that some students need supplementary, intensive and more personalized support to be engaged in the learning process. They require a curriculum that is designed in accordance with specific intellectual, social and emotional learning needs. Thus, 'Curriculum differentiation is critical when designing learning programs to respond to the individual learning needs of students' (Australian Capital Territiry, 2016, p.9). Having all this in mind, Kubat (2018) suggests flexible delivery of lectures by using different teaching methods and giving students responsibilities. He also concentrates on the point of adjusting to students' learning speeds. Doing so, students are concentrating on their own interests and discipline problems can be reduced accordingly (Kubat, 2018).

Apart from the classroom setting, students' individual differences can be considered when students are taking advantage of learning opportunities available in museums and libraries and cannot be brought to the classroom and when students are participating in concrete experiences because some learn best by seeing, hearing and even by touching some material (Kubat, 2018).

After providing an understanding of individual differences, their importance and provisions for these differences in the classroom, the following section considers a narrower view of individual differences, addressing the psychology of the language learner.

2.3. Affective factors in language learning

As the focus of this study is to explore the impact of technology integration in the EFL classroom on individual learner differences, looking at the affective factors included in these differences is necessary to allow a greater understanding of the construct of individual differences and how it is affected by the language learning experience in general and technology use in EFL learning in particular.

Many educational psychologists emphasise the existence of a number of variables that influence learning a foreign language. Henter (2014) argues that explaining the process of acquiring a second language depends on a number of factors which are vital variants that encourage either failure or success in language learning.

Over the past few years, considerable attention has been paid to the affective factors which refer to emotions and feelings. Discussing such factors may help me clarify diversity in learners' ability to overcome mistakes or blocks that may take place in the learning process. Furthermore, affective factors may have an impact on students' achievements. Bearing all this in mind, one may assume that teachers have to understand students' feelings and know more about these factors because they help to determine and explain differences in the learning rate and success of individual students when learning a second language (Ellis, 2015). According to him, affective factors determine whether people react positively or negatively to particular situations (Ellis, 2015). To illustrate, learners may differ in the extent to which they experience anxiety and feel motivated or self-confident; in addition, each of these variables may have a direct influence on the other. The higher the anxiety learners experience, the lower scores they get, the less confident they become. Conversely, the more motivated learners feel, the higher scores they get, the more confident they become.

When discussing the affective factors in foreign language learning, Ni (2012) conducted a questionnaire with fifty English majors enrolled in the department of Foreign Languages at Heze university- China to find out the effects of affective factors on their language learning. She (2012, p.1508) claims that 'the emotional factors strongly affect the learners' input and how much input is converted into intake'. She argues that negative feelings inhibit efficient processing of the language input, on the other hand, positive emotions encourage the efficacy of the process.

In this research, my aim is to explore the relationship between technology use and a number of affective factors which are stated to influence foreign language learning. But before setting such connection, the following sections examine these factors and how they affect language learning. They consider the widely discussed variables, namely motivation, anxiety, and self-confidence (Dörnyei and Ryan, 2015; Williams et al., 2015; Griffiths and Soruç, 2020) as significant factors that contribute to either success or failure in language learning.

2.3.1. Motivation

Motivation seems to be among the most necessary variables which have a noticeable impact on students' success or failure. There is a considerable amount of research on language learning motivation. Early studies date back to the 1950's by the Canadian psychologists Gardner and Lambert. Certainly, other recent work has been published in the field of L2 motivation. In this regard, Ushioda (2013, p.1) believes that:

> While motivation is not really an issue in the case of infants acquiring their mother tongues, being motivated (or not) can make all the difference to how willingly and successfully people learn other languages later in life.

Motivation is a feeling that drives people to perform particular actions. Dörnyei and Ryan (2015) claim that without sufficient opportunities for motivation, even people with outstanding capacities cannot realise long-term aims and neither are appropriate curriculum and teaching methods enough to guarantee students' success. On the other hand, they presume that motivation is an internal energy which:

> Provides the primary impetus to initiate L2 learning and later the driving force to sustain the long, often tedious learning process; indeed all the other factors involved in SLA presuppose motivation to some extent. (Dörnyei and Ryan, 2015, p.72)

Another significant element that is worth considering when talking about motivation is the distinction between integrative vs instrumental motivation (Gardner and Lambert, 1959) and intrinsic vs extrinsic motivation (Deci and Ryan, 1980). Integrative motivation originates from a desire to learn the foreign language to know more about the culture and to integrate well in the society. Instrumental motivation, on the other hand, involves learning a foreign language in order to fulfill a particular goal such as getting a job. Intrinsic motivation arises from within the learners; they learn the foreign language for their own satisfaction. Extrinsic motivation, however, originates from an external motivator such as a teacher, a method, or a material. However, the aforementioned dichotomies seem extremely simplistic compared to the recent classifications of the complex (Ushioda, 2008; Griffiths and Ozgur, 2013; Lamb, 2016: Sampson, 2016) and the dynamic (Pawlak, 2012; Dörnyei, Macintyre, and Henry, 2014; Waninge, Dörnyei, and De Bot, 2014; Griffiths, 2018) nature of motivation. Researchers are increasingly giving more attention to the complexity of affective and social factors that affect motivation. This complex view of motivation suggests that:

> Language learners' motivation derives from multiple sources, such as their own individual characteristics, the social and contextual ecologies to which they are exposed, their ideal vision of themselves, their own volitional competence (Griffiths and Soruç, 2020, p. 183).

In addition to the complex nature of motivation, recent research works highlight a dynamic and changeable pattern of motivation. Waninge, Dörnyei, and De Bot make the point that 'motivation as a variable in [language learning] is no longer seen as the stable individual difference factor it was once believed to be' (2014, p. 407). They conclude that despite the fact that motivation is characterised by fixed stages, it also 'changes over time on an individual level and is inseparable from the learner's individual learning context' (Waninge, Dörnyei, and De Bot, 2014, p. 407). Similarly, Mercer (2011) demonstrates the dynamism of motivation along with other variables depending on different parameters, contexts, and settings.

Bearing all these patterns in mind and in order to sustain students' motivation, Harmer (2015, p.93) suggests '[making] the materials and activities relevant to our students' lives and interests… [and to] vary the activities we use'. In this context, Mercado (2017) mentions that success in the classroom does not only require knowing who our students are but also knowing what motivates them. Besides, the majority of today's learners belong to the millennial generation which relies a lot on technology in their everyday lives. For this reason, he suggests that:

> Social media, MOOCs, blogs, wikis, mobile apps and content management platforms can all provide learners with vast amounts of input in the L2 that can reinforce their identification with or desire to learn more about a target language user group or culture (Mercado, 2017, p.9).

2.3.2. Anxiety

Anxiety seems to be one of the most highly examined factors in psychological research and a concept that has received a lot of attention within L2 studies (Horwitz, 2001; Dörnyei and Ryan, 2015). Anxiety is as defined by Williams et al. "a negative emotion associated with worry and nervousness" (2015, p.87). When thinking about anxiety, a number of reactions come to mind such as feeling irritated, being unable to sit still, struggling to breathe and having a racing heart and a dry mouth. In addition to this, Williams and colleagues mention a number of physical reactions which often join a feeling of anxiety such as 'pacing around, furrowing our brow, wringing our hands, and tensing our muscles and shoulders' Williams et al. (2015, p.87).

As far as general anxiety is concerned, psychologists classify it into three areas namely: trait anxiety, state anxiety, and situation-specific anxiety (Aydin, 2018).

- Trait Anxiety is relatively a constant feature of personality. It is related to 'a stable predisposition to be nervous in a wide range of situations' (Zheng, 2008, p.2).
- State Anxiety is not a lasting characteristic of personality. It is 'a moment-to-moment experience of transient emotional state'. (Zheng, 2008, p.2)
- Situation-Specific Anxiety falls in between. It represents a feeling actually experienced at a particular time as a reaction to a specific situation (Manipuspika, 2018).

Being an anxious person can affect many aspects of an individual's life. What about using a foreign language? The context of learning or using a foreign language may force people to be highly anxious. Such a specific form of anxiety is known as foreign language anxiety. In this context, Williams et al. (2015, p.87) conclude that 'Despite being a confident, respected and authoritative figure in his first language (L1), this individual may struggle to articulate ideas adequately in the L2 and therefore feel frustrated, uncertain and anxious'. Accordingly, one would argue that anxiety affects L2 performance and is problematic in terms of language acquisition and achievement. In the same line of thought, Dörnyei and Ryan claim that 'in an anxiety-provoking climate our L2 performance deteriorates' (2015, p.176). In other words, anxiety can limit the learners' ability to understand what is said; it can affect their ability to store and retrieve language, and it can hinder their speaking and writing capacities.

Additionally, Williams et al. mention a number of behaviours which are regarded as symptomatic of anxiety such as 'suffering from mental blocks, freezing up during an activity, withdrawing from class participation or offering limited, monosyllabic responses". In some cases, learners may also 'hide their anxiety behind disruptive behaviours' (2015, p.88).

A significant distinction that is worth considering when discussing anxiety is the distinction between deliberative and facilitative anxiety (Williams et al., 2015) also known as beneficial and inhibitory anxiety (Dörnyei and Ryan, 2015). All the already mentioned thoughts relate to debilitative or inhibitory anxiety which is a negative anxiety that inhibits learning and has a harmful effect on performance. However, although too much anxiety can have a deliberating influence, a certain degree of anxiety can be helpful. This is referred to as facilitative anxiety and it takes place when struggling with the task triggers a suitable amount of anxiety. It actually facilitates or even promotes performance (Dörnyei and Ryan, 2015; Williams et al., 2015).

2.3.3. Self-confidence

Much like other dimensions of human behaviour, self-confidence has generated ample interest among psychologists and researchers. Griffiths and Soruç provide a straightforward definition of self-confidence stating that 'It is the degree to which individuals believe in themselves' (2020, p.166). Additionally, self-confidence is regarded as 'a cognitive human perception that plays important roles in fulfilling basic human requirements such as happiness and success' (Tunçel, 2015, p.2575). Having the sense of confidence in mind, Dörnyei and Ryan (2015, p.183) argue that it shares with self-esteem 'a common emphasis on the individual's beliefs about his or her attributes and abilities as a person'.

Like any other psychological trait, self-confidence also is a multi-faceted feature encompassing global, situational and task self- confidence (Djebbari, 2014):

- Global self-confidence: represents general feelings a person has about himself/ herself.
- Situational self-confidence: conversely, this refers to feelings related to a specific situation; language learning can be an example.
- Task self-confidence: this represents the person's skills and abilities when performing a specific task such as confidence when speaking or confidence when using instructional technologies.

From an educational angle, Norman and Hyland (2003) suggest that the meaning of confidence reveals three key elements which can be summarized as follows:

- Cognitive Component: it includes the learners' belief in their knowledge and ability.

- Performance Component: it implies the learners' ability and competence to do something.
- Emotional (affective) Component: it refers to the learners' comfortable and self-assured feeling about their knowledge and performance.

One other significant notion that is worth considering when addressing self-confidence is Clément's (1980) notion of linguistic self-confidence which is included in L2 studies (Dörnyei and Ryan, 2015). The construct of L2 linguistic self-confidence 'refers more specifically to learners' confidence in their ability to communicate in a second language' (Williams et al., 2015, p.46). They associate high level of L2 linguistic self-confidence with having favourable attitudes towards L2 culture, having a willingness to communicate in L2 and a low level of anxiety when speaking (Williams et al, 2015).

There seems to be a considerable amount of research on self-confidence within the learning process which suggests that learners' confidence is one of the most important elements which motivate them to achieve their objectives. Tunçel (2015) examines the relationship between self-confidence and learning Turkish as a foreign language. He concludes that learners with higher self-confidence were more successful in learning Turkish and that there is a positive correlation between high self-confidence and foreign language learning. Djebbari (2014), for her part, explores the relationships between self-confidence, pronunciation practice and speaking competence. She (2014, p. 227) notes that:

> The more self-confident learners are, the higher their speaking performance will be. Highly confident learners are ready to take the risk to speak in front of others. On the other hand, lack of self-confidence results in lack of interest to struggle for high quality of oral performance, besides, less confident learners are not certain about their abilities which lead to low levels of achievement.

Hence, she concludes that self-confidence correlates with speaking achievement when learning a foreign language in a way when the learners' confidence increases their speaking abilities increase and vice versa.

Having given an overview of the affective variables which play a key role in language learning, the following section is devoted to some other learner characteristics.

2.4. Other learner characteristics

The main aim of this section is to elaborate other learner variables which are fostered by ELT technology experiences. These characteristics have been researched widely and identified as key features of the psychology of the learner. This section provides an initial understanding of the concepts of autonomy and collaboration and how they correlate with language learning. It also briefly addresses the literature that surrounds theses variables in technologically mediated contexts.

2.4.1. Autonomy

In this subsection, I address autonomy as an individual variable which affects and correlates with other characteristics and approaches to language learning. An overly cited definition of autonomy across literature is 'the ability to take charge of one's own learning' by Holec (1981, p. 3) as a starting point for applying the term autonomy to language learning. Later and since the turn of the twentieth century, research on autonomy moved to include other factors and individual differences with which autonomy interacts. Benson (2007) examines 'the emergence of alternative views of autonomy, new contexts of practice and interaction with concepts such as self-regulation, motivation, sociocultural theory and teacher development' (p. 21). In addition to the methodological and psychological dimensions of learner autonomy in language learning, Cotterall highlights the contextual aspect which needs consideration since 'a defining characteristic of autonomous learners is their ability to make decisions about their learning which takes account of the context in which they are learning' (2008, p. 118).

The principle of taking maximum responsibility for what students learn and how they learn it depends to a large extent on students' needs and preferences. Çakici (2015) suggests a number of strategies to foster learner autonomy in English language teaching and learning. Students, according to her, are encouraged to make decisions about what and how they learn and to be able to learn for themselves using techniques such as self-reinforcement and positive self-talk. Using cooperative learning experiences in which learners are directors of their own learning also discourages students from relying on the teacher as the only source of knowledge. In addition to this, she suggests that self-reports, diaries, evaluation sheets, and portfolio creation are good instruments for making students aware of their own learning styles and help them develop their own learning plans and strategies. Teachers, in their role, need to become less of an instructor and more of a facilitator in order to create a learning environment that is conductive to fostering learner autonomy (Çakici, 2015).

When applied to the context of the current study, autonomy and technology move in coordination with one another to a great extent. Griffiths and Soruç (2020, p. 140) believe that 'the development of digital technology in recent years has led to a revolution in the way autonomy can be exercised'. Hamilton (2013) suggests an eclectic blend of guided and autonomous learning in order to achieve an effective approach which enables 'the learner to exploit his innate potential for autonomy' (p. 22). An evaluation of classroom and free-time use of an educational virtual platform shows a correlation between autonomy, foreign language learning, and technology. She argues that signs of autonomous behaviour emerge either as a 'response to the direction or guidance suggested by the task' or as a 'response to the environment… and ecological changes brought about by technology' or as a 'response to a combination of both the direction and the virtual environment' (Hamilton, 2013, p. 197).

The nature of relationship between technology and autonomy in the context of foreign language learning, according to Hamilton, is complex because:

> In a technologically mediated context, learners' potential for autonomy can emerge proactively enabling them to take charge and determine learning objectives or reactively as they respond to direction, organising their resources to achieve pre-determined learning objectives (2013, P. 231).

Furthermore, autonomy is becoming a necessity for distance learning and computer-assisted language learning experiences beyond the classroom since 'it is now much easier to make contact and to make materials available without a physical presence; successful distant learners, however, need high levels of autonomy' (Griffiths and Soruç, 2020, p.141).

This section serves as a brief overview of the concept of autonomy in language learning and its relationship with technology, the next section provides a background for another student' initiated learning strategy that was fostered by the use of technology.

2.4.2. Collaboration

In this subsection, I provide a brief overview of the literature that surrounds collaboration as a social learning variable and the way it is linked to digital technologies to create a technology-enhanced collaborative language learning environment.

Collaborative learning is as defined by Laal and Laal (2012, p. 494):

> An umbrella term for a variety of educational approaches involving the joint intellectual effort from small group projects to the more specific form of group work known as cooperative learning. (…) There is a sharing authority and acceptance of responsibility among group members (…). Key elements of CL include: positive interdependence, considerable interaction, individual accountability, social skills and group processing.

Such an approach to learning involves groups of learners working together, sharing responsibility, and taking collective decisions to solve a problem, complete a task, and learn something together. Considering the fact that collaborative learning is a significant shift away from a teacher-centred approach and an opportunity to engage in an active student-centred approach, it requires 'time, effort, self-management, and agreement to take on different roles as part of the collaborative work' from the students and 'scaffolding and support' from teachers (Hernandez, 2012, p. 811). This suggests that collaborative teaching and learning practices are less frequently implemented either because 'teachers are under pressure to cover large amounts of content' or they 'feel that their lessons are more engaging when they involve the whole class rather than when individual or small-group strategies are used' (Wardlow and Harm, 2015, p. 33). For this reason, they recommend using appropriate digital tools to overcome such barriers to collaborative learning in the classroom 'with targeted professional development, including modelling the use of technology to facilitate collaborative learning and more time and opportunities to gain comfort with appropriate digital tools' (Wardlow and Harm, 2015, p. 32).

Wardlow and Ham (2015) suggest a number of technology-enhanced collaborative activities such as editing and creation of documents and presentations using web and cloud-based software, student discussions, presentations, and knowledge sharing using webinars and video and voice conferencing, Brainstorming and development of ideas using wikis and blogs and social networking sites, and data collection and analysis using virtual spreadsheets, online surveys, and Google forms (Wadlow and Ham, 2015).

In the same line of thought, Jeong (2019) examines the role of digital technologies to create a collaborative language learning environment at the Department of English Education in the middle part of Korea. Using online questionnaires and semi-structured focus group interviews, he identifies a number of 'metacognitive and affective benefits of online collaborative EFL learning activities for learner motivation and classroom engagement' (p. 89). Engaging language learners in integrative English learning activities through online group collaboration

and peer-tutoring results in a positive and encouraging learning experience which ‘enhances the self-directed learning, decreases learner anxiety, and increases students' confidence in their learning process’ (Jeong, 2019, p. 95).

The relationship between students’ collaboration and technology has recently been emphasised in the field of education as a response to Covid-19 experience which reduced human interaction between teachers and students and among students. Morell et al. (2021) have conducted an exploratory study on the structure of personal epistemology and spontaneous small groups in a sample of biomedical engineering students. They reveal that spontaneously-formed small groups of students ‘contribute to possible educational interventions aimed to improve collaborative learning in the classroom spaces and beyond’ (p. 109). Another study that appears to be more relevant to the scope of the present research was conducted to achieve an understanding of social media adoption among Pakistani students during the Covid-19 outbreak (Khan et al., 2021). The study reveals that social media plays a significant role during the pandemic because it provides chances for students to engage in collaborative learning outside the classroom when educational institutions were closed and face to face social activities were cancelled. Collaborative learning and knowledge sharing among students have been the main factors that trigger social media adoption by the students’ community during the pandemic (Khan et al., 2021).

The next section presents an account of students’ learning styles, their classifications, and their importance in language learning.

2.5. Students’ learning styles

Another objective of the present research is to identify the impact of technology on students’ different learning modalities. Accordingly, this section focuses on different learning styles and the value of learning styles awareness. In language learning and teaching, many educational psychologists place a heavy emphasis on style preferences that may influence foreign language learning. Yet some others still express doubts about the existence of individual learning styles. It seems that we each have a number of choices and preferences even if these are not firmly stable (Williams et al., 2015, p. 130).

Learning styles have often been named differently in the literature for example: cognitive style, sensory preference, modality …and others. Seeking for an appropriate definition of learning

styles and after a four-phase survey in which scholars wrote down their preferred definitions, Armstrong, Peterson, and Rayner produce their final definition as follows:

> Learning styles are individuals' preferred ways of responding (cognitively and behaviourally) to learning tasks which change depending on the environment or context. They can affect a person's motivation and attitude to learning and shape their performance. (2012, p.451)

When learning styles are explicitly discussed, there seems to be a general agreement among scholars that students can approach the same learning task differently. In this respect, Dörnyei and Ryan (2015, p. 108) mention that 'the concept represents a profile of the individual's approach to learning, a blueprint of the habitual or preferred way the individual perceives, interacts with, and responds to the learning environment'.

2.5.1. Classifications of learning styles

At another intricate level, there are a considerable number of possible ways of classifying styles which can be confusing, unhelpful and generate a "quagmire" of style models (Dörnyei and Ryan, 2015). Consequently, it is not my intention to discuss all these classifications of learning styles, but I will concentrate on two leading constructs namely: Kolb's Learning Style Inventory which is related to personality and the VAK Learning Style Model which has a perceptual dimension.

- **Kolb's learning style inventory**

Kolb's inventory is one of the most well-known and frequently endorsed classifications in research since it focuses on both the capabilities and the limitations of learning styles. Kolb & Kolb (2013) propose a new nine-style typology which better defines the unique patterns of each style and reduces confusion. A brief description of the refined inventory is provided by Dörnyei and Ryan (2015, p. 118) as follows:

- Initiating: a person who enjoys leading others and taking action.
- Experiencing: a person who is accepting and sensitive or open to emotions and intuitions.
- Imagining: someone who can create vision through the gathering of information from diverse sources.
- Reflecting: someone who needs time to absorb and process information.
- Analyzing: a person who is thoughtful and capable of expressing abstract concepts logically and concisely.

- Thinking: a person who tends to enjoy working alone making plans or being involved in rational decision making.
- Deciding: someone with a clear goal and focused on outcomes.
- Acting: someone who is committed to a course of action with a reduced concern for risk or potential negative consequences.
- Balancing: someone considering the various possibilities, weighing up the pros and cons of the other style modes.

- **VAK learning style model**

The VAK model is a popular and widely used learning style construct proposed by Neil Fleming. According to him, style preferences are organised according to whether learners prefer visual, auditory or kinesthetic input.

- **Visual Learners**

Visual learners enjoy reading and prefer to see what they are learning; they well remember colours, pictures, drawings, diagrams, flashcards and demonstrations. Visual people extract and recall information easily from visual presentations. Research has shown that teachers can meet the needs of visual learners by using written instructional material and reinforcing verbal instruction with photographs and videos.

- **Auditory Learners**

Auditory learners prefer to learn by listening to lectures, reading aloud and leading discussions. They remember spoken language well but they have problems with reading the graphic forms. Those learners succeed when directions are read aloud and information is presented verbally. They enjoy engaging in conversations and interacting with others.

- **Kinesthetic Learners**

Kinesthetic learners become exhausted when sitting at a desk, listening to the teacher giving the lecture. They require physical involvement and gestuality in learning situations. They feel best when touching, feeling and experiencing the material at hand. They prefer to work in groups and they are more successful when engaged in active learning.

(Alqadi, 2015; Woda and Gorwecki, 2011)

2.5.2. The importance of learning styles awareness

Within the field of education, it is of a great value to distinguish different learning styles that L2 learners use in the learning process not only for students themselves but also for teachers who look for better teaching outcomes. Teachers, for their part, should recognise the way their

students acquire, remember and retrieve information because 'this enables them to follow certain teaching strategies that can enhance the abilities and the attitudes of their students, especially in learning another language' (Alqadi, 2015, p. 27). In addition to this, it is vital for teachers to realise the differences in their students' learning styles, so that they can 'gear their teaching methodologies and techniques toward a better adjustment with their various students' learning styles' (Alqadi, 2015, p.27).

Williams et al. (2015, p.130) mention that '…we [teachers] need to consciously seek to accommodate different learning styles in the teaching methods that we employ'. However, according to them, it is impossible to deny that the teachers' learning style preferences may affect the way they practise teaching. This leads to an urgent call for teachers to intentionally remind themselves that students learn in quite different ways. Additionally, while it is important for teachers to be aware of their own and their learners' learning styles, they should be careful not to "pigeon-hole" learners into a fixed category. As an alternative, teachers 'should seek to encourage learners to remain flexible in adopting different styles for different purposes and experimenting with styles beyond their traditional comfort zones' (Williams et al., 2015, p.130).

It is often valuable for learners to be aware of their own learning style in order to 'understand why different people learn in different ways and look into developing different strategies for learning' (Rolfe and Cheek, 2012, p. 178). In this vein, Williams et al. (2015, p.130) argues that it is thanks to being aware of their preferred ways of learning that students can be engaged in a "self-regulation" process. Subsequently, they claim that:

> Self-regulatory learners are aware of themselves as learners. They know their own strengths and weaknesses as well as their preferred modes of learning (…). They feel a sense of control in their ability to regulate their own learning processes.

Not only are students able to control their own learning, but also teachers, who are aware of their students' different preferences, can support students to become more self-regulated and to achieve their learning goals.

Having explored individual differences in second/ foreign language learning in general and considered distinct personal characteristics in which language learners differ, in the next section, I address a number of studies that have been conducted in relation to individual differences in the Algerian EFL context.

2.6. Individual differences research in the Algerian EFL context

This section briefly reviews the literature that surrounds individual differences and psychological variables affecting EFL learning within the Algerian context. The majority of research works conducted in the area of individual differences and the psychology of the learner in the Algerian EFL context address isolated affective variables in language learning in a particular setting.

In this regard, Bouchareb (2016) addresses the role of foreign language learners' self-esteem in enhancing their oral performance. This study explores the relationship between Algerian LMD students' self-esteem level and their speaking skills at the University of Constantine. Using a series of questionnaires with 30 second year EFL students and 10 teachers of Oral Expression, she concludes that self-esteem has a significant correlation with speaking achievement since students with low self-esteem have a low level of spoken language production, even if they have good linguistic abilities in other areas of language learning. Regarding autonomy, Ghout-Khenoune (2014) examines Algerian students' readiness for autonomous EFL learning. In order to assess the students' autonomy level, questionnaires were administered to 68 third year BA students, who are both students of language sciences and didactics and future teachers of English language, at the Department of English at the University of Bejaia. She argues that the necessary conditions to promote learner autonomy, namely the students' level of motivation, learning strategy use, and taking responsibility in learning English were limited. As a result, she concludes that her findings are consistent with the widespread claim that Algerian students are, to some extent, less autonomous than students from other cultural backgrounds. Another example is the study conducted by Mellit and Idri (2019) on the impact of EFL students' attitudes towards literary texts on their motivation to read. They conducted 150 perception questionnaires with second year EFL students at the Department of Foreign Languages, University of Setif 2. They assert that negative attitudes towards reading literary texts negatively affect students' level of motivation to read. For this reason, they suggest some techniques and strategies to meet learners' reading needs and interests, among which the need for technology integration in literature classes is emphasised. Similarly, a number of other studies have explored isolated affective variables in relation to EFL learning such as Nouioua (2018) and Salhi (2020) on autonomy, Melouah (2013) and Idri (2014) addressing anxiety, and Merrouche (2017) investigating students' learning styles.

The majority of research conducted in the field of individual differences in the Algerian EFL context tackles isolated psychological variables such as self-esteem, autonomy, motivation and

anxiety. Unlike the present research which covers different personal characteristics that influence learning and addresses a broader view of individual differences, the above-mentioned studies explored the relationship between one individual difference and certain EFL learning skills.

Only a few researchers, however, tackle a more general view about individual learner differences in EFL learning. An example of the available literature on the matter would be Zitouni and Nedjai (2017) who investigate quantitatively how individual differences interact with success and failure in the language learning process. They examine the relationship between gender, age, motivation, personality, and cognitive style and academic performance. They randomly selected 50 EFL students at Batna 2 University to answer a questionnaire to determine the participants' individual differences. After collecting data about the participants' differences, they administered a performance test to check whether these differences have an impact on their EFL learning experience. Their research indicates that these differences, mainly motivation and personality, impact greatly on the foreign language learning process. They found that learners who are intrinsically motivated performed better than those with extrinsic stimulation and parental encouragement.

Similarly, another quantitative research work by Lagrour (2019) investigates the way individual differences affect the language learning process in EFL classes. He sheds light on different cognitive, affective and social variables, namely intelligence, aptitude, learning styles, learning strategies, age, motivation, personality, anxiety, self-esteem, willingness to communicate, gender and beliefs. He concludes that learners' differences affect the language acquisition process in a direct way, but that students are not aware of the importance of these differences in their EFL learning process. He also stresses the role of teachers in considering students' preferences, psychological status, language performance, varying practice and material, using cooperative rather than competitive goals, and paying attention to correction and feedback strategies.

Along similar lines, Djebbari (2019), in her theoretical paper, considers the link between individual differences, mainly affective factors, and learners' academic achievements. She asserts that:

> Self-confidence, self-esteem, self-concept, self-image, anxiety and motivation are all key concepts that should be coupled within the classroom setting to frame the relationship between learners'

> psychological health and some aspects of EFL language processing (2019, p. 33).

In addition to highlighting the correlation between the aforementioned variables and performance in EFL learning, she emphasises the role of teachers in considering their students' psychological health when trying to achieve their conventional language teaching goals and that while such ability can be intuitive in many teachers, they still require specific guidance to support their students psychologically (Djebbari, 2019).

From the above studies, it is clear that the majority of research in the field of individual differences in the Algerian EFL context assessed the impact of IDs on the language learning process and academic achievements quantitatively. My research, however, considers technology integration in EFL learning and the way it influences individual learner differences by adopting a qualitative research approach to give more value to the participants distinctiveness and individuality.

In addition to this, what should be included as individual differences, in the aforementioned discussion and as revealed in section 2.1, differs from one study to another. The present research also investigates a different combination of variables including cognitive, affective, and social factors, which builds a different construct of individual differences.

2.7. Summary

This chapter has reviewed the literature, related to individual differences in foreign language learning, which I relied on to explore the impact of technology integration in EFL learning on individual learner differences. I see individual differences as a diversified composite, and as including different affective, cognitive, and social variables. I have identified the importance and provision for these differences in the language teaching and learning process. Moreover, I have delineated a number of variables which closely affect the EFL learning process and show a correlation with technology-assisted language learning. I have also reviewed the literature that revolves around individual differences in the Algerian EFL context. Through this literature, I have attempted to provide a backdrop of the impact of individual differences on foreign/ second language learning, which in turn helped me uncover the complexity and the dynamism of these differences.

The following chapter reviews the literature related to technology-assisted language learning.

CHAPTER THREE

3. TECHNOLOGY-ASSISTED LANGUAGE LEARNING

The aim of this chapter is to critically review the literature related to technology-assisted language learning as a key subject in the study. It is intended, along with chapter 2, to show how the literature has helped me understand the impact of technology integration on individual learner differences. After reviewing the literature that surrounds the source of my work -the psychology of the language learner- in the preceding chapter, this chapter presents TALL experiences and ELT technology scenarios covered in this study. Considering technology integration in practice, the different new ways of learning, and the different ways they affect instruction helped me understand the complexity and the dynamism of the impact of educational technologies on the psychology of the learner

The chapter is structured in the following way: it starts by considering the twenty-first-century learning experience and the way technology can be used to empower instruction in section 3.1. Then, it moves on to address the literature needed to integrate technology in practice and develop language skills in section 3.2. It also approaches new ways of learning, which are investigated in the current study, namely blended learning, flipped classrooms, and mobile-assisted language learning, in section 3.3. Section 3.4 describes the ICT situation in the Algerian context. Section 3.5 presents an overview about TALL research in the Algerian EFL setting and section 3.6 summarises the content of the chapter.

3.1. The twenty-first-century learning experience

The focus of this section is to set the foundation for the entire chapter. It aims at clarifying one of the key concepts relevant to this study ‘technology’, discussing the factors that are most likely to contribute to a successful twenty-first-century learning experience, and exploring why technology incorporation can be a good idea.

In modern education, researchers and curriculum designers are seeking new perspectives on language learning and new ways to make the teaching process more diverse, effective and engaging. In the search for new ways and ideas, ‘technology can facilitate the English language learning process by making it more amenable and relevant to twenty-first-century learners, if

it is applied wisely' (Mercado, 2017, p.2). Hence, decision makers in the teaching and learning process should make the right choices concerning which, when and how information and communication technologies are to be used. In addition to this, there should be methodological revision that meets learners' needs, potentials and lifestyles taking full benefit of technology as an instructional medium.

Technology which is understood as 'digital or electronically based devices, resources or processes that facilitate the teacher and learners' ability to think, perform and succeed' (Mercado, 2017, p.2) can have a supporting role in the language classroom. That will be possible only if both teachers and learners collaborate to profit from a diverse teaching and learning experience because technology does not guarantee better achievements on its own. Teachers, for their part, have to select the right technology taking into consideration classroom conditions, access, and students' achievements and goals. They must know which technology tool to incorporate in order to fit different learning experiences. This is clearly revealed by Mercado who states that technology 'will only become a powerful enabler and enhancer of the learning experience if the key stakeholders in the educational process use it with enough knowledge, expertise and determination' (2017, p.18). Thus, technology can have huge potential as a tool and resource, but implementing it in the classroom without selection and determination is ill-advised.

As will be shown later, my study requires technology integration in EFL classrooms. Two questions present themselves here: why should we integrate technology and what does technology bring to the learning experience? Research has thrown considerable attention on the ways technological devices can be beneficial for language learning. The arrival of technology is regarded as one of the most powerful growths in language learning. In this vein, the 2017 National Education Technology Plan (NETP) update report lists five ways technology can enhance learning (2017, p.12):

- Technology can enable personalized learning or experiences that are more engaging and relevant: in other words, it can create the opportunity to learners to decide about their learning and develop their learning skills even outside the classroom. Examples include writing essays, sharing knowledge and collaborating in data collection… In the same line of thought, Mercado (2017, p.45) establishes a strong relationship between technology and autonomous learning. He presumes the fact that 'technology today

makes it more possible than ever before for language learners to explore and learn the language on their own outside of class, in their own free time'.

- Technology can help organise learning around real-world challenges and project-based learning – using a wide variety of digital learning devices and resources to show competency with complex concepts and content: to put it another way, technology can be more engaging since it incorporates real-world experiences which keep the student at the centre of learning design.

- Technology can help learning move beyond the classroom and take advantage of learning opportunities available in museums, libraries and other out-of-school settings: the NEPT offers an example of an attractive event namely 'the Global Read Aloud' which connects students from all over the world to read, share and discuss thoughts and understandings of the same literature within a world of readers.

- Technology can help learners pursue passions and personal interest. Consequently, it may help students exercise exploration and research skills and boost an attitude of ongoing, self-motivated learning.

- Technology access can close the digital divide and make transformative learning opportunities available to all learners: students with physical impairments, for example, can benefit from online programs to achieve a specific degree and realise their aims regardless of location.

Having looked at the twenty-first-century learning experience and a number of benefits through which technology can empower teaching and learning, the next section looks at how to integrate a range of educational technologies into actual practice.

3.2. Integrating technology in practice

This section provides some background information needed to integrate technology into classroom practice in a principled and informed manner. It also discusses the development of the four skills through technology and the same for specific language areas, namely: vocabulary, grammar and pronunciation.

Within this changing time of globalization, teachers have to deal with digital native learners. For this reason, there is an urgent call for educational change or more precisely what is labeled

“change in practice”. According to Fullan (2016, p.28), this kind of change in the classroom necessitates innovation which includes three dimensions: the possible use of new or revised materials, the possible use of new teaching approaches and the possible alteration of beliefs. Thus, it is wiser to promote new e-learning resources and integrate them in the curriculum. Accordingly, both students and teachers should be familiar with information and communication technologies because they enable collaboration and extend learning beyond the walls of the classroom. This collaboration ‘offers access to instructional materials as well as the resources and tools to create, manage, and assess their quality and usefulness’ (NETP, 2017, p.28).

Moreover, teachers in their turn should be careful about the way they integrate technology into classroom practice. At the planning stages, teachers should always take their students into consideration by asking themselves a number of questions such as: what will students learn? What does technology bring to the activity? What skills do my students need? And do my students benefit from or create content using digital tools? In this vein, Hockly (2017, p.22) claims that ‘there is no point in using technology for its own sake. [You as a teacher have to] ensure that your use of technology is meaningful, and that it supports their [students] learning as far as possible’. Although research suggests that teachers have the biggest influence on students learning, we cannot neglect the role of schools and institutions which ‘need to support teachers in accessing needed technology and in learning how to use it effectively’ because lack of training stands as the main challenge when incorporating technology in teaching (NEPT, 2017, p. 28).

Since today’s generation comprises digital native learners, it seems crucial to incorporate technological aids in the teaching /learning process in general and language learning in particular. From this angle, Hockly suggests that ‘we [teachers] can use a range of technology and tools to support our student’ development in the main language skills: reading, writing, listening and speaking’ (2017, p. 31). Technology can also be used to support specific language areas such as vocabulary, grammar and pronunciation. Additionally, Hockly suggests that the topic of technology can be introduced as a warmer or ice-breaker before starting using it in the classroom. She introduces the ways technology can help teachers correct their students’ work and provide feedback as well (Hockly, 2017).

At first glance, both hardware and software can provide ample opportunities for students to practise speaking and listening. For his part, Mercado (2017, p. 92) states that:

> With technology, learners can fine-tune pronunciation, develop a repertoire of speaking or listening strategies, engage in live interaction with people in distant places and self-assess their progress over time. In addition, teachers can provide feedback to recorded speech samples.

When language skills are discussed, there seems to be a general agreement among researchers that communicative competence can be achieved by developing their listening and speaking skills together. Hockly (2017) declares that there are two ways technology can assist speaking practice: using online materials for "listen and repeat" activities and communication apps to practise free speaking. Furthermore, she lists plenty of authentic listening materials such as: listening websites, sample listening exam practice materials, podcasts, MP3 audio format and video materials online.

In a like manner, Blake (2016) proposes that technological devices are worth taking advantage for their affordances for L2 reading and writing as well. Again, Mercado (2017, p. 114) believes that "technology can actually do much to facilitate successful reading and writing". Moreover, it is reported that technology and Internet not only provide texts for general reading and word-processed documents for writing (Hockly, 2017). Teachers can also use a number of ideas and a range of technologies and sites which are available online to support their students' language skills. Hockly suggests a number of ways such as: using emails, blogs, wikis, online mind maps and story generators for writing purposes and e-books, blogs, interactive fiction, dictionary plug-ins and online newspapers and magazines to practise reading (Hockly, 2017).

As stated earlier, instructional technologies can also be used to promote specific language areas. Starting with vocabulary, students can use a number of tools and apps such as flashcards, vocabulary games and virtual sticky notes to learn vocabulary both inside and outside the classroom. Moving to grammar, Saeedi and Biri (2016) investigated the effectiveness of English animated situation comedy (sitcom) in teaching a specific grammar point. They showed that these videos have positive impact on students' motivation and push them to put greater efforts in the process of grammar learning. When it comes to pronunciation, Hockly mentions that 'although pronunciation is an integral part of speaking in general, there are ways that technology can be used to focus specifically on pronunciation with students' (2017, p. 54). These include phonemic chart apps, dictionary websites and apps, song sounds and word games.

The following section introduces new ways of learning which were used in my research to explore the impact of technology integration on individual differences.

3.3. New ways of learning

Educational change cannot happen without adopting new approaches in the classroom. Similarly, TALL cannot be discussed without considering new ELT technology scenarios. Blended learning, flipped classrooms and mobile-assisted language learning will be covered in my research. For this reason, this section explores these approaches and looks at the way they can support instruction.

Technology can be introduced in a variety of ways to assist the teaching learning process. Below are three ELT technology scenarios, each describing a different teaching and learning context which may support students' learning:

3.3.1. Blended learning

In its most general sense, "blended learning" refers to the implementation of technology to support learning. However, in relation to English language teaching it is 'the term most commonly used to refer to any combination of face-to-face teaching with computer technology' (Tomlinson and Whittaker, 2013, p. 12). That is to say, in this scenario the teacher works with his or her students partly face-to-face and partly online using both online and offline activities and materials. Such an innovative concept 'embraces the advantages of both traditional teaching in the classroom and ICT supported learning' (Lalima and Dangwal, 2017, 129).

Blended learning appears to be a newly adopted technique which can be implemented in different ways. As an illustrative example, Hockly (2017, p.142) mentions two different models. The "lab rotation" model, which is used in some US elementary and high schools, it encompasses two class periods: the first 50 minutes in a computer lab using learning software followed by a session with the teacher to work in collaboration and discuss issues. Secondly, we have the "flex" model of blended learning: here students study most of the time online, with the ability to access a teacher for individual tutorial guidance.

Additionally, a number of reasons for adopting blended learning environments are worth considering. Both individual teachers and institutions mention the following factors for implementing such a new approach: large class sizes; lack of space in the classroom; dissatisfaction with face-to-face instruction; and insufficient exposure to language (Aborisade, 2013). Implementing blended learning is not such an easy task; it 'needs rigorous efforts, right

attitude, handsome budget and highly motivated teachers and students for its successful implementation' (Lalima and Dangwal, 2017, p.129).

For the online part of the blended learning course, teachers may engage their students in activities such as: 'contributing to a class blog, taking part in forum discussions, reading and listening to or watching online material, and working in project groups to create digital products' (Hockly, 2017, p.25). Choosing an appropriate online platform depends on a number of issues which are summarised in the following terms: 'your own [teacher] confidence with technology, the language learning needs of your students, how much of your blend will consist of online work and what you want that online work to consist of' (Hockly, 2017, p. 144).

In this vein, Garrison (2017) states 'research has shown that blended learning has had a significant impact on the transformation of teaching and learning with its focus on sustained interaction and collaboration' (p.107). In a like manner, Lalima and Dangwal (2017) argue that blended learning has a number of merits which can be summarized in the following points:

- It provides more chance for communication and creative and collaborative learning
- It brings creativity and gives a new life to already established lectures
- Students gain more digital awareness and become techno savvy.
- Students develop a feeling of self-motivation and self-responsibility.

Bearing these advantages in mind, Hockly and Dudeney promise that 'blended and online learning in English language teaching will be with us well into the future' (Hockly and Dudeney, 2018, p.168).

3.3.2. Flipped classrooms

When identifying key-definitions of the two concepts "blended learning" and "flipped learning", we may find it challenging to differentiate between them. Nevertheless, it seems advisable to set up a clear difference between the two terms. Hockly for example suggests that 'the flipped classroom is a form of blended learning that encourages students to do preparation work online before they come to class' (2017, p.144). Although, flipped learning is not so new in other educational domains, it remains a current trend in English language teaching and learning (Mercado, 2017, p. 62). The flipped classroom also known as "the inverted classroom" or simply "the flip", is an instructional strategy that focuses mainly on student-centred approach, which helps teachers transform their classrooms to centres of learning and engagement (Bergmann and Sams, 2014, p.24).

In a more specific context, Hockly mentions that a flipped approach reverses the traditional order of instruction in which the teacher stands in the front of the class giving instructions. Students are instead given content to be prepared at home such as instructional videos and classroom time is spent on doing application of what they have learned before under the guidance of the teacher (2017,p. 144). Additionally, research has shown that the flipped classroom is vitally important in language learning and has positive effects on learners depending on the context and surrounding conditions. In this vein, Tütüncü and Aksu (2018, p. 208) indicate that:

> Flipped classroom provides a new methodology and modality for teaching and learning by minimizing direct instruction in teaching and maximizing one-to –one interaction and cooperative learning to encourage social interaction, team work and cultural diversity.

Again, flipping their classrooms, teachers can radically change their teaching and create an atmosphere where learning rather than teaching is the goal. In this line of thought, Mercado (2017, p. 64) points out:

> Rather than introduce L2 content for the first time, the teacher can elaborate on, clarify and channel such information for learners to consolidate their understanding as well as their ability to apply what they have learned to real life situations.

Another key benefit is that flipped learning allows for differentiation and lets learners learn at their own pace. The use of instructional videos gives students control of the pause and rewind buttons and helps each learner study at the speed that is appropriate to him or her. In addition, teachers will be able to individualize instruction to meet the individual needs of learners (Bergmann and Sams, 2014, p.25).

From another stand point, there are a number of challenges that can be associated with applying flipped learning. To start with, ‘students are required to set aside part of their personal time and space in order to engage in L2 content review, processing and practice’ (Mercado, 2017, p.64). Moreover, students may not do the necessary pre-class work, and come to class without preparation. Another challenge can be the students’ expectations; many students require their teachers to stand at the front of the class and explain the lecture (Hockly, 2017, p.145).

For this reason, teachers do not have to flip every lesson. Teachers should pick up the topics that students struggle with and spend more time helping their students individually comprehend

the difficult notion (Bergmann and Sams, 2014, p.25). More than that, they should do a quick diagnostic speaking activity related to the pre-class work and they have to put those who did not do the work in groups of students who have done it. They will recognise then that by coming to the class unprepared they are not taking benefit of the learning experience. Equally important, Teachers need to explain the rationale behind their approach at the beginning, deal with their students' expectations sensitively and get their feedback on the approach (Hockly, 2017, p. 145).

3.3.3. Mobile-assisted language learning

Mobile-assisted language learning (MALL) or simply Mobile learning describes any educational setting where the dominant technologies are hand-held devices from laptops to cell phones. Besides being used for basic functions such as social networking, mobile devices are developed to be used for a range of educational purposes as well (Garrison, 2018, p.93). Seeking for a fixed definition of mobile learning is quite challenging, because the focus is always on mobility but researchers perceive this mobility from different angles. O'Malley et al. (2005) for example concentrate on the mobility of the learner. Keegan (2005), on the other hand, focuses on the mobility of the device. Kukulska-Hulme (2005), for her part, attributes the definition to the mobility of the context more precisely the time and the place.

Burden and Maher (2015) use the concept "ubiquitous learning" to describe mobile learning. Such a concept includes a number of characteristics namely: permanency, accessibility, immediacy, interactivity and context-awareness (Yahya et al., 2010, p.121). MALL is interested in freeing the learning experience from the limitations of time and place. Mobile devices can be used inside the classroom to support instruction as they can be valuable for learners to develop their skills in a variety of ways outside the classroom. Jaya (2015) lists a number of merits of using mobile phones as instructional tools in language learning such as increasing students' motivation and enthusiasm, promoting the use of English for communication purposes and helping students become more competent.

Research shows that M-learning has a great impact on education and can be regarded as one of the powerful sources of growth in language learning. Burden and Maher (2015, p. 179) believe that:

> The use of mobile technologies, both in the classroom and beyond, repositions the role of the teacher. In a traditional classroom the teacher has generally been the sole provider of knowledge – the gate keeper. Using

> mobile devices, a greater number of experts can be called upon to supplement the knowledge of the pupils [the students] and to provide for different types of expertise.

From another layer of analysis, only using mobile phones or tablets in learning situations will not automatically guarantee better learning. In fact, it depends on the way these devices are used. In this context, Hockly suggests that 'if devices are used appropriately in pedagogically sound ways, students' motivation can increase … (and) they can help make our lessons more engaging and relevant to students' lives' (2017, p. 120).

For their part, McQuiggan et al. identify the ways mobile devices can be beneficial for education if used wisely. They (2015, p.1) state that:

> Mobile technology offers a plethora of features and benefits that enable it to break the educational system wide open, engaging students in new ways and making educational experiences more meaningful, if schools can effectively utilize structured, integrated approaches for implementation of this new technology.

A question that can be raised at this level is "whose mobile devices to use?" Some schools and universities all around the world provide digital devices or what is referred to as "a class set" of smart devices for the students to use in class time. In other settings where this is not the case, the BYOD (bring your own device) approach can be implemented. In other words, students are allowed to bring their own devices to class and use them when necessary (Hockly, 2017).

In a similar situation, students can use their smartphones or tablets for non-educational purposes in distracting and confusing ways. In such a case, teachers will not support the implementation of technological devices and their reasons are understandable. For this reason, getting students engaged and focusing their attention is suggested (Hockly, 2017, p. 124). Another way to put an end to these distractions is to ethically remove them by using what is called parental controls or filtering applications. Using these applications, teachers can reduce these interruptions by limiting apps, blanking screens and controlling students' devices (Smith, 2016).

Having discussed technology-assisted language learning scenarios, the next section describes the ICT situation in Algeria

3.4. ICT situation in Algeria

The aim of this section is to provide a background for ICT situation in Algeria in general and the current state of ICT integration in Algerian universities in particular. The rapid development of information and communication technology (ICT) has altered the way individuals, societies and countries interact and work together. ICT is a crucial instrument that enriches and supports society, economy, democracy, education, health care …etc. It also provides access to information through telecommunications. This is clearly revealed by Niebel et al. (2013, p. 6) who state that:

> Information and communication technology (ICT) encompasses all technical equipment and facilities that convert, process, save and transfer various types of information in digital form. It includes voice telephony, data communications and computer, radio, television and similar technologies. Copper wires, fibre optics and a variety of wireless technologies can be used for communications and for the exchange of data in this context.

The conditions of using ICT throughout the whole world are improving significantly. Hardware, software and connectivity are becoming widely available. Nevertheless, 'although the rate of technological progress has been rapid and developing countries have been able to catch up in the area of mobile technology in particular, the distribution and the use of ICT remains very unequal, and there is still a digital divide at the global level' (Niebel et al., 2013, p.6). Algeria like many other developing countries is experiencing progress in internet connection and expanding 3G and 4G services. According to Internet world stats, internet penetration rate and the number of internet users have been increasing gradually to achieve 26.35 million users in 2021 (59.6% of the whole population).

Algeria has shown great interest in the field of ICT and prepared a plan for the transition to e-government. Lahmar and Benzidane mention that such a plan has positive effects not only on the national economy, but also 'seeks to improve the capacity of education, research, innovation and the establishment of industrial constellations in the field of information and communications technology' (Lahmar and Benzidane, 2019, p. 161). The initial phase of ICT introduction to the educational system in Algeria was 'providing the physical infrastructure mainly computers and hiring ICT teachers', equal attention, however, should be given to ICT training programs for both teachers and supervisors, and more focus should be on 'use ICT to learn' instead of 'learn to use ICT' (Boukhatem, 2015, p. 136). More recently, higher education

institutions became connected to internet via the international academic and research network and the majority of universities created their websites and made use of the Moodle platform where students can access courses and lectures, download documents, create activities, and communicate with their teachers (Gherbi, 2015).

In addition, a number of studies shed light on the introduction of ICT in the Algerian education system. Bensafa (2015, p. 232) states that ICT integration can promote language teaching and learning since:

> It can increase motivation to learn languages, it offers opportunities for meaningful practice of language in authentic contexts, it provides innovative language engineering devices which provide just-in-time support in language use, and it enables information and resource sharing between language teachers.

Benzerdjeb, for her part, summarises the importance of ICT integration in students' learning in that it 'cultivates students' interest in study, promotes students' communication capacity, widens students' knowledge, improves the teaching effect, improves interaction between the teacher and student, creates a context for language teaching, and adds flexibility to course content' (2014, p. 10-12). She also distinguishes a number of problems resulting from ICT integration in the Algerian LMD system such as 'the loss of speaking communication, the restriction of students' thinking potential, and the dominance of assisting instrument' (p. 13). Similarly, Berbar and Ait Hamouda (2019) investigate the extent to which ICTs are used by teachers and identify the challenges of technology integration in the EFL classroom. Using an online questionnaire with sixteen teachers from the Department of English at the University of Tizi Ouzou, they highlight a number of barriers that prevent teachers from incorporating ICTs into the Algerian classroom. In addition to the lack of appropriate material and resources, they focused on 'students' unfamiliarity with ICT tools' since they perfectly manage social media, but using word processing can be very challenging for them. They also pinpoint the lack of internet access in some regions in Algeria, the lack of ICT facilities in student accommodation, and the overcrowded classrooms which impede access to technologies (p. 8).

This was an overview of the ICT situation in Algeria, the following section presents research about TALL in the Algerian EFL context.

3.5. TALL research in the Algerian EFL context

This section provides an account of technology integration in the concerned context 'Algeria' from an insider perspective. It also mentions a number of publications in recent years exploring technology use in EFL teaching and learning in Algeria.

Due to its significance and widespread adoption, English is now taught in the majority if not all Algerian universities either as EFL in English departments or as ESP courses in other departments and LMD is the dependable system in these universities now. One of the objectives set by the ministry of higher education when implementing the LMD system is to be more open to innovative teaching practices (Sarnou et al., 2012). Paradoxically, Magnounif (2009) assumes that the LMD system does not fit the Algerian context because of the socio-economical data, lack of motivation among students and teachers and the centralized management of the university. Again, Miliani (2010) argues that the Algerian educational system has become "obsolete" in this world of digital revolution. This was years ago, yet the current situation in general did not really have a noticeable change.

The above-mentioned details do not indicate that there is no literature dealing with TALL in Algeria. On the contrary, there are a number of studies dealing with educational technology integration in EFL teaching and learning in the Algerian context. Doing such research can be considered as a process of building up the stones towards educational change and creating innovation within Algerian universities in order to keep pace with the world's educational system. In this respect and in relation to psychological variables, Meziane and Benmansour investigated the effect of using interactive whiteboards as an instructional tool on students' engagement. They conducted action research with a group of 40 students majoring in second year technical stream during their classes of English language. Questionnaires and observations were conducted to enquire about students' engagement and behaviours in their English language classes with and without an IWB. Looking for educational change, they highlighted students' enthusiastic attitudes towards IWBs and the role of IWBs improving students' motivation, engagement, participation, interaction and effective retention. They also suggested reflection upon the will to integrate technology, the way of constructing classroom activities, and the fact that technology does not guarantee quality of instruction in its own: different learners and different contexts call for different techniques.

For her part, Guerza conducted research which addresses the issue of learner autonomy and how it can be enhanced by information and communication technologies in the Algerian EFL context. In addition to revealing the reality of ICT integration in an Algerian EFL setting, she

introduced the CPP (Content/ Process/ Product) program as a new project in the department of English at Batna University, and explored its effectiveness in fostering learner autonomy in EFL learning. She used questionnaires and conducted a classroom observation with 75 first year LMD students along one year curriculum of oral expression course. The study reveals that autonomy is encouraged by the use of technology and careful implementation and wiser decisions by teachers. The CPP model, according to her, 'offered lavish and encouraging opportunities for learners to practise their autonomy, their uptake, and to be exposed to the target language through creating real life scenarios' (Guerza, 2015, p. 985).

In an attempt to design a practical framework to integrate ICT in ELT and more precisely in an ESP course, Halfaoui conducted research in the Preparatory School of Economic Sciences, Commerce and Management in Oran. She administered questionnaires to learners, teachers, and economic actors and a learners' focus group interview to explore the feasibility of a psycho pedagogical framework for effective ICT use in foreign language learning. She highlighted the importance of considering both students' and teachers' attitudes to ICT integration and knowledge and experience concerning teaching and learning with technology. She also concluded that 'ICT effectiveness is dependent on: confidence, collaboration, development of a common vision, development of a strategic plan and ongoing technological and pedagogical support' (2016, p. 191).

Moreover and apropos the link between technology implementation and the psychology of the learner, Saidouni and Bahloul (2018) investigate the relationship between MALL and students' motivation and question the role of mobile devices to promote learners' motivation in EFL classes. To do so, they administered a questionnaire to 30 masters students and interviewed four teachers of English at Batna 2 University. They highlight that 'both teachers and students strongly confirm that the integration of mobile devices in EFL setting fosters the students' motivation and increases eagerness toward learning', and suggest the implementation of mobile learning in EFL classrooms 'in order to cope with the challenge of technological and pedagogical shifts occurring in the teaching profession' (Saidouni and bahloul, 2018, p. 546). They also found that EFL teachers are welcoming the use of MALL as long as it is accompanied by appropriate use from the students. I turn now to Fersaoui (2016) who wonders about the future of teacher-learner relationship in an online context. She gathered data from a sample of 26 EFL teachers and 100 students using questionnaires, interviews, and classroom observation. She shed light on the teacher-student rapport and its dependency on the role of the teacher, which is determined by the type of instruction and the teacher's dynamicity. She addressed the

way online learning affects the teachers' roles and she stressed the point that the teacher-student relationship is not comprised of face-to-face instruction only but there should always be agents behind the technology. She concluded that the role of the teacher, within an online teaching and learning context, 'is to guide, direct and train the student… to end up as an instructed and efficiently-autonomous learner' (Fersaoui, 2016, p. 150).

An issue that is worth mentioning at this level is whether we can consider the aforementioned studies and many others as technology-enhanced language learning situations or not. In view of this, Bax (2011, p. 1) hypothesized that:

> A technology has reached the fullest possible effectiveness in language education when it has arrived at the stage of 'normalisation', namely when it is used without our being consciously aware of its role as a technology, as a valuable element in the language learning process.

In this sense, one may presume that technological devices have not yet arrived at the stage of normalisation in Algerian educational contexts. In a word, only pens and blackboards can be considered as completely normalised in the Algerian classroom. This, however, did not prevent online learning from taking place to a certain extent in Algerian higher education settings over the last two years (2020, 2021) during the Covid-19 pandemic situation. The creation of an online educational platform and the use of Zoom classes were the first steps taken by stakeholders to resume the delivery of classes after a suspension of a number of months depending on the institution. Benmensour (2021) explores the Algerian EFL students' perceptions and attitudes towards Zoom sessions in EFL learning during the pandemic situation. This study was conducted with 20 undergraduate EFL students enrolled in the English Language Department at Oran university. Using interviews and open-ended questionnaires, she investigated the students' motivation to engage in online oral expression classes via zoom sessions. Her research reported positive attitudes towards Zoom classes and the impact of these attitudes on the quality of the teaching and learning process. On this basis, she recommends training students and teachers to use educational technologies and developing positive perceptions among students about online learning in order to benefit from affective technology integration. On the other hand, she highlights that 'students' negative attitudes, lack of training, lack of ICT skills, and computer anxiety' are the challenges to effective integration of Zoom classes (Benmansour, 2021, p. 275).

Similarly, Kerras and Salhi (2021) conducted research to determine the challenges and difficulties facing Algerian students at university during the pandemic situation. To do so, an online questionnaire was answered by 139 students of Languages and Translation enrolled in different Algerian universities (Guelma, Oran, Tlemcen, Constantine and Algiers). They identified a number of limitations which challenged Algerian students during the shift to online learning as a result of Covid-19, namely 'the lack of fluid communication between the teacher and the student, the unavailability of equipment and Internet connection, the lack of an interactive database for the student, and the absence of some communicative and psycholinguistic teaching methods' (p.32). Despite the above-mentioned challenges, they consider the crisis as 'an unprecedented opportunity to increase the resilience of national education systems and transform them into equitable and inclusive systems that contribute to the fulfilment of the collective commitment of a country like Algeria' (Kerras and Salhi, 2021, p. 33).

Unlike the present research that addresses a general view about the relationship between different ELT technology scenarios and different psychological variables, the majority of previous research in the Algerian EFL context linked a certain technology scenario to a certain psychological variable.

3.6. Summary

Similar to the previous chapter, this chapter has reviewed literature related to technology-assisted language learning which I relied on to investigate the impact of using instructional technologies on the psychology of the language learner. I have identified the significance of technology incorporation in language learning and tackled the development of practice and language skills through principled and informed use of educational technologies. Furthermore, I have provided a background for the three technological interventions used in this study to examine the relationship between technology integration and individual learner differences. I have also contextualised my research by addressing TALL research and the ICT situation in the Algerian context. To sum up, this chapter has clarified the impact of technology on the teaching and learning process, which in turn helped me realise its complex and dynamic impact on individual learner differences.

The following chapter discusses the research methodology employed in this study.

CHAPTER FOUR

4. RESEARCH METHODOLOGY

This chapter discusses the process of research methodology I used in the present study to explore the impact of technology integration on the psychology of EFL learners and the extent to which contextual approaches to technology take account of individual learner differences. It begins by introducing my research design and locating it within qualitative ethnographic case study in section 4.1. The second section (4.2) tackles reflexivity, access, the setting, participants, and the fieldwork. The third section (4.3) describes the different methods used to collect data. The fourth section (4.4) is dedicated to the data analysis process. This is followed by a description of my approach to the writing up process in section 4.5, an overview of ethical considerations in section 4.6, trustworthiness in section 4.7, and a summary of the chapter in section 4.8.

4.1. Research design

This section starts by locating the study within the qualitative research approach (section 4.1.1) and it moves to section 4.1.2 to address a combination of the constructivist paradigm and interpretivism that make the framework of my research. Then, It presents a detailed description of the main strategy of inquiry 'case study' (section 4.1.3) followed by the integration of some ethnographic elements in my research in section 4.1.4. Blending these together suggests following an 'ethnographic case study' research methodology in section 4.1.5.

4.1.1. Qualitative research paradigm

My research attempts to explore the impact of technology-assisted language learning inside and outside the classroom on the psychology of EFL learners. I locate this line of inquiry within a qualitative research approach.

At the very beginning, the objective of my research was to uncover the relationship between technology integration and the psychology of language learners with a methodological framework based purely around case study. Then, as my research was developing, my research questions were changing and a desire to observe what is happening in the research setting in terms of technology use both inside and outside the classroom was increasing. This adds some ethnographic elements to my research and makes it sit more comfortably within a qualitative ethnographic case study research approach as described in section 4.1.5. Such an idea is

influenced by the postmodern paradigm in which 'one does not begin by choosing a method. Methods can be sufficiently flexible to grow naturally from the research question, and in turn from the nature of the social setting in which the research is carried out' (Holliday, 2016, p. 21).

In addition to this, when adopting a postmodern research view, I acknowledge that 'reality and science are socially constructed, researchers are part of the research setting, the emancipatory potential of according value to individual views, values, perspectives and interpretations [and the view that] what is important to look for should emerge' (Holliday, 2016, p. 16; Cohen et al., 2018, p.24). In the present research, what is written in the students' diaries, what is mentioned in their answers to the interview questions, what I observed and what I was told is regarded as a reality constructed by the participants and gives value to their distinctiveness and individuality. Moreover, the way I am interpreting the participants' words and actions makes me part of the world I am researching and being flexible when collecting data and constructing themes during data analysis are valorised.

4.1.2. Constructivism as an interpretive worldview

Any study is guided by a set of philosophical ideas which shape the researcher's approach to research. Such ideas are called *worldviews* (Creswell and Creswell, 2018) or *paradigms* (Cohen et al., 2018). These are general beliefs which can clarify and organise the thinking about the research. In investigating the relationship between technology-assisted language learning and the psychology of language learner, the research design and the framework of my research is informed by a constructivist paradigm which is often combined with interpretivism and assumes that:

> Individuals seek understanding of the world in which they live and work. Individuals develop subjective meanings of their experiences. These meanings are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meanings into few categories or ideas.
>
> (Creswell and Creswell, 2018, p. 8)

Consequently, it seems that Creswell and Creswell refer to constructivism as an approach that addresses *multiple and varied* forms of reality and *subjective* interpretation. In a like manner, Cohen et al. (2018, p.175) argue that:

> An interpretive paradigm rests, in part, on a subjectivist, interactionist, socially constructed ontology and on an epistemology that recognised multiple realities, agentic behaviours and the importance of understanding a situation through the eyes of the participants.

Constructivists address interaction among individuals to understand their attitudes and behaviours. They use approaches such as '*verstehen'* (understanding) and '*hermeneutic'* (uncovering and interpreting meanings) to make sense from the meanings participants have about the world (Cohen et al., 2018) and inductively generate or develop a theory or a pattern of meaning (Creswell and Creswell, 2018). Using an interpretivist paradigm requires researchers to skip their own assumptions about people and 'position themselves in the research to acknowledge how their interpretation flows from their personal, cultural and historical experiences' (Creswell and Creswell, 2018, p. 8). Accordingly, I consider a case of technology-assisted language learning in Algeria and I am trying to interpret individual meanings and differences learners have about technology integration in the classroom. I understand that any reality I was told or I observed in the study was a reality constructed by both student and teacher participants and my own understanding of their contributions during the research process.

4.1.3. Case study as the main strategy of inquiry

In order to gain a deep understanding of the effects of technology-assisted language learning on the psychology of language learners, I used case study research which is expected to catch the complexity and particularity of a single case of Algerian university students and teachers. The study is based on a set of features which characterize 'qualitative research', a label which is defined by Hammersley (2013, p.12) as:

> A form of social inquiry that tends to adopt a flexible and data-driven research design, to use relatively unstructured data, to emphasise the essential role of subjectivity in the research process, to study a small number of naturally occurring cases in detail, and to use verbal rather than statistical forms of analysis.

I selected case study as the main method of inquiry because it investigates a case or multiple cases in considerable depth and aims to capture the uniqueness of the case, rather than using the case as a foundation for wider generalization. Cohen et al. (2018, p. 376) mentions that 'a case study provides a unique example of real people in real situations, enabling readers to understand ideas more clearly than simply by presenting them with abstract theories or

principles'. In addition to this, case study research is the suitable and preferred method when: how and why questions are being posed, the investigator has little or no control over events and when the focus is on a contemporary phenomenon within a real life context (Yin, 2009).

I decided to do a case study because I want to 'understand a real-world case and assume that such an understanding is likely to involve important contextual conditions pertinent to [my] case' (Yin, 2018, p. 15). More precisely, it will be an *intrinsic case study* in order 'to understand the intriguing nature of a particular case [which] is of interest because of its own value or specialty' (Dörnyei, 2007, p. 152). In the same line of thought, Heigham and Crocker (2009, p. 69) describe an intrinsic case study as a case 'in which interest lies purely in one particular case itself. There is no attempt at all to generalize from the case being studied, compare it to other cases, or claim that it illustrates a problem common to other similar cases'. Yin's categorization of case studies, however, includes *descriptive case study* which carries the same meaning as Stake's *intrinsic case study.* According to Yin (2003), a descriptive case study aims to present a detailed, contextualized picture of a particular phenomenon.

Doing case study research helped me uncover the particulars of my participants and my results can be used 'to improve conditions or practice for that particular case (and also) may be extended to other cases where the particulars are similar' (Heigham and Crocker, 2009, p. 73). However, this requires 'a thorough understanding of the context [in order to] interpret what the particulars of the case mean' (Paltridge and Phakiti, 2010, p. 67).

My aim behind the decision to conduct a qualitative case study is to acknowledge multiple realities that may emerge when collecting data. Exploring a case of university students and the way they use technological devices, their attitudes and behaviours may be used to improve the situation and the learning experience of that particular case and the results of this study can be extended to other cases where characteristics and basics are similar.

4.1.4. Ethnographic strategies in my research

Ethnography as a naturalistic approach which investigates how people belonging to a certain culture behave or work is the main feature that made me adopt ethnographic elements in the present research. The use of ethnographic research in applied linguistics is stimulated by the so called 'social turn' in language learning and teaching. This latter 'develops in-depth understandings of language learning and teaching events in the specific social contexts within which they are taking place' (Paltridge and Phakiti, 2015, p. 139).

An influential and pioneering definition of ethnography which is commonly cited in the field of applied linguistics mentions that it is 'the study of people's behavior in naturally occurring, ongoing settings, with a focus on the cultural interpretation of behavior' (Watson-Gegeo, 1988, p. 576). Such an interpretation is subjective, developed by the participants themselves and this is an important feature that defines ethnographic research. Focusing on participant meaning is 'a central aspect of ethnography (in which researchers) find ways of looking at events through the eyes of an insider' (Dörnyei, 2007, p. 131).

According to Dörnyei (2007), ethnographic work includes four main phases: the first one involves entering the setting which is a strange milieu for the researcher. The researcher should discuss this entry with the gatekeepers, for example, in my case gatekeepers are likely to be the head of the department of English and teachers. This phase involves 'mapping the terrain, deciding who's who and keeping a diary with field notes' (Dörnyei, 2007, p. 132). After the researcher becomes familiar with the participants and the setting, now comes the second phase in which non participant observation is at the height of activity and the important task of finding key participants begins simultaneously when conducting initial interviews with them. Now the researcher feels at home in the setting and this allows him/her to use a variety of methods to collect focused data. Then, we have the final step which focuses on data analysis and more data is gathered to fill gaps, to clear up uncertainties and to confirm previous findings (Dörnyei, 2007).

Although traditional views of ethnographic work tend to recommend 'prolonged engagement' in the setting as Dörnyei suggests that 'a minimum stay of 6-12 months is usually recommended to achieve the necessary prolonged engagement' (2007, p. 131), this is referring to doing an ethnography rather that employing an ethnographic approach as I was. Holliday (2016, p. 14) strongly argues that 'there is a difference between doing an ethnography (which usually involves a sustained engagement with a particular setting), and employing an ethnographic approach'. In addition to this, several researchers (e.g., Holliday, 1997; Bax, 2006; Balchin, 2017) have employed an ethnographic approach for relatively small studies, without the need for extended engagement. Following this, the present piece of work is an ethnographic case study conducted throughout a period of three months in the setting.

Including ethnographic elements in research should be the right choice for me since my aim is to describe how a cultural group 'an EFL classroom' at a particular university works and to explore the beliefs, values and behaviours of students in that group. Additionally, I wanted to

learn from students and to understand the way they see their experiences using technological devices in language learning not only in a formal classroom but also in various informal settings outside the classroom.

Though I employed an ethnographic approach, intervention to some extent was unavoidable. Puttick (2015, p. 49) argues that 'As ethnographers, it is impossible to avoid intervening in some sense'. He believes that the observed situation – in which a teacher is judged as 'Requiring Improvement' – leaves the researcher with 'guilty knowledge' (Puttick, 2015, p.49). During the first visits to the setting, when carrying out observations and through interviewing some student and teacher participants, I noticed that the available teaching and learning facilities and infrastructure, the revealed students' interest in TALL and educational technologies, and the teachers' ability to use instructional technologies required the adoption of new approaches and the implementation of different ELT technology scenarios. When discussing this with teacher participants, I suggested the integration of two forms of blended learning, namely the flipped learning experience, and mobile-assisted language learning experience, as described in section 4.2.5. This kind of intervention is identified by Dennis (2009, p. 136) as an 'inclusive interpersonal mode of intervention' which involves speaking with participants to challenge beliefs or actions. It is openly discussed with participants and presents fewer ethical risks (Puttick, 2015). My intervention, therefore, was restricted to suggesting scenarios which were implemented in normal conditions, by the class teacher, in the usual classroom or language laboratory, using the material available there. My data collection, however, was not limited to the above-mentioned experiences and setting, I also considered the participants' experiences in various settings outside the formal classroom.

4.1.5. Ethnographic case study

'One can blend study designs to be able to use the best of each design that can mitigate the limitations of each as well' (Fusch et al., 2017, p. 923). This defines an important pragmatic and eclectic principle of qualitative research called 'Bricolage'. Such an approach in educational research denotes the use of multiple frameworks, methods and methodologies. Doing so, 'researchers are empowered to produce more rigorous and praxiological insights into socio-political and educational phenomena' (Phillimore et al., 2016, p. 9). In addition to this, Dörnyei mentions that 'case study research often utilizes ethnographic methodology' (2007, p. 131). Working in an ethnographic mode and having an ethnographer's eyes, ears and mindset helps the researcher 'see, hear and question with patience and without judgement' (Dörnyei, 2007, p. 131). Accordingly, no matter what research methodology the researcher adopts,

‘having the open-minded attitude of an ethnographer will help (him/ her) carry out well-balanced and revealing research’ (Heigham and Crocker, 2009, p. 107). The data collection methods that are commonly used when carrying out an ethnographic case study design are direct observation, field notes, reflective journals, informal/ unstructured interviews, focus groups (Fusch et al., 2017). However, ‘within a postmodern paradigm we will always employ whatever means seem appropriate to get to the understandings that we seek’ (Holliday, 2016, p. 20).

In the present study, I opted for an ethnographic case study in order to answer my research questions and reach data saturation. Initially, I started designing my research, formulating research questions and deciding about data collection instruments to be used without having a specific research methodology to drive my research. I soon decided on case study research to gain a holistic view of Algerian university students’ experiences using instructional technologies in context. Here context is important to the researched phenomenon; I wanted to focus only on the behaviours or attributes of individual learners under conditions created by me as a researcher. Now as my understanding of qualitative research design is developing, I realised that one of the aims of my research is to understand and interpret the behaviours and attributes ‘with a particular reference to the cultural basis for these behaviours or values’ (Heigham and Crocker, 2009, p. 71). The broader cultural orientation, in which students’ actions and behaviours are investigated in everyday life situations outside the classroom, is adding some ethnographic elements to my research.

4.2. Reflexivity, access, participants, and fieldwork

This section provides an account of researcher reflexivity and the way it influenced every stage of research in section 4.2.1. Next, it describes the research setting and access (section 4.2.2), participants (section 4.2.3), field relations (section 4.2.4) and an overview about the way I implemented technology in the setting in section 4.2.5.

4.2.1. Reflexive journey

Behind all qualitative research stands reflexivity as a central element of research. The concept of reflexivity is recognised as ‘the process of a continual internal dialogue and critical self-evaluation of researcher’s positionality as well as active acknowledgment and explicit recognition that this position may affect the research process and outcome’ (Berger, 2013, p.220). Such a position includes the researcher’s personal characteristics, experience,

knowledge, preferences, beliefs, age, gender, ethnicity, and cultural and national identity. Accordingly, the researcher cannot break free from the social world he/she is researching, 'does not pretend to escape subjectivity, and must therefore account for that subjectivity wherever possible' (Holliday, 2016, p.147).

Reflexivity 'highlights the journey of discovering how we, as researchers, shaped and how we were shaped by the research process and outputs' (Palaganas et al., 2017, p.426). At the early stage of my research journey, I perceived technology as purely positive and the integration of educational technologies in the classroom as an amazing facility teachers should use to assist the learning process and engage and motivate all learners without caring about individual learning attributes. In addition to this, the only barrier I used to have in mind is the lack of financial resources. I considered funding as the sole problem behind technology adoption and I did not recognise any other limitations. I tended to assume that technology automatically motivates students and help them learn more effectively without reflecting sufficiently on the case.

Nevertheless, as the study developed, I found myself thinking more reflectively about how confident are teachers as technology users, how ready are students to use technological aids, are the time and effort spent using the technological tool worth it, and what other things does technology bring to the teaching/ learning experience? Such reflections brought several changes to the research in general. Starting with my research topic, what had been the core of my research, i.e., technology integration and individual differences became only one aspect of my research which is addressed in one research question. Furthermore, my research is extending to include the students' technological experience outside the classroom as well. Accordingly, new research questions emerged and other data collection instruments were used to answer these questions.

Reflexive researchers cannot stand outside their values and biases; they 'need to look at themselves and their positionality as part of the research process' (Cohen et al., 2018, p.302). However, they need to monitor their reactions and interactions, their relationships with participants, their roles and biases and any other influence in the research. According to Berger (2013, p.220) reflexivity may influence every stage of the research in three major ways. Starting with 'access to the field', research notes that participants tend to share their experiences and information with someone who cares about their situation. Secondly, the nature of researcher/researched relationship plays a central role and may affect the data given

by participants. The researchers approach participants with their backgrounds and goals and these may affect the way they speak to their participants. Finally, the way the researcher constructs the world, formulates questions, chooses language, collects data and analyses it is influenced by his/her reflexivity. Holliday (2016, p.146) summarizes the above-mentioned methods as 'the way in which researchers come to terms with and indeed capitalise on the complexities of their presence within the research setting, in a methodical way'.

As suggested by Denscombe (2014) researchers do not start the research with 'a clean sheet', however they bring their own personal characteristics, experiences, knowledge and backgrounds. I realised that at the beginning of my data collection process, my background and previous experiences as a student for five years in the setting influenced my early data. Looking through the classroom observation data collected during the first two weeks and my questions in the focus group discussions, I noticed that the majority of my notes and my questions were about differences between the setting for this study now and how it used to be 4 years ago when I was a student there. I found myself all the time comparing the two settings in terms of technology integration. Teaching and learning facilities and infrastructure in the current situation did not indicate a noticeable change but when it comes to usage and practice things were different. Language laboratories, for example, are now used for their real purposes: teaching oral production and helping students improve their listening and speaking skills in the target language besides teaching phonetics and pronunciation patterns. Additionally, students and teachers are taking benefit from both the infrastructure (series of desktop computers all connected to the teacher's computer, headphones, projector, and speakers) and the software loaded there. Such an improvement preoccupied my mind and I perceived the research setting as positive and increasingly improving without reflecting sufficiently on the scope of my research and my role as a researcher in the field. My observation notes at that moment included comments such as 'fruitful investment', 'real exploitation' and 'meaningful use' and I did not recognise that I was comparing the two settings, projecting my background onto the research and therefore influencing the recorded data. Nevertheless, as I spent more time in the field, I became aware of the way my positioning is bringing subjectivity to the work and I came to focus more on individual learners and how they perceive the use of instructional technological aids in their language learning.

I also came to realise that I was giving preferentiality to participants who mentioned ideas that I agreed with and I only felt progress when informants shared views and experiences that I had. Here is a sample that I noted after interviewing Rim:

> Today I interviewed a teacher who is experienced in teaching and has a good relationship with technology. She has some very interesting ideas on technology integration and how it can serve individual learning in a positive way. She is an informative person whose thoughts will contribute adequately to my research. (Filed notes, 25 November, 2019)

Later as I interviewed more teachers, I became aware that I was supporting some informants and neglecting others according to the kind of data they were providing. I gradually realised that there were other opinions worth considering and even those views which I did not agree with will bring variety to my findings, as the following extract from my field notes illustrates:

> I have just interviewed a young sensible teacher who was answering my questions reflectively. She has distinct views and she mentioned different arguments that I haven't come across till now. I believe her views are bringing dynamism to the collected data. (Field notes, 10 December, 2019)

During early visits to the setting, I found myself comparing the use of the material and the degree of technology integration between now and how it was three years ago when I was a student there. Internet access at that time was limited to the local library and the study area. We used to have three language laboratories which are considered a high-resource context but used as a normal classroom since we were only allowed to use the chairs and the desks there, the teachers were rarely making use of the computer and the speakers to teach us listening. We usually used to listen to the teacher reading the script. The lab was not used for its real purpose: we used to study modules other than Oral production and Phonetics in the language laboratory and these two modules were taught in normal classrooms. Rooms were distributed to classes and decided randomly without taking into consideration the nature of the module and the number of students. Now and based on discussions with the head of the department and different teachers, the case is different. All Oral Production and Phonetics sessions are set out in the language lab. Teachers are integrating and students are allowed to use the material in the lab for listening, typing and pronunciation. All auditoriums are equipped with head-projectors and free internet access is provided almost everywhere in the department. Teachers look more ready to use technology in their teaching since some of them were queuing and disputing to get the data projector and take it to their classrooms. In addition to this and as a reaction to Covid-19 situation, the university took an unexpected step by creating online platforms and adopting an online teaching and learning program as discussed in section 7.2.3.

The observed improvement, in terms of the usage of language laboratories for their real purposes, the teachers' readiness to integrate technology and the availability of more hardware and software, made me expect a good effect on students' and teachers' perceptions which was supposed to be conveyed in the form of purely positive attitudes towards technology use. The fact that what was missing three years ago is now available and what was neglected is now considered tended to direct my interpretation of students' and teachers' views regarding technology integration at the beginning of the process. As the process developed and when analyzing the collected data, I realised that the students' expectations go beyond the availability of the hardware and software and they require a more principled manner and affective approach to technology integration which takes the psychology of the learner into consideration.

In short, this section was an overview of how reflexivity is affecting different stages of the research. It serves as a deliberate and conscious understanding of my position and its influence on the research process.

4.2.2. The research setting and access

Deciding the research setting in qualitative research is an important starting point which can be informed by 'the research purposes, the need for the research, what gave rise to the research, the problem to be addressed and the research questions' (Cohen et al., 2018, p.304). It determines 'exactly where, when and with whom the research will take place' and 'provides an environment in which [the above-mentioned elements] can be addressed' (Holliday, 2016, p.34). The setting for the present study is a city in north-western Algeria. Mainly, it took place within the English language department at the Faculty of Letters and Foreign Languages which has become an independent department recently. In terms of setting, my research involved the English language classroom, the language laboratory, the lecture theatre, the GVC room, foreign languages library, the university's learning space and other bordering areas outside the department. Such a setting seems relevant since it has 'a sense of boundedness', it is 'sufficiently small', there is 'access to take whatever role is necessary to collect data', it is felt to 'provide a variety of relevant, interconnected data', and there is 'sufficient richness' (Holliday, 2016, p. 34).

A detailed description of the research environments where I collected data and in which my research problem and objectives were addressed is provided as follows:

- **The language classroom:** In the researched setting, this can be described as a traditional educational space where teachers deliver knowledge to students. The

majority of rooms are equipped with 4 to 5 rows of either single or double desks and chairs and each row contains 5 to 6 desks. The desks in a small number of rooms, however, are arranged in U shapes to facilitate group discussions and mainly access for the teacher. The teacher's desk is placed in the front of the room next to the board. The classrooms are supplied with either a green chalkboard or a whiteboard or both of them. No additional teaching resources are found in these rooms. Teachers who want to use the projector in their class, need to check if it is available, bring it from the teachers' room, and fix it in the classroom.

- **The language laboratory:** This is a study room equipped with audio-visual electronic devices. It consists of a teacher console computer that is connected to 20 stations for individual students via a local area network. The teacher console includes a tape recorder, a headset, a microphone, and a system of switches to monitor the students' stations. Each student station also includes a headset and a microphone. The PCs in the laboratory are arranged in a U shape in front of the teacher's desk. The lab is also equipped with a speaker and a whiteboard. The equipment enables students to watch and listen to the teaching material in their screen and earphones, practise listening and hear model pronunciations of the English language, and record and hear their own speech and pronunciation.
- **The lecture theatre:** or auditorium, referred to as 'the Amphitheatre' in the researched setting. This is a large room with rows of hundreds of seats, arranged as tiered seating to enable students sitting at the back to see the lecturer and what is going on at the front. Lecture halls are equipped with a blackboard, a mobile whiteboard, a microphone, speakers, and an overhead projector.
- **The 'GVC' room:** The Global Virtual Classroom is a room with series of desktop computers used by students enrolled in the GVC program to individually chat with native speakers from other universities. In the middle of the room, however, there is a boardroom table and chairs used by groups of students for video-conferencing. They connect with other groups at other universities to communicate, practise speaking, and exchange knowledge. In addition to the desktop computers, the boardroom table and the manager's desk in the front, the room is equipped with a whiteboard, an overhead projector, speakers, microphones, and a web camera.
- **The foreign languages library:** This is attached to the whole faculty of foreign languages. It is supplied with books, articles, and other resources on the first floor and

it offers a large learning space for students to study and work individually or in groups on the second floor.

- **Mohamed Dib study area:** This has large tables and chairs and is used by students in their free time. Students mainly meet there for focused group work and collaboration, such as for group assignments or preparing and practising presentations. Students also use this space to eat, relax, and take breaks from their studies.

Another significant stage in the research process involves gaining access and permission and managing entry into the context. This starts by 'identifying the gatekeepers who facilitate entry and access to the group being investigated' (Cohen et al., 2018, p. 310). In this respect and in a personal email exchange with the head of the department of English, I obtained his permission to conduct my research there and I was given the green light to go ahead locating my research, deciding my sample and finding informants. This was a couple of months before getting there and I got his authorisation in a form of a signed approval letter as soon as I arrived to the field. Being a former student at the university where I collected data made entry into the context a smoother process. It was easier to identify the gatekeepers who facilitated entry and access to the field. I made use of previous affiliation and I continued building on existing relationships throughout the process to secure access and maintain rapport which is, according to Cohen et al. (2018, p. 312) 'not a one-off affair or in which access is negotiated and achieved on a once-and-for-all basis'. A brief chat with the head of the department and establishing a reason for being there were enough to gain his permission to conduct fieldwork.

In addition to the head of the department there were two teachers whom I identify as significant figures who showed a warm welcome and facilitated entry to their classrooms after listening to me explaining my research, my data collection process and what they were expected to do. I also provided them with a participant information sheet covering the background of my research, what are they required to do, the research procedure, matters of confidentiality and data protection and my contact details to have an idea about the research they are participating in and have the opportunity to ask questions. Besides oral agreement, they signed a written consent form to show understanding of their voluntary participation, confidentiality of data and agreement to take part and be audio-recorded. I tried to make things clear from the beginning especially that my research process extended over a period of three months and I achieved their goodwill and cooperation. Showing interest in the Algerian context and caring about the EFL department and the way educational change can be implemented drew the gatekeepers' attention and they showed readiness to share their experiences and provide support. Concerning

student participants, I was introduced to them by their teachers, all that I had to do is to provide them with details about my research and what were they supposed to do both orally and in the information sheet and at last I got the consent of those students who accepted to participate in my research.

4.2.3. The research participants

Deciding a population and recruiting an appropriate sample is one of the early, challenging tasks the researcher may face in the research process. Dörnyei (2007, p. 96) establishes the difference between sample and population as follows: 'the sample is the group of participants whom the researcher actually examines in an empirical investigation and the population is the group of people whom the study is about'. Researchers should be careful about how a sample is selected. In the present research, I am following a non-probability sampling in which I am 'targeting a particular group, in the full knowledge that it does not represent the wider population; it simply represents itself' (Cohen, 2018, p. 217). This matches the principles of qualitative research and is often the case of ethnographic research, case study research and action research. In the present research, the target population will be Algerian university teachers and LMD students at the department of English at a university in Algeria from which I took a sample.

- **Students' biodata**

The study involved 10 main student participants and 10 secondary ones. The main participants were a group of students whom I purposefully targeted when using the different sources of data collection. The secondary participants, however, participated only in the focus group discussion and wrote the diaries. They offered to discuss with their friends and jot down their attitudes because they were enrolled at the same class with the main participants.

My student participants belonged to the existing groups studying English at one of the Algerian universities. They were involved in the study through writing diaries, being observed and being interviewed. Those involved were in the age group of 18 to 30 years old. They came from government schools and they were baccalaureate holders. Prior to entering university, they had studied English for seven years: four years in middle school and three years in secondary school in different streams. Arabic is their mother tongue; French is their first foreign language and English is their second foreign language. The main student participants were Abdelillah, Aya, Ghoutia, Fatima, Siham, Akram, Malika, Linda, Kawther, and Ismail. The secondary

participants were Anas, Salma, Manel, Amira, Ahlem, Salah, Sarra, Firdaws, Rihab, and Marwa.

These participants are born in the era of technology, the majority - if not all of them - had a smart-handheld device (smartphone or tablet…) and they used them for multiple purposes: socializing, entertainment, personal management and educational reasons as well.

- **Teachers' biodata**

The second group of my population was seven teachers selected randomly among the existing 73 teachers in the department to interview about their attitudes and experience in the field. Their codified names were Rim, Imene, Amel, Lina, Clara, Cylia and Rafik. They are all teaching English at the same Algerian university and either holding or preparing for the Doctorate degree. They had varied teaching experience and they were in charge of different modules basically related to two specialties: Literature and Civilization plus Language Studies.

4.2.4. Field relations and changing roles

There has been much discussion concerning the researcher's position and how it may affect the research process. Besides being a researcher, other identities have been attributed to me in relation to participants.

Starting with teacher participants, I came to realise that they perceived me in three different ways: in some situations, they tended to see me as 'a former student and future colleague', they expressed a warm welcome and they showed their readiness to participate and provide help. At other times I was perceived as 'a model for their students': they presented me to their students as someone who used to be a student there a few years ago, simply as they are at the moment, and now as a PhD student in one of the UK universities. I have also been viewed purely as a researcher who visited them seeking their help and contribution in my research. In addition to these, there have been some incidents that made me think of my position as an insider to teachers as the one described below:

> Today Rim requested my help invigilating her students at an examination. She coincidentally saw me in the corridor when she was looking for someone to replace her because she had to leave for a moment. She called me and requested my assistance without hesitance and as simply as she would do with any other colleague. [Field notes, November 18, 2019]

This was unexpected but motivating and helped me realise the different roles I had in the setting. I gained an insider status and considered the situation as an opportunity to develop rapport with the teacher and get closer to students.

Another incident that prompted my status as an insider in the setting is described in my field notes as follows:

> When waiting for a student with whom I had an interview near the teachers' room, Rafik, a teacher participant, walked right past me, he saluted me and after a brief discussion about my research and how things are moving on, he commented on my standing waiting for a student and recommended to enter the teachers' room and take a seat there and the student will come to look for me'. [Field notes, January 9, 2020]

Such an instance made me realise that I was treated as a colleague and as someone who has the right to reach the teachers' room and sit there. Then, I came to understand that my position as a PhD student is shaping my relationship with my teacher participants and such a relationship is not as simple as the relationship between the researcher and the researched.

In the above-mentioned situations and other similar occasions, I felt very much an insider to teachers. However, this was not the case with my student participants especially at the beginning of the process. Though we shared a similar background: We are all Algerians, we belong to the same age group, we all speak Arabic and switch to French and English in daily speech and they are all English language learners at the university where I studied a few years ago, they attributed to me different identities. Starting with first year students, I was introduced to them by their teacher as a researcher who is doing a PhD in the UK and seeking their participation in her research work. At that moment, students perceived me as an 'expert' who used to be a majoring student there and now is an international student coming from the UK to collect data about them. Third year students, on the other side, my first contact with them was when I invigilated them in an examination. Then they saw me frequently with their teachers either inside or outside the classroom and therefore I was given the status of a teacher and I felt a kind of teacher/student relationship with them. I have not felt an insider to them and I experienced some degree of discomfort. This largely impacted the initial steps of my data collection process as I noted in my research diary:

> In my focus group discussion with students today, students appeared uncomfortable and not at ease to share with me their attitudes and

> experiences. They gave me the impression that they were careful to what they were saying, they were making kind of superficial answers and kept calling me 'Miss' simply as they do with their teacher. Such reactions made me feel uncomfortable with them as well'. [Field notes, 20 November, 2019]

Furthermore, I came to realise that student participants in the focus group discussion were making efforts to speak in English and looking for suitable vocabulary to express themselves though I gave them the freedom to use the language (Arabic, French or English) they feel comfortable with. I was even using Arabic to show them that the language is not as important as their ideas and insights especially with first year students who still find difficulties expressing themselves. Later as I spent more time with them both inside and outside the classroom and after multiple attempts to get closer to them, I gained their confidence. They perceived me as someone caring about their situation, their feelings and preferences in language learning. They showed more readiness to help and they felt at ease to share with me their feelings and tell me personal experiences in both the diary and follow-up interviews. We built better and closer relationships: we kept in touch through social media, they engaged me in their study groups, they requested my help in their studies and they invited me to cultural events they were part of. Consequently, they treated me as a friend, supporter, advisor and researcher while I had to remind myself that they are my participants.

4.2.5. Integrating technology scenarios in the setting

As a part of designing my research, I decided to conduct a classroom research in which I chose together with the class teachers the technology uses we implemented in the classroom. We opted for two different forms of blended learning with varying access to resources and technology. These scenarios were carried out by two different teachers and they are described as follows:

- **The flipped learning experience**

Together with the class teacher, we chose an instructional video that suits what they were dealing with in the classroom at that moment. After having a look at the syllabus, we decided to flip a lesson about idioms (weather idioms). The class teacher provided the link to the video on the blackboard at the end of the session and I posted the video in their Facebook learning group so that they could access content at home. Since some students live in the university campus and they do not have internet access there, the teacher gave them a week period to see

the video and take notes of what they have learned. Class time, therefore, was devoted to activities and application of what they had learned before coming to class. Activities gathered individual work on sentence completion using the idioms learnt from the video, group work on solving the sentence maze and communicative pair work when performing a dialogue using weather idioms. Three students from the whole group did not do the necessary pre-class work. For this reason, the teacher started the class by a quick diagnostic speaking activity in order to remind those who had seen the video of its content and give the three students who hadn't done pre-class work an idea about the lecture and what they will be dealing with in the session.

- **Mobile-assisted language learning experience**

During my visit to the setting, a teacher participant informed me that her students were required to give oral presentations in class. Here I decided to seize the opportunity and use mobile devices and interactive presentation software as a mean for students to give feedback on their classmates' presentations. So, after each presentation, students were asked to use their mobile devices (either smartphones or tablets) to log in to "Mentimeter.com" and use the code to join the presentation that I had already created and in which they stated their opinions regarding their peer's talk. The session was held in the language laboratory and we used the system fixed there to project students' feedback on the screen.

Both technology uses were implemented in classroom with different students in order to have their feedback at the end of each session through diaries.

4.3. Data collection

The present research is a qualitative ethnographic-case study designed based on multiple sources of data collection namely interviews (including both focus group discussions and one to one interviews), learners' diaries, observation and field notes in order to handle the situation from different angles. More specifically, two focus group discussions were held with two different groups of students at an early stage of the process, seven interviews were carried out with teachers, seven one to one follow-up interviews were carried out with students, learning diaries were written by two groups of students, ten observations took place and field notes were written throughout the whole visit to the setting.

4.3.1. Interviews

At early stages of my research when I was thinking about appropriate data collection methods, I opted for semi-structured questionnaires as an instrument to get EFL students' and teachers'

views about technology integration in classroom practice. I thought that such questionnaires would give respondents the platform to voice their opinions about digital technologies, let them answer questions creatively and they would have the freedom to include details about their feelings and explain their feedback. After piloting my questionnaires with two students and two teachers to check the clarity of the items, I realised that the use of the questionnaire is to some extent limiting data especially that the majority of my questions were attitudinal questions asking about emotions and perceptions and requiring detailed information. Respondents' answers to the questionnaire in the pilot study were very brief and did not allow for dynamism. When I read their answers, I did not feel that they conveyed feelings and emotions. Accordingly, I tried to be more flexible and I intentionally used interviews and focus group discussions to get more in-depth answers.

- **Focus groups**

Focus group discussions were used at the outset of the study as a means of gaining different views and beliefs regarding TALL and educational technology at higher education. The use of focus groups or what is labelled group interviewing is in harmony with Brinkmann and Kvale who mentioned that 'focus groups are characterized by a non-directive style of interviewing, where the prime concern is to encourage a variety of viewpoints on the topics in focus for the group' (2018, p. 80).

The first focus group discussion was carried out with a group of twelve first year LMD students and the second one was held with eight third year students in order to 'gather data on attitudes, values, perceptions, viewpoints and opinions' (Cohen et al., 2018, p. 532). All the participants in the focus group discussions were accessed by 'snowball sampling' where 'people are used as informants to identify, or put the researchers in touch with, others who qualify for inclusion' (Cohen et al., 2018, p. 220). I used the two teachers whom I considered as gatekeepers to put me in touch with student participants. My aim behind using focus group discussions was to gather qualitative data from participants' interaction with each other and bring different viewpoints on technology-assisted language learning. As Cohen et al. reveal 'here the participants interact with each other rather than with the interviewer, such that the views of participants can emerge' (2018, p. 532).

My role, however, was to introduce the topic for discussion, to lead the discussion and to keep them to the focus of the discussion. I took Brinkmann's and Kvale's advice 'to create a permissive atmosphere for the expression of personal and conflicting viewpoints on the topics

in focus' (2018, p. 80). I invited students to express freely their point of view regarding technological tools and whether they use them to support their English learning. I tried to check if they would like to include the use of technology in their classes, and if there were any technologies that they dislike or would prefer to avoid and why.

- **Teachers' interviews**

My rationale behind interviewing teachers was to gather data about their beliefs concerning technology integration in their teaching. I used interviews rather than questionnaires in order to 'explore issues in depth, to see how and why (teachers) frame their ideas (…and) how and why they make connections between ideas, values, opinions, behaviours, etc' (Cohen et al., 2018, p. 506). Questioning and listening actively to what the teachers were saying helped me better reveal what they think about using technology in the classroom for teaching/ learning purposes.

In planning and conducting my interviews, I followed Brinkmann's and Kvale's (2018, p. 41) guidelines which are set out in seven stages beginning with 'thematizing' when the purpose of the research is decided. This step makes clear the reasons why interviewing was chosen. As mentioned before, I wanted to go deeper into the teachers' attitudes and actions in technology-assisted language learning environments. Then, follows 'designing' the interview which entails formulating the questions taking into consideration the objectives of the interview and what I was trying to find out. Next, the process moves to 'interviewing' which is the actual conduct of the interview. I selected teachers haphazardly according to their availability. This sampling strategy is called 'convenience sampling' and it involves 'choosing the nearest individuals to serve as respondents and continuing that process until the required sample size has been obtained of those who happen to be available and accessible at the time' (Cohen et al., 2018, p. 218). I had to introduce myself and explain the purposes of the interview in case that was the first contact with the participant. The time for the interview was set up in advance either by email exchange or face to face meeting with them. The interviews were conducted in different settings within the university according to the quietness of the place; it was either in an empty classroom, in the teachers' room or the teacher's office. Seven teachers to whom I had easy access were interviewed and the length of the interviews varied from one teacher to another: the shortest one did not exceed 20 minutes and the longest one took one hour. After the interview, the majority of interviewees offered their phone numbers and email addresses to keep in touch and have the opportunity to ask follow up questions related to their answers. Another crucial stage in the process is 'transcription' which according to Cohen et al. (2018,

p.523) includes different kinds of data such as ‘what was being said; the tone of voice of speaker; the inflection of the voice; emphases placed by the speaker; pauses, silences and interruptions; the mood of the speaker and the speed of the talk’. Afterwards, ‘analysis’, ‘verification’ and reporting’ make up the next steps in the procedure.

- **Students’ follow-up interviews**

Conducting one-to-one interviews with students seemed to be a suitable continuation to the data that I obtained through focus group discussions, observation and learners’ diaries. The research interview is as Brinkmann and Kvale put it ‘an inter-view where knowledge is constructed in the inter-action between the interviewer and interviewee’ (2018, p. 2). My interview questions were built upon the insights I gained through the focus group discussions and what each student wrote in his or her diary. When selecting students to be interviewed I used ‘purposive sampling’ in which as its name indicates, each informant had been chosen for a purpose. I opted for this form of sampling at a certain stage in my research since I needed to ‘handpick the cases to be included in the sample on the basis of their judgement or their typicality or possession of the particular characteristics being sought’ (Cohen et al., 2018, p. 2018). I selected seven students who showed more readiness to share personal information in the focus group discussion and who provided me with different insights in their diary. Accordingly, the interview gathered follow-up questions which differ from one interviewee to another and additional questions in order to get in-depth information about their feelings and experiences in technology-assisted language learning situations. The interview meetings were fixed in advance either in a Facebook or face-to-face chat. They were conducted in a quiet learning space at the university. The use of such interviews gave informants the platform to voice their opinions about learning technologies and let them answer creatively including details about their feelings and instances from their learning experience. I also used Covid-19-follow-up discussions since I felt the need to interview some participants during the Covid-19 pandemic to explore their perceptions of and experiences with TALL and online education during such difficult circumstances. I interviewed two teachers and two students to whom I had access.

4.3.2. Learners’ diaries

Besides collecting students’ and teachers’ attitudes towards technology use in the teaching/ learning process and after using different technology scenarios, the impact of such technology integration on individual learners was approached using personal diaries after each experience

since ‘they offer the opportunity to investigate social, psychological and physiological processes within everyday situations’ (Dörnyei, 2007, p. 156). Diary studies capture the experience as it is lived by an individual. In second language learning and teaching, they are defined by Bailey and Ochsner (1983, p. 189) as:

> An account of a second language experience as recorded in a first-person journal. The diarist may be a language teacher or a language learner – but the central characteristic of the diary studies is that they are introspective: the diarist investigates his own teaching or learning. Thus he can report on affective factors, language learning strategies, and his own perceptions- facets of the language learning experience which are normally hidden or inaccessible to an external observer.

In the present research and at the end of each session, learners were given 10 minutes to jot down their ideas about how they felt after integrating technologies into their lessons. This act in research is referred to as ‘event-contingent design’ in which participants are required ‘to provide a self-report each time a specific event occurs’ (Dörnyei, 2007, p. 157). Through personal diaries, I got the students’ thoughts and feedback on what they enjoyed most and least and how each had felt when using instructional technologies inside and outside the classroom. Students were asked to write their feedback and feelings, in as much details as possible, openly and honestly, and they might use Arabic, French or English to write them. In addition to this, instructions and guidelines about how to write diaries and what to include in their writing were given to students in the first session.

Students’ attention was directed to the fact that they can provide their answers anonymously so that I get reliable feedback. Furthermore, I assured them that their responses would be treated in confidence and for research purposes only, and if there were missing points or an idea that needs explanation in their diaries, follow-up discussions would be used to fill in the gaps.

4.3.3. Observation

‘Besides the competencies of speaking and listening used in interviews, observing is another everyday skill, which is methodologically systemized and applied in qualitative research’ (Flick, 2009, p. 222). Such a skill includes all the senses in order to get information about participants’ external behaviour. My desire to carry out observations emerged when my research was developing and broadening to also embrace the difference between the learners’ technological experience inside and outside the classroom.

According to Heigham and Crocker (2009, p. 166), observation is 'the conscious noticing and detailed examination of participants' behaviour in a naturalistic setting'. In the present research, when I was integrating technology in the learning process inside the classroom, my observation took the form of a non-participant observation 'where the observers place themselves depends on the setting and the purposes of their research and their placement may change as the study develops' (Heigham and Crocker, 2009, p. 167). In order to identify the reason behind the technology gap in the classroom, I was following the flow of events and maintained distance from the observed participants in the beginning in order to avoid influencing them.

My observation took place in settings outside the classroom as well. It wasn't limited to observing learners but also interacting with them while they were performing their normal tasks. In this sense, I was 'observing behaviour, listening to what is said in conversations both between others and with the fieldworker and asking questions' (Bryman, 2016, p. 423). This helped me uncover the learners' familiar routines and activities and what is actually going on in terms of technology use in language learning.

According to Flick (2009, p. 227), observation is a process which moves through three phases starting from 'descriptive observation' which 'serves to provide the researcher with an orientation to the field under study [and] develop more concrete research questions'. At this step, my focus was on the way students use technology for educational purposes outside the classroom and what educational technology resources they were using outside the classroom to help them achieve academically. Then came the 'focused observation' phase which 'narrows your perspective on those problems and processes, which are most essential for your research question' (Flick, 2009, p. 227). Here I focused on the actual technological practice students are experiencing individually outside the classroom and what makes it different from the one they have inside the classroom setting. Finally, there is the 'selective observation' phase in which the focus is on 'finding further evidence and examples for the types of practices and processes found in the second step' (Flick, 2009, p.227).

Ten observation sessions took place in different settings inside and outside the classroom. Inside the classroom was either in a normal classroom or in the language laboratory. Outside the classroom, however, was in the library, the learning space, the global virtual classroom (GVC), the palace of culture in addition to accidental observations which were carried out at surrounding places such as the bus stop and the university corridors.

Questions that arose in my mind when I was in the field are how much observation shall I carry out? Or when do I stop observing? Research mention that it is appropriate to stop observation when theoretical saturation has been reached. Cohen (2018, p. 555), on the other hand, suggests to carry on observing even when the situations that are being observed are reporting data that have already been collected because 'the greater the number of observations, the greater the reliability of the data might be, enabling emergent categories to be verified'.

4.3.4. Field notes

Field notes included all the notes I was taking during my data collection process with the exception of the ones taken during observations which are considered observation data. Because of the weaknesses of human memory, researchers are recommended to take notes after hearing or seeing something interesting. As Bryman (2016, p. 440) describes, field notes are 'fairly detailed summaries of events and behavior and the researcher's initial reflections on them. The notes need to specify key dimensions of whatever is observed or heard'. Accordingly, my notes are a combination of descriptive and reflective information. The descriptive content involves a description of the physical settings, date and time, participants, their roles in the setting and their reactions to the classroom and outside the classroom experience. Reflective information, on the other hand, is my ideas, impressions, and thoughts I had about the lived experience.

The inclusion of field notes as an assistive data collection instrument is motivated by two methodological imperatives suggested by Silverman (2017, p. 332) which are 'a concern with what participants take to be routine or obvious [and] a recognition that what is routine is best established through watching and listening to what people do rather than asking them directly'. My aim was to record in details what was happening inside the classroom when the teacher and learners came together and instructional technologies were integrated in the teaching/ learning process and also outside the classroom when learners were free from classroom boundaries and performing their everyday tasks.

Preserving detailed field notes is important but time-consuming and energy-absorbing. For this reason, I followed Silverman's advice (2017) which suggests making short notes at the time and expanding them after each field session. In the same vein, notes, thoughts and impressions of events were written in the afternoon or evening each day 'while they are fresh [otherwise] they will vanish into the night' (Bernard, 2013, p. 345).

Field notes can take different forms and it is useful to classify them in different types (Bernard, 2013; Bryman, 2016). In the present research, my notes included two different types which are described by Bernard (2013, p. 346-352) as follows:

- **Jottings:** these include 'things that just strike you as you are walking along'. They 'provide you with the trigger you need to recall a lot of details that you do not have time to write down when you are observing events or listening to an informant'.
- **Field notes:** including methodological notes, descriptive notes and analytic notes.

Accordingly, my field notes recorded what my participants did, how they reacted, what they felt and how they expressed this. They also included my descriptions, thoughts and insights, my reactions and my reflections on the methods, the data collection process, ethical issues, problems and dilemmas. These notes helped me gather additional data needed to answer my research questions.

4.4. Data analysis

This section describes the data analysis process which started mentally during the data collection phase to become a more structured and documented type of analysis at later stages. It starts by giving an overview of the data analysis process and then describing how different themes were generated.

4.4.1. Overview of the data analysis process

As suggested by Newby (2014, p. 845), qualitative research is a complex field which collects a variety of data derived from many sources. The data collected in the present research takes different forms ranging from 'words', that existed in the learners' diaries, those that arose in focus group discussions and those I collected through interviews, and 'behaviour' that I observed during my visit to the research setting. In qualitative data analysis, as Cohen et al. (2018, p. 643) remark, 'there is no one single or correct way to analyse and present qualitative data; how one does it should abide by fitness for purpose'. Since my research is an attempt to gain insights about students' and teachers' views, experiences and opinions about technology integration at higher education and its impact on individual learner differences, I used thematic analysis which seems to be a suitable approach to answer questions dealing with participants' ideas, beliefs, knowledge and experiences from a set of qualitative data. I chose a 'reflexive' approach to thematic analysis which 'allows for social as well as psychological interpretations

of data' (Braun and Clarke, 2006, p. 37). Using the reflexive type of thematic analysis seems to be a good fit with the objective of my research which lies in interpreting the impact of TALL and the use of educational technologies at higher education on the psychology of the language learners. In addition to this, as I highlighted in section 4.2.1, my reflexive practices during data collection and analysis encouraged me to look at the data with an open, analytic eye. Reflexive thematic analysis, therefore, 'emphasises the importance of the researchers' subjectivity as analytic *resource*, and their reflexive engagement with theory, data and interpretation' (Braun and Clarke, 2021, p. 330).

The reason behind adopting a reflexive thematic analysis approach is its flexibility as a method; it offers the researcher 'either or' choices and it does not require one specific orientation to data, coding practices, and themes development (Braun and Clarke, 2021). I adopted an inductive approach to analysis as a means to determine findings and then create possible themes with enough subjective intervention. These themes were the result of an active interaction with my participants and reflexive construction of data that is relevant to the general aim of the study rather than emerging from data. Undertaking reflexive thematic analysis inductively is not *an atheoretical method;* this however requires bringing theoretical assumptions and myself to the analysis. During the journey of data analysis, I used some concepts and theories which helped me make sense and better interpret the data. In this regard, Braun and Clarke (2022, p. 9) suggest that:

> Themes are not waiting in the data to "emerge" when the researcher discovers them; they are conceptualized as produced by the researcher through their systematic analytic engagement with the data set, and all they bring to the data in terms of personal positioning and metatheoretical perspectives. Data analysis is always underpinned by theoretical assumptions, and these assumptions need to be acknowledged and reflected on.

When conducting this type of analysis, I followed Braun and Clarke's (2006, 2012, 2019, 2021) detailed description of the process of thematic analysis which follows a number of steps starting by 'data familiarisation and writing familiarisation notes' in which the researcher generally looks through the data to get familiar with it. It involves transcribing audio recordings and making notes on preliminary ideas to provide a description of the content. Next, the process moves to 'systematic data coding', the step when the researcher starts organising his/her data into meaningful groups. It is 'the process of breaking down segments of text data into smaller

units and then examining, comparing, conceptualizing and categorizing the data' (Cohen et al., 2018, p. 668). In other words, generating codes involves highlighting sections (sentences or phrases) of the transcribed data and coming up with labels or codes that describe the content.

As a next step, we have 'generating initial themes from coded and collected data', when the researcher starts searching for themes which are generally broader than codes. Here the researcher collates the codes and tries to identify patterns among them in order to come up with themes. After generating themes, the researcher needs to make sure that these themes represent data accurately. This is called 'developing and reviewing themes': it is when the researcher returns to the transcripts and other data extracts and explore whether the themes are present in the data and whether the data is supporting the theme. There should be a meaningful coherence within one theme and a clear distinction between separate themes. Now, as the researcher is aware of the final themes, it is time to provide a name and a description of each theme. 'Refining, defining and naming themes', as the fifth step in the process, involves formulating exactly what is meant by each theme and providing an understandable name for each. After defining the essence that each theme is about, the final step is about 'producing and writing up the report', when the researcher provides a clear account of what he/she has done throughout the whole research process.

4.4.2. Coding the data and generating themes

After translating, transcribing and reading the collected data, I went through the process of coding which is defined as:

> The ascription of a category label to a piece of data, decided in advance or in response to the data that have been collected (…) It is the process of breaking down segments of text data into smaller units, and then examining, comparing, conceptualizing and categorizing the data. (Cohen et al., 2018, p. 668)

When it comes to coding my data, I used a combination of three types of coding: descriptive coding to categorisation to analytic coding (Gibbs, 2007, p. 42). Descriptive coding is the initial form of coding, simply attaching a label to a piece of data. In terms of labelling the data, I used anonymised names in addition to the source of that piece of data, as shown in the following table:

Data Forms	In-text Labelling
Students' focus groups	(name of participant, focus group discussion)
Students' follow-up discussion	(name of participant, follow-up discussion)
Teachers' interviews	(name of participant, teacher interview)
Students' diaries	(name of participant, diaries)
Observation	(observation notes, date)
Field notes	(field notes, date)

Table 3: Labelling the data

At this stage, I read carefully each interview transcript, diary, observation note, field note, and provided descriptive comments in the margins of each text (See Appendix 9). These comments were related to my focus area, research questions, and other possible lines of inquiry. I simultaneously started the categorisation of data which 'goes beyond a mere descriptive labelling of the relevant data segments' (Dörnyei, 2007, p. 252). I highlighted similar or related data which could be clustered together under a category such as 'motivation', 'autonomy', 'comfortable learning', and 'visual learning'. Following this, coding became more analytic and themes began to emerge. An analytic code 'might derive from the theme or topic of the literature, or responsively, from the data themselves' (Cohen et al., 2018, p. 671). The process of developing themes was gradual, starting with initial and possible themes such as 'determinants of students' attitudes towards technology' and 'determinants of teachers' perceptions of technology'. Then, these were developed and refined to construct final themes and subthemes which I related to the reviewed literature and the research questions during the writing up process.

Reflexive thematic analysis is, as highlighted by Braun and Clarke (2021, p. 331), 'not intended to be followed rigidly'. My approach to data analysis did not necessarily follow a systematic

step-by-step process and there is no clear cut-off between different steps. It aligns with Holliday's (2016, p. 103) description of the formation of themes which is as follows:

> … Arriving at the themes can be the result of formal data analysis, but can also be born from what was seen during data collection. Often the themes have been growing within the researcher's mind through the whole research process. Researchers often know the character of their data regardless of any formal analysis. It is after all largely a product of their own thinking during the process of collecting and recording.

Developing themes is, therefore, the result of the construction that my mind was making during the process of data collection. I deliberately recalled thoughts and understandings that I developed when collecting, recording, and transcribing data and rearranged them in a structured way. I started by generally looking through and quickly familiarising myself with the collected data, then I made connections to what I felt was happening in the setting and I tried to make sense of it and organise it under headings and sub-headings.

4.5. Writing up the research

The themes emerging from the collected data were organised into three chapters from 5 to 7. In writing about the data, I followed the process recommended by Holliday in qualitative inquiry, which involves three different components. Starting with 'the argument' which 'says what has been found … (and) it is part of the argument of the whole written study'. Then, I provided 'data extracts' which 'are taken from the corpus and deployed strategically to provide evidence to support the argument'. These were followed by 'discursive commentary' which 'tells the reader which bits of each data extract are significant and why, showing the reader how they provide specific evidence to support the argument' (Holliday, 2016, p. 98).

In writing up my research, I have tried to provide a thick description which 'gives the context of an experience, states the intentions and meanings that organised the experience, and reveals the experience as a process' (Denzin, 1994, p. 505). Another reason to create a thick description was to demonstrate the interconnection 'not only between argument, commentary and the data, but also between the different bits of the data and how they relate to each other' (Holliday, 2016, p. 111). The relationship between the argument, data, and commentary was simply demonstrated by providing 'the data, the sources, how it interconnects, what the data means,

how each extract means what it means, and the relationship with theory' (Holliday, 2016, p. 112).

Another feature of the writing up process was the inclusion of findings and discussion in one section. This made it easier to correlate the findings with discussions and so increase the readability of the study. I would agree with Morehouse's claim that during the writing up process of a qualitative manuscript, 'the themes that emerge from the data are often framed within the context of the theoretical issues' (2012, p. 98).

Although I encountered some issues in the writing up process such as deciding where to place particular sections or how to order data chapters, there were some strategies which facilitated the construction of the present piece of writing. Reading a considerable amount of well-written qualitative research work in my area of interest or what is referred to as the use of 'textual mentors' (Heigham and Croker, 2009, p. 289) inspired me, made me familiar with different writing techniques, and helped me make decisions about how to organise my writing. In addition to this, keeping a research journal is a practical tip which assisted me practise different styles of writing. A research journal may include 'commentary on readings; confusions and decisions; personal reactions to field works (…); descriptions of people and places; ratings and ravings' (Heigham and Croker, 2009, p. 298). Another technique which helped me review my writing was sharing drafts with a critical reader, who is a fellow researcher, with whom I discussed my approach to writing.

4.6. Ethical considerations

Each piece of research raises ethical issues and dilemmas for the researcher and what is considered ethical or not may vary from one researcher to another. Cohen (2018, p. 111) announces that 'ethical research concerns what researchers ought and ought not to do in their research and research behaviour'. More precisely, Bryman (2016, p. 121) reveals that ethical considerations revolve around issues like: 'how should we treat the people on whom we conduct research? (And if) there are activities in which we should or should not engage in our relations with them'. Such issues are more important in qualitative than quantitative approach because qualitative research, according to Dörnyei (2007, p. 64), 'often intrudes more into the human private sphere: it is inherently interested in people's personal views and often targets sensitive or intimate matters'.

As Heigham and Crocker (2009) note, it is convenient to consider ethics on two levels: 'the established procedures and protocols' such as seeking approval to carry out the study, and 'the specific ethical dilemmas encountered in the conduct of a study' which are the issues that arise in the practice of research. In addition to this, research mention that ethical concerns depend largely on the context of research and may arise from 'the nature of the research project itself, the procedures to be adopted, methods of data collection, the nature of the participants, the type of data collected, what is to be done with the data and reporting the data'. Thus, Dörnyei (2007, p. 72) suggests that 'what we need is a contextualized and flexible approach to ethical decision making, relying more on the researcher's professional reflexivity and integrity in maintaining high standards'.

Ethical considerations run throughout the whole process of research and are present at each stage. Paltridge and Phakiti (2015, pp. 247-251) address ethical practices over three phases:

- **Prior to conducting and at the start of the study**: at this stage I followed standard university procedures and guidelines to gain ethical approval to conduct the study. I also kept in mind, from the start, ethical considerations such as protecting the participants' anonymity, confidentiality, privacy, non-maleficence and non-traceability in the research. Another important issue at this step was seeking participants' consent using an understandable consent form with simple language and translated into the local language. I followed Heigham and Crocker's list (2009, p. 276) of basic ethical principles underlying informed consent:
  - The participants are as fully informed as possible about the study's purpose and audience.
  - They understand what their agreement to participate entails.
  - They give that consent willingly.
  - They understand that they may withdraw from the study at any time without prejudice.

  When I easily obtained written consent from all student participants, some teacher participants preferred to suffice with verbal consent, but I had to get their written consent for ethical purposes.

- **During data collection and data analysis:** at this stage, I tried to 'adopt a flexible approach when dealing with ethical problems that may emerge in specific research contexts' (Paltridge and Phakiti, 2015). An example of these problems can be

research bias which includes prestige bias, self-deception bias, and acquiescence bias and needs to be factored in. During data collection and specifically when using the interviews, I took care of 'the degree of threat or sensitivity of the questions [and] the reactions of the respondents. For example, they may react strongly if they consider an item to be offensive, misleading, intrusive, biased or irritating'. Furthermore, official permission to undertake classroom observation was obtained from teachers and students and writing diaries was completely voluntarily. All the data is treated as confidential and presented as anonymous.

When it comes to data analysis, I followed, as recommended, 'a four-step data analytic process that includes coding, determining themes, constructing an argument and going back to the data' in order to achieve 'transparent, rigorous and informed data analyses' (Paltridge and Phakiti, 2015).

- **Reporting the data and publishing the study**: when reporting findings, I should be selective in 'disclosing and brokering information to evade harming my student and teacher participants'. Moreover, after completing the research, 'deliberate efforts [will be] made to share my findings with a broader audience through journal publications and presentations at conferences to honour my participants' (Paltridge and Phakiti, 2015, p. 251)

4.7. Trustworthiness

Instead of focusing on validity and reliability, qualitative researchers prefer to use the term 'trustworthiness' which is believed to be a good fit with qualitative studies. Trustworthiness also called rigor of the study, 'refers to the degree of confidence in data, interpretation, and methods used to ensure the quality of a study' (Connelly, 2016, p. 435). In a similar vein, Heigham and Crocker (2009, p. 264) define trustworthiness as:

> A set of standards that demonstrates that a research study has been conducted competently and ethically. Observing these standards convinces the reader that the study has merit and worth and that the results are credible and therefore potentially useful to guide further research and practice.

They suggest that a study's trustworthiness is made of competent and ethical practice. They also mention two sets of standards to judge the trustworthiness of qualitative research which

are ‘does the study meet general guidelines in the field for acceptable and competent practice?’ And ‘does it demonstrate sensitivity to ethical issues?’ (Heigham and Crocker, 2009, p. 265).

Related to this, Paltridge and Phakiti (2015, p. 51) indicate that ‘because of the inevitability of subjectivity, the validity and trustworthiness of the research will depend on how this subjectivity is managed’. They state that good research depends on three principles namely: ‘transparency of method’, ‘submission’ and ‘making appropriate claims’ (Paltridge and Phakiti , 2015, p. 52).

In this research, I tried to address the above-mentioned standards and principles and establish some criteria that constitute trustworthiness. Each of these criteria is described below:

Credibility: Heigham and Crocker (2009, p. 269) suggest several strategies to help ensure that the study has credibility. These include:

‘Prolonged engagement or being there’: I spent a period of three months in the setting keeping in touch with student and teacher participants generally from 8:30 to 16. I accompanied participants in different locations inside the department and in other bordering areas outside the department (as described in section 4.2.2). After leaving the field, I continued interacting virtually with the majority of participants through social media and email exchange to carry on with follow-up discussions and to check with them my initial analysis of their views and behaviours. I believe that the amount of time I spent with participant was enough to make sure that I ‘have more than a snapshot view’ of the experience.

‘Triangulation’: using a variety of data collection methods namely interviews, focus group discussions, observation, learners’ diaries and my field notes helped me ensure that I ‘have studied more than a small fraction of the complexity that [I] seek to understand’ (Heigham and Crocker, 2009, p. 269). Obtaining multiple sources of data together with giving the context of the experience allowed a ‘thick description’ to be developed and built the full picture that I am exploring accordingly.

‘Participant validation’: four participants were invited to provide feedback, elaborate, correct and extend my initial analysis of the points they made in the interview and the diaries.

‘Using a critical friend’: In addition to the comments and discussions provided by my supervisory team about the emerging findings during data collection and analysis in both physical and virtual meetings, I had a critical friend who questioned my decisions, categorisations, and explanations.

‘Using your community of practice’: starting from data collection until the final stages of writing up the study, I engaged in critical discussions with trusted participants and other researchers in the setting who are my previous teachers and will be future colleagues. I regularly discussed emerging and tentative ideas with fellow researchers whose research involved the same research setting and similar research procedures.

Transferability: Connelly (2016) explains that qualitative researchers demonstrate that the research findings are applicable to other contexts and situations, but this is different from statistical generalization. In the present research, my analysis, discussions, and interpretations were context-dependent, but can be applicable to other settings where particulars are the same. These particulars include the characteristics and the basics of the research context and the assumptions that were central to the research.

4.8. Summary

This chapter has presented the methodology that I used in this study. It was organised around seven sections and it described the research design, the research setting and participants, data collection instruments, the data analysis process, ethical considerations, and the trustworthiness of the study. All of which led to the construction of the major theme of the study: the complex and dynamic impact of TALL and educational technologies at higher education on individual learner differences.

Having outlined the research design and decided data collection instruments and my approach to analysis in this chapter, the following three chapters describe the findings of this research. The next chapter highlights students’ voices and teachers’ reflections about technology integration in language teaching and learning.

CHAPTER FIVE

5. STUDENTS' VOICES AND TEACHERS' REFLECTION ABOUT TECHNOLOGY INTEGRATION IN LANGUAGE TEACHING AND LEARNING

This chapter presents findings determining students' opinions about technology use in their learning and teachers' reflections about technology implementation in their teaching process. In an attempt to gain insights into the students' individual attitudes and teachers' views and actions in ELT technology scenarios, I decided on a number of fundamental factors which appeared to contribute in determining both my student and teacher participants' voices and how they perceived the situation. The chapter begins by identifying the foundations of students' attitudes towards technology and how they come to affect different learners' perceptions of ELT technology experiences in section 5.1. It then presents in section 5.2 data shaping teachers' views regarding technology implementation which are formed out of certain dimensions that make them after all decide whether to integrate technology in their classroom teaching or not. Next, findings about positive attitudes regarding instructional technologies and the efficiency of technology in language learning are discussed in section 5.3. The final section 5.4 is devoted to features of inadequacy of educational technologies reported in the data.

5.1. Determinants of students' attitudes towards technology use

The purpose of this section is to identify fundamental elements which seemed to be responsible for different positive and less positive students' attitudes towards technology implementation in language learning. There are a number of competing factors that contribute to students' perceptions of TALL which therefore should be taken into consideration by teachers when implementing an ELT technology scenario. Teachers when deciding about an appropriate use of technology and before starting using it with students should be concerned with the level of their students, the novelty of the technological experience and their strategy of implementation in the classroom. When conducting both the focus group discussion and one-to-one interviews, I realised that both students when stating their opinions and teachers when describing their students' experiences regarding TALL and educational technology use in higher education refer to these elements as key factors on which they build up their views.

5.1.1. The level of students

The level of students is an important factor shaping learners' views about using instructional technologies in their learning process. It appears that though students at upper levels (Masters students) are more familiar with and more ready to use instructional technologies, they showed less interest and comfort when integrating technology in their classes. Students at lower levels (undergraduates), however, reacted more happily and felt more excited when being part of technology-assisted language learning situations.

The level of the students at university was largely mentioned by teachers as a basis for their students' reactions towards technology implementation in the classroom. Rim, a teacher who has been in charge of different levels at university for a long period of time, realised that students' behaviour changed completely from their first year at university until their MA studies. At upper levels, students start having a very basic point of view regarding technology and they prefer discussion in the classroom:

> When I started welcoming first year students at the language laboratory, they were really happy and curious about using it at that level…Later on, in their second and third year, whenever we had the chance to use the lab, I realised that students are not behaving the same way, they are less positive and just complaining…. I was really surprised that more than 60% of third year and Masters students are against using too much technology in the classroom and they prefer to have face to face communication with the teacher. (Rim, Teacher interview)

This seems to be more than an observed behaviour by a teacher since initial excitement was also conveyed in the first-year student Abdelillah's words when he said that:

> When I entered the lab, I was really happy and excited… I said in my mind this is the lecture that I will never miss and that lecture is actually my favourite now just because of the way she (the teacher) uses videos and other technologies. (Abdelillah, Follow-up interview)

Happiness and excitement were the reactions of a first-year student when attending lectures in the language laboratory. An incident reported in my field notes, however, indicated that students in upper levels (MA students) showed less interest in technology integration. The teacher informed her students that the remaining lectures of the semester will be devoted to

student-made videos, she was giving them guidelines and pieces of advice concerning video making when:

> The majority of students seemed uncomfortable when the teacher is telling them about video-making. First, a heavy silence covered the room; students seemed confused or nervous about what she is saying. When a student asked some questions about the task, others immediately started complaining: one is grumbling about the workload and other assignments they have to do in other modules, and another one is criticizing the complexity of the software. (Observation notes, November 11, 2019)

Both the happiness felt by Abdelillah and the uncomfortable feeling experienced by MA students in technology-assisted language learning situations can be associated with their level at university. This reflects Benadla and Hadji's finding that 'Master students have negative attitudes towards E-learning, and they would prefer face-to-face interaction in the classroom and handouts more than virtual learning' (2021, p. 55).

Nevertheless, there seems to be other ways certain stages in students' learning help decide their attitude towards technology implementation. Clara thought that students at advanced levels show more willingness to use technological aids and she suggested that:

> First year students keep looking to the projector more than focussing their eyes on what is projected. The more the level is up; the more students are ready and accept to use it because they become more familiar with it. (Clara, Teacher interview)

Therefore, there seems to be a variation in attitudes and readiness between different levels experiencing technology implementation in their learning. Though MA students were more familiar with technology use and it became a kind of habit for them, undergraduate students when discovering the university and ELT technology scenarios were more optimistic about the experience. This leads me to think about the novelty of the technological experience and how it may influence the learners' views about using instructional technologies in their learning process.

5.1.2. The novelty of the technological experience

The novelty of the technological experience in language classrooms at university compared to secondary schools played a decisive role in determining students' attitudes towards technology incorporation in language learning.

After implementing different technology scenarios in different classrooms at university, I realised that some students from different levels actually refer to the novelty of the experience when giving their opinion regarding technology use. The following positive claims are extracted from first year students' diaries:

> …We used the laptop and watched the video before coming to class, that was new for me… (Anas, Diaries)

> Seeing a video is not new for me but the way we checked it at home before coming to class and having an idea about the lesson is something new and effective. (Salma, Diaries)

> This method is very useful… I understood the lesson easily and we had more time for tasks and activities… This is new and helpful. (Manel, Diaries)

The newness of the experience seems to affect the views of students at an advanced level (third year students) as well. When commenting about a mobile learning experience implemented in the classroom, third year students stated the following:

> Today's session was totally different and the way we used our mobile phones to give feedback to our classmate is really new… (Malika, Diaries)

> …This new way is very interesting since it gives the chance to shy people to give their opinion… (Amira, Diaries)

Some teachers as well talked about the impact of the novelty of the experience on the reactions of students who are coming from a completely traditional learning environment:

> Students come from an environment which is totally different from university. In secondary school, the teacher is the total authority, he is doing everything and he doesn't use technology except in some TPs [practical work]. Seeing teachers presenting lectures using the data show is something new for them. (Clara, Teacher interview)

> Students are not used to technology in classrooms at the secondary level. Here at university, they are really curious about using technology, new things, new ways and even the shape of the classroom is completely different from a traditional one. So, having this new environment could push them and motivates them to learn more and behave positively in the classroom. (Rim, Teacher interview)

Here is another instance where the novelty of the experience was addressed when discussing the use of instructional videos as an aid in the classroom. Abdelillah with a smiling face reported the following:

> Watching a video as part of classroom learning is a new activity that makes me question myself: what's going to happen later… I wonder what will happen in the video…. However, listening to the teacher talking and talking is sometimes boring. It's the same thing for the past 12 or 13 years. The teacher is always the same and delivering information in the same way. (Abdelillah, Follow-up interview)

Though he referred to the experience as 'a new activity', he thought that his attitude would remain the same after multiple exposures:

> I think my reaction would stay the same no matter how longer they use technology with us because we had this old way of teaching and it's being around for many years… So, it's going to take lot of time for me to feel bored using technology and I would love to use it again and again. That's not about it happened the first time or 50 times, it was more of amusement and pleasure. (Abdelillah, Follow-up interview)

The modest pace at which technology is presented and used in the classroom at the secondary level before coming to university seems to affect students' reaction towards technology supported learning environments. Behind some positive comments and happy attitudes stands the adjective 'new' as a reference to this student's feeling, yet he showed some certainty and awareness that he would have the same feeling and satisfaction if the technological situation is experienced repeatedly. Up to now the novelty of the technological experience is standing behind different students' positive perceptions. Aya also used the word 'new' when describing

her experience in the language laboratory but she perceived it differently. She described her first entry to the lab as a strange experience and something hard to manage when she said:

> The first time I entered the lab and attended the oral production module which necessitates technology use, it was a bit difficult and strange. It was the first time to use it and I am not used to it. It is something really new but when I find it beneficial, I find myself enjoying. Since I could see the difference between this and a lecture in the normal class, I did not care to that difficulty, I tried to manage and I am more familiar and accustomed to it now. (Aya, Follow-up interview)

She also expressed a feeling of anxiety when she reported another involvement in the language laboratory:

> One time at the very beginning of the year, we were practising listening in the lab and I didn't know how to access the document in the computer, I got a bit anxious because I don't have the habit to work using the university's material and I couldn't manage to listen and type at the same time but by time things are getting easier. (Aya, Follow-up interview)

Aya, here in both experiences, associated the complication and struggle she used to have and the anxious and uncomfortable emotion she used to feel at the beginning of the year when using technology with the novelty of the experience. After five months since the beginning of the year in September until January when I interviewed her, she was no longer consciously aware of the struggle and her unfamiliarity with the situation. She also tried to manage the difficulty and her negative feeling towards TALL tasks.

The kind of anxiety reported in Aya's words seems to be a situation-specific anxiety which has a facilitating influence in her learning. Such certain degree of anxiety at the beginning of the year can be linked to 'beneficial anxiety' by (Dörnyei and Ryan, 2015) since she could manage the strangeness of the situation and became accustomed to technology-based language learning.

The above findings stressed the novelty of the experience and how it drives different views regarding technology integration. Though the majority of participants related their favourable opinion to the newness of the experience, there was an exceptional case who linked anxiety and discomfort felt in English language teaching technology scenarios to the fact of being new and different than usual.

Ghoutia, however, is a third-year student who is no longer impressed by technology use in the department of English Language since she has been exposed to the same material and the same methodologies. She clearly mentioned that:

> Technology is no longer an effective tool in the department, we have only the usual: data show and speakers. Two years ago, I was interested to the teachers' method when presenting the lecture. Later, it became the same thing: the same old material and the same old methodologies and nothing new. (Ghoutia, Follow-up discussion)

The fact that there was no novelty in the use of technology during her studies at the department, Ghoutia seemed not to care about the way she is taught. Fatima, on the other hand, when commenting in her diary on a repeated mobile-assisted language learning experience, revealed that:

> Today's experience is not a new thing for me; one of our teachers used it with us before. She divided students who have internet connectivity in their mobile phones on different groups and we used to work collaboratively. I enjoyed it a lot, sharing information and debating on a virtual level was amazing. When we used this strategy (mentimeter.com) today, I remembered that good time and I hope we will repeat it again and again. (Fatima, Diaries)

Though there was no novelty in the experience reported by Fatima and the strategy used in previous years and now is the same, she still enjoys the use of the interactive software in classroom learning and expresses the wish to use it over again.

There seemed some evidence from the findings above that the novelty effect was the source of motivation, increased interest and other students' positive behaviour. Such positive reactions connect to 'the wow stage' which is 'a stage of enthusiasm at which we start to have exaggerated expectations of what the technology can do for us' (Bax, 2010, p.245). Once the novelty waned and some students became accustomed to certain technology uses, their interest decreased and no attention was directed to the technological learning experience. In other cases, however, even after multiple exposures to the same technology scenario, students reported enjoyment, motivation and comfort mediated by the satisfaction of their basic psychological needs. Here the process goes beyond 'the wow stage' and technology use becomes normalised in learning (Bax, 2010). Students' need-satisfaction is echoed in Ryan and Deci's self-

determination theory which suggest that when different needs are satisfied and supported, positive outcomes such as motivation, internalization and learning will follow (2017).

The next section considers the teachers' way of implementation inside the classroom and how it affects students' reactions towards TALL and technology integration in higher education.

5.1.3. The teachers' strategy of implementation

The practice of the technology scenario by the teachers at university affected students' response to the technological experience. Students clearly referred to their teachers' use of the materials or strategy of implementation of educational technologies either when praising or criticising certain classroom technological situations.

Fatima, when giving her opinion about technology integration in her learning career, recalled a previous experience when one of her teachers used to bring the data projector very frequently to the classroom. She reported that:

> The teacher was presenting too much information in one session and she used the data show as an aid in order to be able to give a long lesson which should be delivered in no less than two sessions. I remember that I left the room with no information in mind and when I used to see her entering the room holding a data show, I used to get bored because she was not using it the right way. (Fatima, Follow-up discussion)

Here Fatima looked uninterested in this kind of technology integration in the classroom because of the way the teacher incorporated it. When conversing with a teacher who showed appreciation for the use of the data projector in a similar situation, she declared that:

> I have a lecture in second year syllabus which is overloaded with information and if I would present it orally it would take me two or three sessions which is not a time I can afford. We have a very loaded syllabus and a very limited time. So, I present it using the PowerPoint and I give it only one session. The PowerPoint presentation helps me gain time and put everything I want in a very short time. (Cylia, Teacher interview)

The aim of the above-mentioned teacher's strategy was to save time and to be able to cover the intended content of the syllabus. The same strategy, however, was the reason behind the

student's feeling of boredom and lack of interest when implementing the data projector in classroom learning.

Moving to another student who stressed the role of the teacher in technology contexts and thought that technology integration requires an appropriate use from the teacher:

> The use of the data show, for example, is beneficial but it depends on the way it is used by the teacher. Some teachers fully rely on it; they take a seat and start moving slides of a PowerPoint presentation and explain the lecture or maybe just read the content of the slides. The slides are full of lines without animations or colours. In such a situation, I don't feel like technology is assisting me as a student. (Siham, Follow-up discussion)

Siham, here, criticized the teachers' over-reliance and dependency on the tool. In another context when describing a flipped learning experience conducted by one of her teachers, she revealed:

> One of our teachers used to send us lectures in a form of a video. We watch it at home and when we come to class, she just summarizes the content of the video. It was at the end of the semester and we did not have time to finish the programme. Such a method was advantageous: I felt like I am relying on myself and when I extracted the rules from a video, I couldn't forget them later on. The only drawback is that we (students) were not used to this technique and a week after we had to sit for an exam… She (the teacher) did not care if we have understood the content of the videos and she opted for a formal exam to test us. (Siham, Follow-up discussion)

Here the participant pointed to a flipped learning situation where she experienced both independent and active learning and simultaneously commented on the way the teacher used this technique with them. The absence of presentation and explanation of the new technique, lack of feedback from students and immediate testing after the experience by the teacher, according to her, reduced the effectiveness of this technique. For this reason, Clara suggested some strategies that she follows when using the data projector with her students:

> There should be interaction with students and with the device. We have to mention brief points, examples, statistics, diagrams… and always after using it give time for students' reflection. I can understand if it was successful or

> not through their interaction and getting their feedback by the end. I ask them what do they think and whether they want me to use it again. (Clara, Teacher interview)

An appropriate use of technology, according to this teacher, requires students' interaction and reflection about the use. Rim's description, however, went beyond this and she insisted on rapport with students and the role of the teacher that cannot be performed by a computer or any digital tool. She noted that:

> Direct contact with students, discussing with them and integrating them in the classroom, asking them questions and making them collaborate with you doing your teaching process are the most important things that should be taken into consideration when using technology or not. I prefer to be late and not avoid this kind of communication in the classroom. (Rim, Teacher interview)

I believe that successful technology integration requires wise use and careful implementation from the teacher. The teachers' use and strategy of implementation of technological aids was one of the bases on which students ground their views about technology integration in their learning. Some teachers also showed different degrees of awareness of their role in TALL environments.

In this respect, Hockly (2017, p.22) suggests a principled manner for teachers to integrate technology into classroom practice by asking themselves a set of questions at the planning stage. Considering such questions, according to her, ensure a meaningful strategy of implementation and support for students' learning. She formulates them as follows:

> What technology is available? What will students learn? What does the technology bring to the activity? What is the syllabus fit? Is the effort spent on learning to use the tool worth it? Is the time spent on using the tool in class worth it? What skills do I need? What skills do my students need? Where and when will the tool (s) be used? Do my students consume or produce information with the tool?

The following section concerns dynamics shaping teachers' different attitudes towards technology integration.

5.2. Determinants of teachers' attitudes towards technology integration

Teachers' views towards and actions in ELT technology scenarios also were formed out of certain perceptual dimensions that help them ultimately decide whether to integrate technology in their classroom teaching or not. Teacher participants shared some views about technology but they had many different personal perspectives on how they use technology. I tried to make connection between their opinions and actions in the classroom and I identified perceived students' needs, students' misuse, the utility of the experience and teachers' status as key bases for teachers' attitudes. It seems that teacher participants related their positive thinking about technology and their readiness to use it with their students to the utility of the experience. They also clearly referred to their status and their students' misuse of the technological devices as barriers and obstacles that push them to avoid and inhibit technology use with students. Their students' needs, however, was the only factor responsible for different teachers' reactions since it led them to either implement, reduce or avoid technology use according to the situation.

5.2.1. Perceived students' needs

Most teacher participants took their students' desires into consideration before taking any action in the classroom. The 'student' was largely mentioned by teachers as a reference to their actions, behaviours and decision making in their teaching in the classroom.

Rim is an experienced teacher who feels lost if she is teaching in a normal classroom and not the language laboratory, yet she still appreciates the use of traditional methods in her teaching practice. When checking with her if there are any reasons that make her feel she needs to use technology in the classroom, she largely referred to the students she is facing:

> Everything is based on my learners. I always pay attention to the motivation and the desire of my students to work with something rather than the other in order to help them challenge themselves, improve, evolve… etc. If I find that the majority of my students are in favour of using technology more than the classical method, I use it but most of the time it is 50% technology 50% traditional teaching. I use traditional methods and I complement my teaching using technology. (Rim, teacher interview)

Then, as she decided here to include technology in her teaching based on her students' desire, she also chose not to in other cases because of her students' expectations. When interviewing

her, she reported an incident when she had to follow her students' desire and she did not oblige them by using technological aids. She said:

> …I asked students of Literature and Civilization to select something that they would like to present in the classroom and prepare something about it using the data show and the lab material. In fact, most of the group would like to dedicate their session for reading because they come from a literary background and they have already read many books. Though I am not specialist in literature and I don't read literary books, I agreed on that and each session we selected one student to speak about a famous literary book and explain it …So, we didn't need to use technology but it was a really nice and fruitful experience… (Rim, Teacher interview)

Another incident described in my observation notes was when the same teacher asked her MA students to make a video project as part from 'creativity and performance' module which is about students' innovation and ability to use devices. She set the dates for each presentation two weeks before the week they are expected to start presenting. In the session I was observing them, three students were expected to present their videos but none of them was ready to do so:

> When the class started, the teacher asked them 'who is ready to start?' No one answered. They looked uncomfortable and they started complaining about the workload they have to do in different modules. Since this presentation is part of their evaluation and she couldn't eliminate it, she tolerantly decided to give them more time and provide detailed guidelines and necessary information about the presentation and the tools they are required to use. (Observation notes, November 11, 2019)

In each of the three above mentioned incidents, this teacher is considering her students' needs, expectations and circumstances when deciding classroom activities and technology integration in her teaching and her students' learning. Her behaviour in the classroom varied from one situation to another in order to meet her students' demands. She decided to use technology based on the desire of her students in a certain situation; she withdrew her decision to use technological aids based on her students' requirements in other conditions and she encouraged students and facilitated the use of the material under different circumstances.

The point of considering students' demands is tackled by Clara who described herself as an 'eclectic' teacher who tried to include technology in her teaching and pursue what is happening in the world. She stated that:

> Students themselves ask for change and since we are agents of change and the most important part of the process, we have to do the first step towards innovation and I think one part of innovation is technology implementation in the classroom. It won't be an authority, it won't replace the teacher ever but it is an amazing aid. (Clara, Teacher interview)

Clara felt that she is responding to her students' demands when she integrated technology in the classroom. Cylia, on the other hand, did not think that her students are expecting her to use any form of technology. She argued:

> I don't think students really care how I am going to deliver the lecture whether using a PowerPoint presentation or any other physical support… They just want to receive information and understand the content, they don't care how… I am not really into the teachers who use PowerPoint constantly or all the time. I don't feel like it is attracting and immersing the student… It is not really including the student in the learning process. (Cylia, Teacher interview)

While Rim is varying her decisions regarding technology integration according to her students' different needs in different circumstances, Clara and Cylia tend to make their choices based on a static belief they have concerning their students' needs and expectations in the classroom.

Rafik, however, in an attempt to take his students' requirements into account, confessed a mistake that he used to make with his students when teaching the Oral Production module and expressed the desire to implement change in his teaching practices when he said that:

> When I taught Oral production, I was quite a beginner and I used to have a slogan: "the more you produce, the more you get. You say none, you get none". I excluded listening and it was my mistake because we don't have a module for listening, and students need to listen, so we had to include it with oral production. I confess that I did a mistake and I haven't integrated listening and if I teach oral production again I will include it and I will use the lab to teach it. (Rafik, Teacher interview)

Here Rafik is willing to change his teaching habits in order to accomplish the students' need for listening when studying a foreign language.

Though these teachers were approaching the situation differently, the students and their needs remain their first focus when adopting different classroom practices. Teachers' attitudes and actions are also built on the students' misuse of technology which is discussed below.

5.2.2. The students' misuse of technology

Students' misuse of technology can create negative perceptions and thinking about technology use in the classroom. Teachers mentioned different students' behaviours and actions in the classroom which refer either to using technology in the wrong way or using technology for the wrong purpose. Cylia, when justifying her position regarding technology implementation, she generally commented on the unsuitable and unintended way students are using technology:

> When I am asking them for example to write a literary analysis, instead of thinking about the text that they have been provided, they have all the answers on the text sheet they only need to think about them, they would go on the internet and find answers. So, they are too dependent I would say on technology. (Cylia, Teacher interview)

In fact, such thinking is also present with students. A first-year student 'Ahlem' believes that technology is making her lazier since she 'just start copying without doing efforts' (Ahlem, Focus group discussion).

Rim also noted that social media is useful to keep in touch with students but to a certain degree because they may use it wrongly:

> …When we are in the classroom, I can put limits and keep respect when communicating with students but I can't manage disrespect when we are behind the screen. Some students behind a screen feel more at ease to discuss and overstep the limits. So, that's why we should know how to fix limits with our students through technology. (Rim, Teacher interview)

Students as well are aware of this and they recognised the misuse and disrespect they may show through technology:

> You know using Facebook we can do anything and say anything, create a fake profile and say what we can't say in real life and in front of a teacher and this can be dangerous. (Ismail, Focus group discussion)

Distraction as well seems to affect teachers' points of view. Students are frequently unfocused and distracted as I noted repeatedly in my observation notes:

> Many students, especially those sitting at the back of the classroom, keep checking their mobile phones. They seem distracted from classwork and they are caring neither to their teacher giving instruction nor to their classmate giving a presentation. (Observation notes, November 13, 2019)

> Today, some students spent more than 30% of their in-class time either checking social media, taking photos or texting their friends. This was really disruptive in the class especially that the teacher kept telling them to hide their devices… (Observation notes, December 03, 2019)

This is not only something that I observed but students themselves are blaming social media for being a total distraction in the classroom. Salah said:

> Social media is always distracting me inside the classroom. I can't concentrate with the teacher when I have internet access in the classroom. I only stop checking it if the teacher is in front of me and I couldn't use my phone. (Salah, Focus group discussion)

Teachers' reactions to this varied from one teacher to another. Lina questioned herself about how to react to distractions. She seemed confused when she mentioned:

> In such a situation [when students are distracted], you find me always asking myself what shall I do! It is a big challenge for me as a teacher to attract their attention in the presence of their mobile phones. (Lina, Teacher interview)

Rafik, however, was really bothered and annoyed by students' use of mobile devices inside the classroom. One of the instructions he gives to his students in their first meeting is that 'among the things that I hate is a mobile phone on the table. Put it aside, please'. He also reacts strictly to distractions created by mobile phones in the classroom:

> If I find someone texting or doing any other thing, I blame, insult, offend and ask him or her to leave my classroom because me myself I am not using my phone and they know my point of view regarding this from the beginning of the year… (Rafik, Teacher interview)

This teacher considered such use of mobile devices as bad-mannered and the students using their devices in this manner as not respecting the sanctity of the classroom. Rim, in another position, tried to solve the distraction issue by building rapport with her students and incorporating mobile phones into lessons. After observing her class and noting that students are less distracted in her sessions, I asked her what's the secret behind this and she confidently stated:

> I am creating a specific environment in my classroom through direct contact with students, discussing with them, integrating them in the classroom, asking them questions and making them decide about their learning. I prefer to be late and don't avoid such kind of communications in the classroom. It is a way to motivate them and make them feel they are important in order to make them feel at ease in the classroom and forget their mobile phones for a certain moment. I also make them use their mobile phones in the class time and keep an eye on how they are using it. I organise quizzes using mobile phones and I allow them to use their mobile dictionaries… (Rim, Teacher interview)

To sum up, using mobile phones in classroom learning can be a beneficial and an attractive experience as long as students use them effectively. Effective use, on the other hand, depends to a large extent on the teacher's role in the classroom. The next section is devoted to the utility of the experience and its role shaping teachers' attitudes regarding technology implementation in the classroom.

5.2.3. The utility of the experience

The state of being useful and able to perform several functions attract the teachers' attention when using technology. Each teacher relates to the fitness for some purpose in his or her teaching when revealing their points of view regarding technology use.

Cylia, who does not use technology constantly, still finds it useful for certain purposes. When giving her opinion on how much technology should be used in the classroom, she suggested the following:

> I use technology as much as needed. It is not a general rule for me that I have to use technology every day or avoid it every day. If I want my students to interact with me using technology or I am teaching them something that is usually done on internet or using multimedia devices in general, I do. Otherwise, I am a teacher of literature; I usually work with papers and literary texts. Sometimes I do use some videos just to put them within the context but I always go back to the use of papers. (Cylia, Teacher interview)

This teacher referred to the degree of need she feels about technological aids in her classroom, yet she also emphasised the nature of the module/ course and the content of lectures when justifying her use of technology. More details are mentioned in the next comment:

> As teaching study skills last year, I found myself using technology almost each session. The first lecture was about the use of the internet, so I made my students connect and make some research on the internet. Other lectures were about critical thinking, extracting ideas and so on. So, I was playing videos in the class and making them interact and respond with the video they were watching in class. …The lab, for example, was very useful for creativity and performance as a module because we have speakers, computers available for everyone, the data show was fixed and ready, we could use it whenever we wish and it was easy. (Cylia, Teacher interview)

Cylia related her decision to integrate technology to its usefulness for different modules and what she is tackling in each one. The same point is also raised by Baghdadi et al (2022) who emphasise ICT's effectiveness for Civilization classes. They reveal that technology 'is a means to exposition to authentic materials and culture (…), enhances students' critical thinking and invites them to question the past, so that students have to think rather than simply remember and recall' (pp. 1535-1536).

Rim, however, linked her attitude to certain classroom practices such as assessment in which she praises the use of language laboratories:

> During exams, for example, I take the three language laboratories and I do the exam in one hour and a half. But if we don't have labs and the technology there, I would work with more than 120 students in one day because I have to respect the time devoted for exams and assessment. Doing the exam simultaneously for different groups using language laboratories is really time-saving. (Rim, Teacher interview)

Rim spoke highly about the use of language laboratories for assessment purposes since she found them convenient for shortening the amount of time needed to assess a big number of students and therefore exploit it as fully as possible. Rim deliberately used technological equipment to ease her teaching duties and reduce her workload. Imene, on the other hand, was unintentionally flipping her classes. Because she was late in her teaching programme, she thought of a solution which is:

> I started sending them lectures in their emails and I asked a student to post it on their Facebook group a week before the session. When we come to class, I re-explain things briefly and quickly. If I feel they haven't read the lesson or they have not understood the content, I will surely explain things in details. This way I will minimise explanation and won't feel the need to repeat again and again. I also give them a small activity so that they feel the need to read the lesson. Low level students who need repetition to get an idea will benefit a lot from this method. (Imene, Teacher interview)

Here Imene involuntarily used such hybrid learning approach because of its usefulness for the teacher's comfort and the students' benefit. It could be argued, therefore, that different teachers are gaining different benefits from technology, each according to its ability to satisfy a particular need in his or her teaching. Though the teachers mentioned earlier show different feelings regarding technology use when they said: 'I cannot work without technology' (Rim, Teacher interview), 'I am not into the teachers who use technology constantly' (Cylia, Teacher interview), and 'I believe on pens and papers and I do not feel ready to start using technology in my teaching practices' (Imene, Teacher Interview), they all talked about how useful technology is for them in different classroom situations and practices in their teaching. This reflects the point made by Bouaricha and Hamzaoui (2021) that English for Academic Purposes teachers seem to believe in the usefulness of ICTs for different teaching purposes. They highlighted the capacity of ICTs 'to facilitate their pedagogical tasks in the explanation of

lessons', 'organise the language practice activities and enhance the interaction among students', and 'generate output quality with faster results demonstrability' (pp. 81-82).

The following section treats the teachers' status and how it is responsible for certain less positive teachers' attitudes.

5.2.4. The teachers' status

Some teachers also regarded their professional standing as a barrier that makes them choose not to use technology with students or get in touch with them online. Their position as teachers and the boundaries they are setting with their students did not allow them to maintain contact with students online outside the classroom. Rafik mentioned that:

> …They are my students and I am their teacher and we should keep limits. I won't give them the chance to interact with me online otherwise they will end up showing disrespect… (Rafik, Teacher interview)

> When interviewing another teacher who feels tired when sending emails to students, she revealed that she does not want to join them on social media in order to keep her personal life and personal matters unknown to students. (Imene, Teacher interview)

Students in their role were aware of these teachers' reactions and tend to understand their reasons:

> At the beginning of the year, we created a Facebook group and asked our teachers to join it because it is easier to share stuff. They all have Facebook accounts but they didn't accept to join the group. They want to keep their private life away from education. (Ismail, Focus group discussion)

> Some teachers think that there should be a barrier between them and their students and if we keep in touch with them on Facebook it means we are not respecting them anymore. I think they have their reasons, they want us to respect their privacy and personal lives. (Abdelillah, Focus group discussion)

In summary, the way these teachers view themselves, their profession and their position in relation to students affect the way they perceive online communications with students.

From the above findings and discussion, I infer that teachers should consider their students' needs and expectations and the usefulness of the technological experience for their students' learning when they feel that they should use technology with their students and they are not entirely sure why. Additionally, teachers when deciding to integrate technology in their classrooms should expect students' misuse and wrong applications of technology and should be careful about setting boundaries with students through technology in order to protect their privacy and maintain their status as university teachers.

This section discussed factors relating and determining teachers' attitudes and accordingly actions and behaviours in TALL environments. The following one considers increased efficiency features of educational technologies.

5.3. Efficiency features of educational technologies

The purpose of this section is to pinpoint key benefits showing the effectiveness of technology implementation on students' language learning. Educational technologies offered a number of assistances to teacher and student participants in their teaching and learning processes. Increased interest in learning, free learning, diverse uses and easy access are the benefits valued by students and teachers when evaluating educational technological experiences.

5.3.1. Increased interest in learning

Implementing educational technologies in the language classroom at higher education drives some students to show greater interest in learning and be involved in a powerful motivational process that energizes learning. These students described a learning experience of being captivated by instructional technologies and more lasting feelings that the material is enjoyable and worth using.

When discussing with students a quote stating that the blackboard, pens and papers are outdated; Ismail expressed a total agreement when he said that:

> Yes, pens and papers are outdated and don't seem to fit the twenty-first century. We can write on a tablet, we can just pick up our phones and take notes and that's more enjoyable and practical. The world nowadays is using advanced techniques and we, as a part of this world, have to keep up with those countries and use the methods they are using in education. (Ismail, Focus group discussion)

Ismail's interest in technology was not confined to his use of technological devices for learning purposes but he also showed an ambition in the field that made him participate in an international competition and design a digital copybook:

> I am working on a new device that replaces the paper and the pen. It is a digital note taking device or you can call it a smart copybook. We all know that hand writing is something important especially for pupils but why not to write on a digital copybook. (Ismail, Focus group discussion)

There was also a serious desire to study and attend lectures experienced by Akram when the session is conducted in the language laboratory. Besides learning and receiving instruction, he found himself pursuing an interest and engaging in an enjoyable and pleasurable activity. When reporting his experience at university, Akram confidently mentioned the following:

> Though I am most of the time here at university, I don't attend all lectures especially lectures delivered in the Amphitheatre and lectures where the teacher is only dictating and we (students) are only writing. I enjoy lectures in the lab because there is no hand-writing. After the first session we had in the lab, I knew that's an interesting module, I find myself practicing my favourate hobby at the same time when I am learning. (Akram, Follow-up interview)

Interest served as a stimulus for Abdelillah's favorable attitude as well. He revealed a clear curiosity about the Global Virtual Classroom (GVC) experience at university which is a completely online high resource scenario enabling English language students from different cultures to communicate. He described it as follows:

> The GVC is a wonderful experience in which we can exchange information, ideas and cultures with students from all over the world… I am sitting for the test soon. I want to know more about other cultures, I want to talk with native speakers and practice speaking using technology. We use communication software, speakers and a microphone, we see the other students in the screen… so we change the traditional class routine. (Abdelillah, Focus group discussion)

The above-mentioned cases exemplify the fact that positive views and perceptions are formed based on a feeling of interest in the field of digital technologies and ELT technology scenarios

experienced differently by different students. Akram's interest in technology gave him more energy and enthusiasm to be involved in the learning process. Though the language laboratory tends to be a formal learning space where both the teacher and the students are using technological aids to perform their tasks of teaching and learning, Akram found it a motivating space where he linked instruction and learning to pleasurable activity. Interest in technology, in different circumstances, pushed Abdelillah to think about the global virtual classroom experience, he expressed an eager wish to join this classroom soon and learn from this technology-enhanced environment by communicating with native speakers and students from all over the world. In another way, attention and concern in technology experienced by Ismail drove him beyond the learning process. Such an interest motivated him to participate in an international competition and show his skill and ability to design an E-writer to the whole world. Ismail's interest in technology developed to an earnest desire to create a new device and strive for its attainment.

Each of the three students shared a different experience with technology use, they went through different situations, they took different decisions and they experienced different feelings. All these situations, decisions and feelings, however, reported a sense of interest in technological devices, technology-assisted learning, and technology-enhanced projects.

5.3.2. Free self-determined learning

There is also a perceived appreciation of the degree of freedom and choice technology is offering via the variation of its methods and means. Some students positively referred to free learning and no compulsion in the learning process when evaluating the technological learning experience.

In the next excerpt from an interview, Abdelillah compared a teacher-centred approach to technology-assisted language learning experiences where learning has no limits and he does not feel bounded by the teacher's restrictions:

> In the classroom, I have only one way to do things following the teacher's guidelines and no other choice. I have to do a certain thing in a certain way otherwise it is wrong or inappropriate. The teacher is leading the way and we are just following. I feel like I am guided and I am not doing much work. The variation in technology use however makes me enjoy its use, understand better and learn independently and freely and as you know freely learned is best learned. (Abdelillah, follow-up interview)

This clearly highlighted the gifts of a student-centred education using instructional technologies such as achieving a level of self-teaching and having the freedom to decide about their learning compared to a completely teacher-centred one which does not fully address the students' needs. A further indication of free learning is addressed by Ghoutia who appreciated the university's educational system which is providing the student an amount of freedom in his or her learning process. This freedom, according to her, is demonstrated in the content, method, and setting of learning:

> Technology is giving me a certain degree of freedom and more space. It is up to me to choose how to learn, what to learn and when to learn. That's why I like the university's system because everything is on the student and we are using educational technologies which encourage student centred education in the classroom. (Ghoutia, follow-up interview)

Both above mentioned participants referred to a free learning experience in the classroom. They valued the role of technology in independent learning with confidence and minimal direction from the teacher. Educational technologies helped both of them to play a major role in their learning inside the classroom.

Discussions here reflect the concept of 'student voice' in education considered by Brunauer (2019, p. 130) which is linked to 'to the conviction that students will learn more if they feel responsible for their own achievements and are allowed to co-decide their learning strategies'. Also, teachers giving students a voice in their learning reflects 'the efforts undertaken by teachers to differentiate and personalise their teaching to meet the very specific needs of every student' (Brunauer, 2019, p. 131).

Akram's experience, however, went beyond the walls of the classroom. He referred to his motivation to learn using educational YouTube videos in his free time:

> When I am at home, I am free and I have nothing to do, I just click on YouTube and I type a title of a lecture and I watch videos: I find myself learning at the same time when I am practising my favourite hobby (Akram, follow-up discussion)

It seems evident from the above-mentioned extracts of data that technology is helping the students working on their own and taking control of their own learning however and whenever they wish. Technology use, both inside the classroom and beyond, is encouraging a better

learning experience for some students since it allows them a certain degree of freedom in their learning process.

In a similar vein, Blaschke (2013, 2014, 2018) considered the role technology plays in supporting self-determined learning skills. According to her, technology integration helps incorporating a heutagogical (self-determined) learning approach in students' learning which requires higher 'learner maturity and autonomy' compared to normal pedagogy in which 'instructor control and course structuring' are highlighted.

5.3.3. Diverse learning opportunities

By integrating effective technology in the teaching and learning process, both students and teachers are provided with increased opportunities and diverse chances to adjust and enrich the learning experience.

Among the factors that were mentioned frequently in students' responses when discussing the role of technology in their learning was the diversity of use and resources. Students with different skill levels and learning preferences appreciated the fact that technology offers different opportunities for different learners:

> I always use videos to learn something or revise my lessons. Videos are no more than 15 minutes long but I understand better… (Sarra, Focus group discussion)

> I frequently do research on the net and I try to find reports and short summaries about the lectures we do in class because it is impossible for me to read a handout of 5 or 6 pages. (Linda, Focus group discussion)

> I am really grateful to 'uncle Google' which is providing detailed information in a variety of ways. I sometimes use images and videos to understand better. Sometimes, I play instructional games to learn vocabulary, in other times I simply use online dictionaries. (Salah, Focus group discussion)

The previous mentioned statements revealed positive reactions from different students; it seems that there are plenty of ways technology can help different types of students. When Sarra used instructional videos which facilitate understanding for her and Linda appreciated the use of reports and short summaries, Salah showed gratitude to different technology uses he took benefit from in his learning practice.

Moreover, there is a great deal of discussion among teachers about diverse learning opportunities and ways to teach diverse learners through technology. Amel, when commenting about teaching oral expression in the language laboratory and using the technological devices found there, she declared that:

> Teaching Oral Expression module has changed nowadays. Before the module was all about speaking (free talks, giving presentations, topic discussion), now technology is allowing us to include listening as well. We are using the lab for listening evaluation; students can listen to native speakers and do activities and practice (Amel, Teacher interview).

According to Amel, the use of language laboratories is adding the practice of the listening skill to Oral Expression module. This way technology is bringing diversity to the oral expression teaching and learning experience.

Another incident reported in my observation notes shows that the use of technology in language teaching and learning is allowing variation and the creation of new different ideas in the process:

> In today's Creativity and Performance session, students are required to present a video project. The class teacher has already provided the necessary information and guidelines about the tools they can use, names of software, topic suggestions and a tutorial in previous sessions. Though the majority of students who presented today tackled similar topics, they used different software and they integrated diverse creative ideas. (Observation Notes, November 18, 2019)

Later, I discussed the case with their teacher and she commented:

> A lot of their presentations were really creative, they frequently come up with something new. Each time, I do get at least five (05) presentations that are really different, original and creative. The use of the material helped them think creatively. If they didn't use technology and video-making software, their presentations would look the same (Cylia, Teacher interview).

It is interesting to note that technology supports diversity in the classroom and allows for multiple distinct learning opportunities.

This section discussed positive features showing the helpfulness of technology-assisted language learning environments in students' learning and teachers' teaching. The one that follows reflects upon educational technologies insufficiency features.

5.4. Inefficiency features of educational technologies

Having seen the key benefits and efficiency features of implementing educational technologies in language learning, I now turn to elements, mentioned by students and teachers, indicating the inefficiency of technology in language learning inside and outside the classroom. Apathy and laziness are the main inadequacies experienced by students in a teaching and learning environment supported by technology use.

5.4.1. Apathy in learning

As I mentioned earlier that technology can be a source of greater interest in language learning for some students, it seems that it can also be a barrier and a source of boredom, unconcern and apathetic reaction for others.

Fatima is a student who is using technology to support her English learning but she did not seem to have any preferences as regards technology tools and she did not show any enthusiasm to use them in her studies. She preferred producing worksheets in a handwritten form rather than using a word processing program:

> I can see myself and my experience in writing when I use a paper and a pen… When typing I sometimes forget how to write the word and I frequently get confused about which letter or vowel to use in a certain word. That's not because I don't have the habit to do it, I type on the computer regularly because some teachers are obliging us to bring material in a word format… However, I can only express myself well and enjoy what I am writing when I use a paper and a pen… It's a personal preference. (Fatima, Focus group discussion)

Malika is another student who is studying two different streams simultaneously. She found that very challenging and technology is the only support that helps her manage the two missions but she still does not show concern or emotion when using instructional technologies. She only uses technology to fulfill her educational needs and she did not show any feeling of interest when she said that:

> My eye health is in danger because of technology. Now, I don't really enjoy technology use and I am not waiting for technology to boost my confidence and my motivation or give me courage to engage in learning. The most important thing for me is that I study and achieve my goal, using technology or not, doesn't really matter. (Malika, Follow-up interview)

These two cases suggest that not all students are expecting the use of technology in their learning. Though both of them are using technology in their learning process, their use seems instrumental and not something that they are performing by choice. Fatima's words did not only demonstrate a state of apathy regarding technology use, in fact the way some teachers are imposing the use of some form of technology may limit her learning and production. Malika's use, however, is a requirement of her studies and something essential in order to manage and handle multiple tasks simultaneously. Based on Malika's comment and the use of the word 'now', it seems that there is a change in her attitude and her eye strain is driving this change. Their reasons were different but both participants showed an apathetic attitude towards technology use.

There was also a case of student who is not giving too much attention to technology but she still appreciates the use of some form of technology. Ghoutia decided her interest according to the utility of both hardware and software. She did not show a fixed point of view towards technology use. In a first instance, she recognised the value of YouTube in her studies and career decisions:

> Videos and movies on YouTube are the reason why I am hooked to the English language and the reason behind choosing it as a stream at university. I love Google as well, everything is available there and it is facilitating my task as a student. (Ghoutia, Follow-up Interview)

Here, Ghoutia seemed grateful to videos and google search for helping her both mapping her career path and pursuing her studies. Such a feeling, however, did not prevent her from recognising the worth of the pen and the chalk in certain situations. She mentioned 'I don't mind using only the chalk, the pen and the blackboard in the classroom. I found it primitive but it is the way we started learning. It was and is still effective. For me, presenting the lecture using the data show or not won't make a difference' (Ghoutia, Follow-up interview). When discussing other uses of technology, she clearly revealed her dislike of communication programs and websites 'I don't like communication applications and software. I think that

Social media is a total waste of time; it is the perfect place for no sense. If I don't have to use Facebook for university updates and applications, I wouldn't use it'. (Ghoutia, Follow-up interview). Unlike other participants, this student did not have a definite opinion regarding technology use. She considered different uses and multiple conditions when reporting her perceptions. Her feelings, then, shifted from a great interest to a state of apathy to a total dislike under various circumstances.

Using technology or including students like the three cases discussed earlier in technology-assisted language learning environments may harm their motivation and generate a deadening of senses towards learning.

5.4.2. Lazy thinking

Using too much technology inside and outside the classroom is thought to create lazy thinkers. Both students and teachers agreed that certain use of technology is driving student' laziness.

Some students when debating their points of view in the focus group discussion mentioned that technology-enhanced language learning is making them lazier:

> Amira: Technology makes learning easier. I can search for any information I need and I can access whatever I want in few minutes. I don't even have to write everything, I just copy what I need.
>
> Anas: You said I copy and this is a disadvantage I think. If you take the information without researching deeply and making efforts, you will easily forget it.
>
> Amira: But when you are making research, you are automatically reading the information and understanding it before copying it.
>
> Ahlem: Not all of us are doing this. Sometimes I am in a rush or I feel lazy. So, I don't read carefully I just start copying without doing efforts. Technology is making me lazier. Besides, we can find wrong information in the net…

Though Amira was praising technology and the way it is making learning easier, Anas and Ahlem disagreed with her and blamed technology for being the reason of making less effort in learning and forgetting copied materials.

Some teachers also noticed that technology is bringing laziness to their students' learning process. Rafik when mentioning the disadvantages of technology reported a classroom event which bothered him as a teacher:

> I asked my students to prepare presentations for the second semester and I informed them a month before to prepare themselves. Then, when it is time to present, a student brings his phone or tablet and he starts reading. I dislike such uses in the classroom. Instead of preparing for the presentation and confidently deliver it in front of me and his classmates, he lazily reads from his phone without efforts. Technology is making them lazier and hindering their capacities in the classroom. (Rafik, Teacher interview)

This teacher is displeased by his students' indolence and passive behaviour because of technology. He linked his student's laziness and decreasing performance to the availability of technology. Cylia is another teacher who believed that technology is making students lazy. She exemplified:

> Yesterday, for example, I gave them my email address and instead of taking notes of it they were taking photos and it was just one line. If the board was full of information I would understand but only one line that's something that they can take in less than a minute. That's made me think that this generation is going too lazy because of technology. (Cylia, Teacher interview)

Both teachers thought that technology is creating lazy students; they thought that it has transformed students by encouraging them to opt for easy solutions and learn without efforts.

The point I would make here is that some students and teachers did not regard their / their students' misuse and they blame the availability of new technologies and internet connectivity which is offering easy access to information. They believed that such easy access is making them lazy and preventing them from working hard and therefore they tend to forget easily what they learned easily.

Inadequacies of educational technologies discussed in this section including both apathy in learning (section 5.4.1) and lazy thinking (section 5.4.2) suggest that technology-based learning 'demands that learners be ready for andragogy [methods and principles used in adult education] and for controlling their own learning'. It requires that 'the intended learners have the metacognitive skills, motivation and confidence' to engage in technology-assisted language

learning environments successfully. This puts special importance on the teachers' task to 'prepare learners and make sure (they) are ready to capitalize on the opportunities technology presents' (Knowles et al., 2015, p. 334).

5.5. Discussion summary

This section further discusses the key findings of this chapter. In this chapter, I have discussed students' opinions and teachers' reflections about technology integration in EFL teaching and learning process which provides a full answer to my first research question "*how is the use of technology in EFL learning perceived by Algerian university students and teachers?"* and a partial answer to the second research question "*what is the impact of technology integration in EFL learning on the psychology of language learners?"*. The teacher and student participants' positive and negative perceptions about technology use in EFL learning, the factors underpinning these perceptions, and the efficiency and inefficiency features discussed in this chapter are part of the overarching impact of educational technologies on individual learners.

This section describes the factors determining students' and teachers' positive and negative attitudes towards technology integration in language teaching and learning. Students' attitudes were based on their level, the novelty of the technological experience, and the teachers' strategy of implementation. Teachers' attitudes, however, were grounded on perceived students' needs, students' misuse of technology, the utility of the experience, and teachers' status. This section also identifies the elements indicating the effectiveness of technology use on students' learning, namely increased interest in learning, free self-determined learning and diverse learning opportunities. Finally, it highlights apathy in learning and laziness as the main inadequacies experienced by students when using technology in their learning.

Similar to popular studies on technology integration in language teaching and learning (Unser, 2017; Carstens et al, 2021), the teacher and student participants' voices and actions revealed a combination of both positive and less positive attitudes. These attitudes were based on a number of fundamental factors which identify the participants' opinions about the use of educational technologies in higher education and the reasons behind their orientations. Starting with student participants, either when giving their point of views themselves or when teachers were describing their students' situations, I identified three attitude determinants which play a significant role shaping students' views and therefore should be considered by teachers when

selecting the appropriate technology and planning a meaningful use that supports students' learning.

To start with, the level of students is an important criterion on which participants based their perceptions. Students at advanced levels (Masters students), despite being more familiar with TALL and ELT technology scenarios and more ready to use technologies in their learning, showed less positive attitudes towards technology integration in their classrooms compared to students at lower levels (undergraduate students). Teachers, for their part, believed that the students' reactions towards technology integration in the classroom change gradually from their first years at university when they show excitement for being part of educational technology scenarios to their Masters studies when they start having a very basic point of view and showing less interest in technology use in their studies.

The novelty of the technological experience is also believed to play an influential role in determining students' attitudes towards TALL and the use of educational technologies in higher education. Regardless of their level, both undergraduate and Masters students mentioned the novelty of some technology scenarios as a reference to their positive claims about TALL and educational technologies. Teachers also considered the novelty of the technological experience as a factor standing behind the positive reactions of the majority of students coming from a completely traditional learning environment (secondary school). The novelty of the technological experience was also responsible for a negative attitude and an anxious and uncomfortable feeling experienced when using some form of technology, such as the practice of listening in the lab for the first time.

Similarly, the teachers' strategy of technology implementation was the reason behind different positive and negative students' reactions to technology integration in EFL learning. The students' attitudes towards technology-mediated instruction in the classroom are obviously affected by the teachers' use of the material. When referring to the flipped learning scenario, for example, student participants praised their teacher's use of this technique, which allows for an active and independent learning experience, but they criticised the absence of the presentation and explanation of the new technique, the lack of feedback from students, and immediate testing after the experience by the teacher. Other examples are the frequent use, dependency, and over-reliance on the projector in the classroom by the teacher to save time and cover maximum content of the syllabus, which were regarded as a meaningless strategy that brings students' boredom and lack of interest in the session.

As far as the teachers' attitudes are concerned, I identified four perceptual dimensions as a basis for their views which ultimately assist them in deciding whether to use technology in their teaching or not. The teachers' positive thinking about instructional technologies and their readiness to use it with their students was clearly linked to the utility of the technological experiences. The teachers' status and the students' misuse of the technological devices were referred to as responsible for avoiding TALL and ELT technology scenarios and inhibiting students' use of technology in the classroom. Perceived students' needs is the only variable which determined various teachers' reactions ranging from implementing, reducing or avoiding technology use according to the circumstances.

The students and their needs were largely considered by teachers before decision making and action taking in the classroom. Based on how they perceive their students' needs, some teachers made a fixed decision to either include or exclude technologies from the teaching and learning process. Some of these teachers felt that they are responding to their students' demands when using technology in their teaching frequently. Others decided to avoid the use of instructional technologies because they do not think that their students need technology or are not expecting them to use it in the classroom. One participant, however, varied her decisions regarding technology integration according to her students' different needs and expectations in different circumstances. She integrated technology in her teaching based on her students' demands in certain conditions, and she chose not to use technology based on other students' requirements in other situations. She also encouraged analog students (who do not like and expect the use of instructional technologies in their learning and they involuntarily use them to fulfill some educational needs) and facilitated the use of the material when technology scenarios such as video making was a fundamental component of the syllabus of 'creativity and performance' module.

Despite the fact that teachers showed different positive and negative attitudes regarding technology use, the utility of the experience for both their comfort and their students' benefit attracted their attention. They largely referred to the fitness of certain purposes in their teaching as a factor which encouraged them to use technological aids even if they do not enjoy their use. Teacher participants stressed the utility of technology for different content areas and class assignments, emphasised its applicability for the nature of the module or the course, and highlighted its effectiveness for certain classroom practices such as assessment. Besides serving students' desires, these uses facilitate teachers' duties, decrease their workload, and save time.

The students' misuse of technology is another determinant of the teachers' negative attitudes towards technology integration in EFL teaching. The majority of teacher participants linked their negative thinking about technology to the students' use of technological devices, especially mobile phones, in the wrong way or for the wrong purpose. Teacher participants who do not use or are not ready to use technology in their teaching put the students' unsuitable use of technology as the primary justification of their position. This thinking was also present with students, they were aware of their misuse and they blamed their mobile devices for being a reason for distraction, lack of concentration, laziness, and disrespect to teachers. The teachers' reactions to these behaviours vary from one teacher to another: one teacher may simply question the behaviour, another may react strictly by dismissing the student from the classroom, while a third one may try to create rapport with students and incorporate mobile devices into classroom teaching and learning.

The teachers' status is also considered as a barrier which makes them choose not to integrate technology in their teaching. These teachers' professional standing did not allow them to maintain contact with students online outside the classroom. The use of technology and online communications with students, according to them, affected their position and the boundaries they set with their students. Students showed an understanding of these teachers' reasons and considered their teachers' refusal to get in touch with them online as a protection to their privacy.

The above-mentioned factors determined a combination of positive and negative attitudes towards technology and accordingly actions and behaviours in TALL and ELT technology situations. These attitudes were summarised in a number of efficiency (increased interest, free self-determined learning, and diverse learning opportunities) and inefficiency features (apathy in learning and lazy thinking) which are considered part of the impact of technology integration in EFL learning on the psychology of language learners.

Educational technologies offer assistance in a number of ways to students in general and digital students who like, use, and increasingly expect their teachers to use instructional technologies when delivering instruction in particular. Integrating technology in EFL classes drives these students to show greater interest in learning and to be involved in motivational technology scenarios that strengthen their learning. The students' interest in technology did not only motivate them and help them to perform better in technology-mediated learning scenarios, but also encouraged them to engage in technology-enhanced projects beyond the classroom.

Furthermore, there is a perceived appreciation of free learning opportunities offered by technology inside and outside the classroom. The use of instructional technologies, according to students, is encouraging a free self-determined learning experience which addresses the students' needs and helps them achieve a level of self-teaching and decision-making about their learning. Participants also associated TALL and the use of educational technologies in EFL classes with diverse opportunities that enrich and adjust learning. Students appreciated the diversity of use and resources offered by technology such as the use of online courses, instructional videos, and images, the use of instructional games and online dictionaries, and the use of software and applications that make learning easier. Teachers also stressed the fact that technology is bringing diversity to their teaching process, especially when teaching Oral Expression and Creativity and Performance modules.

Besides the above-mentioned features which show the effectiveness of technology on the teaching and learning process and describe its positive impact on the psychology of the learner, there are other features indicating the inefficiency of technology and which negatively affect the students' psychology. Integrating technology in EFL teaching and learning drives some students to become apathetic and unconcerned about learning. Technology scenarios, for these students, were considered as a barrier and a negative experience which harm their motivation and engagement in their learning process. Certain uses of technology were also thought to create lazy students. Both students and teachers blamed technology for creating lazy, unresponsive students who rely on the click of a button for information, make less effort in learning and consequently forget the material easily. Other lazy behaviours mentioned by teachers include reading the content of the presentation from the phone or tablet instead of confidently presenting in front of the teacher and classmates and taking pictures instead of taking notes which is considered an integral part of the lesson.

This chapter has highlighted students' voices and teachers' reflections about technology integration in language teaching and learning. It has considered both students' and teachers' positive and less positive views about using technology in the teaching and learning process. It does this first by identifying a number of fundamental factors determining students' and teachers' attitudes, views and actions in technology-assisted language learning environments. Then, it has considered both efficiency and inefficiency features of technology in language learning addressed by students and their teachers which describe in part the impact of TALL and the use of educational technologies on individual learners.

The following chapter deeply discusses the impact of technology integration on the psychology of individual language learners.

CHAPTER SIX

6. THE IMPACT OF TECHNOLOGY INTEGRATION ON THE PSYCHOLOGY OF INDIVIDUAL LEARNERS

This chapter presents findings related to the influence of technology integration in EFL learning on the psychology of individual learners. More specifically, as a result of considering the impact of technology integration on the psychology of different language learners, I came to realise that students' individual differences are not only described when different students are experiencing different reactions towards the same technology implementation. These individual differences are also defined when different students are exhibiting the same emotion and the same psychological trait differently.

This chapter, therefore, gathers a number of individual variants which function as a result of the effect of technology implementation in foreign language learning. Section 6.1 is devoted to the degree of pleasure reported by different learners when incorporating technology in their learning. Section 6.2 discusses the tendency of technology to accommodate students' different learning modes. Next, section 6.3 focusses on the way technology is offering affective education. Section 6.4 explores students' opportunities to engage in different powerful learning situations through technology and finally section 6.5 summarises the content of the chapter.

6.1. Providing pleasurable education by means of technology

The purpose of this section is to address features of pleasurable education reported by language learners when using instructional technologies in their learning process. Enjoyable learning and comfortable learning environments are two sources of pleasure in education described by students after experiencing multiple repetitive scenarios of flipped learning and mobile learning. Some students cared about the fact that learning should not feel like serious business for them. They indicated that the comfort and joy levels have a measurable impact on the process of understanding and storing information. Therefore, feelings like joy, enjoyment, comfort and relaxation should be considered by teachers and educators when deciding the classroom practices and the teaching materials which are appealing to learners.

6.1.1. Enjoyable and joyful learning

Using educational technologies in language classes is considered a noteworthy practice that brings amusement to the formal classroom learning environment by some students. Though the

impression of enjoyable learning was a shared sensation among different learners, their reasons behind the feeling and explanations provided in their diaries differed from one learner to another. In addition to this, other students did not care as much about the degree of joy in the experience as they did about what they have learnt from the experience.

After carrying out a flipped learning experience for the first time and asking them to write down their feelings about the experience, some students clearly referred to it as providing amusement and enjoyment. The passages below are excerpted from students' diaries:

> I enjoyed today's lecture, it was really fun. We used technology in a great and helpful way. We used the laptop and we watched the video before coming to class and the way we reviewed information at the beginning of the lecture. This strategy is really helpful, I could understand better because it is funny and not effort demanding. (Abdelillah, Diaries)

> The way we used technology in our lecture was different, innovative and enjoyable. It really serves my need as a young student who is fond of watching videos and used to technology. I wish the university could realise that YouTube can be a teaching and learning source. (Linda, Diaries)

I noticed that both Abdelillah and Linda enjoyed a pleasurable experience. What drives such a feeling, however, seems to be exclusive to each case. Abdelillah linked his fun and joy with his ability to understand without making too much effort. Linda, on the other hand, was enjoying because the experience is satisfying her needs as a digital native who is familiar with and having a strong liking for technology.

After a second exposure to the same experience (flipped classroom), these students are still experiencing fun and joy in their learning. When reporting their feelings for a second time, they mentioned:

> It was a session full of learning and laugh. I am really happy and I think my classmates feel the same. I could understand easily and I enjoyed this change in the method of teaching and learning. I think we should do more like this and I wish our teacher will keep using this way of teaching. (Abdelillah, Diaries)

> Today's lecture is just wonderful like the previous one. This method breaks the routine of the teacher always explaining the lesson by herself without using an assistive tool such as the laptop and adds fun to the classroom environment. I haven't felt bored. (Linda, Diaries)

Both views suggest that the impression of enjoyment does not come out of the new experience and the initial reaction. It is, however, a continuous and conscious sensation that is felt after more than one exposure. It may also extend subsequently in similar forthcoming experiences since the student is expressing the desire to use flipped learning again and is waiting from his or her teacher to keep implementing such an approach in classroom teaching.

This perceived feeling, however, did not seem of interest to other students in an identical situation. They did not give the impression that they are concerned with the degree of enjoyment technology is bringing to the learning experience. When discussing the point with Malika, she clearly said:

> I don't really care about the experience whether it is funny or not and whether I am enjoying or not. I come here to university to study and the most important thing for me is to acquire knowledge no matter the method is. Giving instruction in a funny way or not, using technology or not, I don't care. The most important thing for me is that I understand the content and each time I learn something. (Malika, Follow-up interview)

This, therefore, suggests that there is a variety of expectations from different students in the classroom. While Linda and Abdelillah were very positive towards the situation and showed an enthusiasm to receive instruction in an enjoyable way using technology, Malika only wanted to gain knowledge regardless of the method and the material used to deliver information.

6.1.2. Comfortable and relaxing learning environment

Being comfortable, feeling relaxed and opting for easy ways to learn appear to be of great interest to language learners. Different aspects and sources of comfort were addressed by different learners when describing their emotions in technology-assisted language learning situations. An exceptional stressful experience, however, was highlighted by a student when using technology for assessment purposes.

One aspect of comfortable learning is easy comprehension, which was reported by Abdelillah when using instructional videos to prepare for classwork. He provided an example from his

experience using technology outside the classroom when he was doing a task as a preparation for classroom learning. He stated:

> I printed nearly six pages about the topic and I read them more than once and I understood nothing. Then, I found a video on YouTube addressing the topic. The video was 5 minutes long but I understood better and with less energy. In addition to this, I could answer easily in the classroom when the teacher asked me to talk about the topic. (Abdelillah, Follow-up interview)

Other students believed that using technology inside the classroom is affording some comfort to the learning situation. Akram was concerned with functional classroom skills that became easier when using technological aids. He reported in his diary:

> Seeing the lecture at home in a form of video is better and easier than using the blackboard. I like this way because I hate writing and reading from the blackboard. It is really tiring. (Akram, Diaries)

Salma, on the other hand, related comfort to the ease of other mental activities such as understanding and information retention. She commented on the flipped learning experience in her diary as follows:

> I hope we will use this method in all modules because I felt comfortable when I could understand the lecture quickly and I memorised the idioms easily. Having an idea about the lecture before coming to class is very useful. I could answer activities easily in the classroom without thinking too much. (Salma, Diaries)

Many students found the comfort they were seeking for when using instructional technologies and in the variety of software which are, according to them, making the hard task easier. Students here purposefully referred to a state of rest and relaxation they perceived when making use of technological aids in different learning situations inside and outside the classroom.

There was another case who perceived technology as a tool that is facilitating the learning task for her except during exams and mainly the listening exam in which students have to listen and type simultaneously. She revealed that:

> The only problem I have with technology is during listening exam. Unlike hand writing when I type on a keyboard I make lot of mistakes, I even forget

> how to write the word. This makes me anxious and put pressure on me during the listening exam because I have to listen to the recording and I don't have time to check the spelling. (Aya, Follow-up interview)

As discussed above, comfort and stress are both highlighted when considering different learners experiencing technology implementation in different learning situations. Comfortable learning, however, originated from different sources, mainly ease of use of instructional technologies compared to the traditional blackboard learning, effortless comprehension, and easy memorisation.

Considering both aspects of pleasurable education through technology use discussed above, I infer that in addition to different degrees of enjoyment and comfort experienced by individual learners, the source of such emotion and what drives each trait is exclusive to each student case.

6.2. Accommodating students' individual learning modes

There is a perceived recognition among students and teachers of the role of educational technologies to cater for students' individual learning modes. Technology use with students was suggested as a tip for teachers to vary their strategies, incorporate different methods and accommodate students' different preferred learning styles. The use of educational technologies facilitated for both students and teachers the practice of differentiated education through visual learning and other idiosyncratic learning modalities.

6.2.1. Visual learning

Many learners believed that they can only understand better and gain more knowledge when they see things. Visual learners thought that they typically do well in technology-mediated language learning environments. They all referred to the use of visual aids, but the effect such visuals have on each learner varied between engagement and information retention.

When discussing with Abdelillah his learning strategies, he largely referred to the use of images and videos. I tried to know the secret behind such an interest and he answered:

> Images, 3D animations and videos help me understand more… when I place the picture in my mind and I carry on using my imagination, I get much closer to the reality and I have an idea about the real situation but when I read the information …I feel like it stays on the paper, I can't extract it and place it in

> real life unlike when I see it in a video I feel like I can relate to it. (Abdelillah, Follow-up interview)

This was about his experience when using technological aids on his own outside the classroom; visual learning seemed of an interest also in formal classroom learning situations as he mentioned:

> The lecture in the lab is actually my favourite one because of the way the teacher uses videos and technology in her teaching. Using a video, I see things and I can take part of them… I use my eyes and ears to grasp the meaning … Listening to the teacher giving instructions, however, is sometimes boring. So, I am not all the time really listening to him or her. (Abdelillah, Follow-up interview)

This again suggests engagement in the learning process. Abdelillah when using visual aids felt that he is included and integrated in the learning process both inside and outside the classroom.

Besides engagement stands information retention as another benefit students who partake in visual learning are enjoying when using audio-visual aids. Linda commented on the experience as follows:

> Seeing a video is not like reading a text…Visuals, animations and scenes do stick in my memory and the day of the exam I can remember them easily. This is a great way to memorise things and keep them in mind for a long time. When I read something, I memorise it as well but as soon as the test comes and I write it, it's gone. I can easily forget words but an image will be kept in my mind. (Linda, Follow-up interview)

Both Linda and Abdelillah took benefit from visualisations in their language learning process inside and outside the classroom. These students experienced visual learning differently: Abdelillah gave value to the way technology and the use of visuals is including him in his studies. Linda, however, related the importance of visual learning to her ability to memorise things and store them for a long period of time in her mind.

The points I made above suggest that learners' individual differences are not only described when students are experiencing different emotions under the same circumstances but they are also defined when students are approaching the same learning style differently. Though, both

students' cases refer to the same mode of learning 'visual learning', the outcome of such learning style differ between engagement and information retention from one learner to the other.

6.2.2. Idiosyncratic learning modalities

In addition to visual learning, there is recognition of the role of technology helping students study in the manner that suits them and assisting teachers feed their students based on their unique characteristics.

It seems evident that each student is a unique entity with different characteristics to be taken into consideration in the teaching and learning process. Several idiosyncrasies have been identified among learners when using technology in teaching. Imene, when talking over her experience of using flipped classrooms in her teaching, referred to the effectiveness of this teaching strategy to a certain category of learners who need time to process information and prefer to understand things before acting. She mentioned that:

> This strategy (flipped learning) is really helpful for students who need time and repetition again and again to absorb information. They have enough time before coming to class to read or see the content of the lecture. Then, when we come to the classroom I explain again and remind them of the lesson and they have time to ask for more clarifications (Imene, Teacher interview).

Aya is a student who belongs to the category of students described above by the teacher. When describing her learning routine, she noted that:

> As a student, I dedicate four to five hour a day for revision. I need time in order to comprehend what I am learning. It is a long period but watching instructional videos make it shorter and enjoyable. I don't forget images and visuals, they have an effect on my mind and they are kept in my memory (Aya, Follow-up interview).

The description of this category of learners provided by both the student and the teacher connects with 'the reflecting learning style' which is part of Kolb's learning style inventory (2013). Reflecting students, therefore, appreciate the use of flipped learning scenarios and watching instructional videos as part of their learning process.

Amel also observed that some of her students feel motivated when they study in the language laboratory. She suggested that: 'Students who like taking action and generally take a leading role in the classroom enjoy lectures in the lab. I noticed that they feel motivated and they move in the room. They participate and they volunteer to perform tasks in the session' (Amel, Teacher interview). Accordingly, the language laboratory and the use of the material helped 'initiating students' (Kolb and Kolb, 2013) feel at ease and encouraged them to learn and perform better.

I could also notice other idiosyncrasies among students when using technology in learning through their diaries written after using a flipped learning approach. Aya when giving her opinion about the experience highlighted that this approach is advantageous to students similar to her who have a clear aim, tend to decide on problem solutions and concentrate on outcomes. She commented:

> You know the classroom is a bit noisy and I can't concentrate well sometimes because of noise or because of the seating arrangement. So, there is no 100% concentration on the lesson. But, when I study at home, I just close my room's door; I don't receive anyone, I put my phone on the silent mode and I put in mind that I am going to revise. So, nothing disturbs me and I can concentrate better and understand the content easily. Students like me will definitely benefit from this kind of classroom (flipped classroom). The important and difficult step is done at home comfortably, I only revise what I learned and confirm my understanding when I come to class with the teacher. The experience was really beneficial; the day of the exam I could remember everything I have learnt … I was focused and the exam outcome is the proof. (Aya, Diaries)

This case here resonates with Kolb and Kolb's 'deciding' way of responding to learning tasks which characterize learners 'with a clear goal and focused on outcomes' (2013). This category of learners, therefore, has the chance to cater for their style and modality using technology in general and flipped learning approaches in particular.

Fatima was also appreciative of the flipped learning approach since it served certain cognitive preferences in her learning. When commenting about the experience, she revealed a strong motivation for action when using technology to prepare content before coming to the class. She wrote:

> When the teacher sends me the video and I see it at home, I can manipulate my learning better. I can stop the video whenever I want and then play it again when I am ready. It gives me the opportunity to prepare more questions to be discussed in the classroom. It is also a chance to maximize practice, discussion and teamwork in the classroom. (Fatima, Diaries)

According to Kolb and Kolb's inventory (2013), Fatima is categorised as having an 'acting' style which identifies students who 'are committed to a course of action with a reduced concern for risk or potential negative consequences'. Acting students, then, consider flipped learning as an opportunity to practice their point of strength and to express their motivation and passions in the classroom.

Another record in the students' diaries reported another way students respond to flipped learning environments. Abdelillah explained that receiving the lecture in the form of video to watch before class time helped him understand better. He revealed that:

> Animations in the video help me understand more… when I place the picture in my mind and I carry on using my imagination, I get much closer to the reality and I have an idea about the real situation and I feel I can relate to it. When I read the information, however, I feel like it stays on the paper, I can't extract it and place it in real life. (Abdelillah, Diaries)

Abdelillah, using the inverted classroom and being given content in the form of video to prepare at home is serving his 'experiencing' modality which is 'characterized by the ability to find meaning from deep involvement in the experience and being open to emotions and intuitions' (Kolb and Kolb, 2013). The above-mentioned feelings and actions exemplify how certain technology uses assist each learner approaches learning tasks in the way his or her brain learns better and understands new information, which is ultimately contributing towards students' success in learning.

Even though it does not seem easy to determine and address different learning modalities in each student, teachers and educators when varying strategies by implementing educational technologies in language learning are not only accommodating to some learners' desires but are also challenging what other learners believe and want. This supports what Bax (2011) called 'the accommodation approach' to education in which teachers are not told to accommodate to 'learners' only but 'learning' as well. This element of challenge, according to Bax, encourages

the learner to ‘break away from preconceptions and rise to more critical levels of thinking and analysis’ (2011, p. 9).

6.3. Offering affective education via technology

There is recognition of the ability of educational technologies to provide a psychological curriculum which helps develop certain aspects of the students’ personality. Using instructional technologies, teachers are considering the emotional atmosphere of the classroom and students are caring about their emotional states and involving them in their learning. Besides a content-based curriculum, affective education is required to develop students’ beliefs, emotions and attitudes. Technology-assisted instruction, if implemented wisely, is seen as an essential aid that helps teachers consider their students’ emotional and social behaviour and encourages students to learn optimally by boosting their motivation and building their self-confidence.

6.3.1. Boosting students’ motivation

There is a great deal of discussion about the way educational technologies can be the source of students’ motivation both inside and outside the classroom. The use of instructional technologies is also the suggestion of teachers who do not enjoy technology implementation in their teaching as an occasional treatment for students’ boredom and passivity and as a motivational tactic to engage them.

Aya, when describing the lecture of Phonetics in which the teacher used an instructional video, expressed a high level of motivation and thereby full engagement in the learning process. She said:

> Last time, our teacher of Phonetics presented the lecture of long and short vowels in a form of video. The way the video exemplifies and shows the position of the lips and the tongue and we repeating after it really facilitated the task. If I was only listening to the teacher pronouncing them, I wouldn’t realise what is happening inside the mouth when pronouncing the sound. The way it was presented in a form of song was joyful, informative and engaging at the same time. I was really motivated and I can’t wait to attend the next session. (Aya, Follow-up interview)

The fact that images, sounds and animations in the video are getting Aya closer to the information, not only made her feel enthusiastic about learning but she also expressed impatience in waiting for another similar learning experience.

Such a scenario was mentioned repeatedly when I interviewed her classmates, each revealing some degree of motivation. Abdelillah, however, is regretting his inability to attend that lecture:

> Lectures in the lab are actually my favourite ones just because of the way the teacher uses videos and other technologies. In the lab, I feel excited and I want to learn. I couldn't attend the Phonetics session last time when the teacher played a song to teach them vowels. I would love if I just go back and do attend that class. You know we had this old way of teaching and it's being around for many years. So, I think it is going to take lot of time for me to feel bored if they use technology with us. (Abdelillah, Follow-up interview)

Here the use of language laboratories served as an extrinsic motivator that catches this student's interest and kept him away from boredom. Along similar lines, Ghoutia highlighted that technology is playing a significant role in the field of foreign language learning because 'technology, if used the right way, has an amazing motivating role which is a requirement for language learning. I hope the university can help us by providing enough material and better exploitation of the existing technologies' (Ghoutia, Follow-up interview). This student suggested wise technology use as a way to motivate students learn foreign languages and therefore hoped for better learning opportunities using technology.

Teachers, in their role, are making use of technological devices to help bored and unmotivated students benefit from a coloured engaging learning environment. Cylia who 'usually works with papers and literary texts' mentioned that:

> When I find my students too passive or bored, may be the kind of students who don't usually like to interact in class, I tend to change the method …I tend to change the whole way of presenting the material in class and use more technological devices to attract their attention and motivate them. (Cylia, Teacher interview)

Similarly, Lina used technology occasionally when students are unmotivated or feel bored. She stopped the lecture and found a way to integrate the lab material or students' mobile devices in the teaching and learning experience.

Amel, in other circumstances, used the language laboratories when teaching Oral Production module to stimulate her students to speak. She said:

> When teaching oral production module, I always use the material in the lab just to motivate them to speak. I believe many students are bored and unmotivated because of the way they are being taught. So, as a teacher I can't blame them and throw up my hands. Each time I have to think about something new to push them to speak. Technology in its many forms is offering multiple motivating ideas and tasks to use in the classroom. (Amel, Teacher interview)

This teacher here linked technology implementation to the nature of a module which is motivation-demanding. She made use of digital instruction to motivate her students and make them more active in the classroom. The above-mentioned findings echo Saidouni and Bahloul's view that 'both teachers and students strongly confirm that the integration of mobile devices in EFL settings fosters the students' motivation and increases eagerness toward learning' (2018, p. 546). They also found that students believe that technology 'will provide them with new and accessible applications which, they believe, will enhance the language learning process by creating a motivating atmosphere (Bahloul, 2019, p. 567).

6.3.2. Building self-confidence in learners

There is evidence that different students experienced different confidence degrees when involved in technology scenarios both inside and outside the classroom. Technology implementation helped some students believe in their competence and abilities and encouraged them to have a 'can do' attitude in the classroom. Others, on the other hand, considered some technology uses either by their teachers or classmates as a cover that hides their low confidence and incapability in the classroom.

Teachers at the department of English in the setting believed that technology is an important classroom aid to enhance instruction and help students gain confidence. Rim commended the use of technology for students' first oral assessment experience and she explained that:

> When I organised my first exam or assessment with them, they were afraid to speak because they are not used to communicate in the classroom in the secondary level. They come to university with a certain inhibition, stress and lack of confidence. If you put them for the first experience in front of a screen by themselves using headphones and voice recorders, they trust themselves and they feel more at ease to speak, they have the chance to repeat again if they are not really satisfied with a voice version…etc. Talking to themselves is more beneficial at that level (Rim, Teacher interview).

Rim praised the use of instructional aids for students to accept and trust their abilities in initial oral assessment situations regardless of any imperfections in their output.

Similarly, though Amel believed that the technological experience is not always successful with first year students especially at the beginning of the year because of the novelty of the experience, she noticed that technology boosts her students' confidence in the oral expression module:

> Even if it is effort demanding with first year students, I can see the results of my efforts in their confident eyes, classroom behaviour and participation. When we use technology in the classroom or the language lab, they build a kind of self-confidence; they participate and volunteer to perform tasks in the classroom. (Amel, Teacher interview)

The teachers mentioned above seemed to have an unchanging point of view regarding technology implementation and students' confidence.

Students, however, revealed different perceptions of confidence in different technology-assisted language learning conditions. Aya, after being involved in a flipped learning scenario reported a high degree of satisfaction with the experience which she correlated with an unusual feeling of confidence. Trusting her abilities, daring to participate, sharing ideas and contributing to classroom learning are the benefits that differentiated her attitude towards a flipped classroom than a normal classroom. She wrote in her learning diary:

> This strategy gave me more courage to share my information in the classroom. When I participate, I feel better about my learning and I feel I am contributing to classroom learning. Today, I was the first to raise my hand and give a definition of 'idiom'. I didn't have to think about it or say it to

> myself before I dare and raise my hand as I always do in normal sessions. In normal classes, I always have doubts and bad thoughts about my abilities and I have to prepare the information well in my mind so that I can say it but sometimes when I feel I am ready to speak and I raise my hand, it is late and the teacher wants to move to something else. (Aya, Diaries)

Later in the follow-up discussion, she added:

> Because I saw the video before at home, I could understand every single detail and then I reformulated ideas using my style. I could both write and speak about it and the day of the exam I didn't feel anxious since I haven't revised that lecture. I guaranteed that however was the question about idioms, I will answer it. I was sure that preparation I did at home in addition to revision and application at the classroom will save me and in fact the day of the exam I answered easily without thinking too much. (Aya, Follow-up discussion)

Abdelillah commented about the same experience as follows:

> Flipped learning is among the amazing things I experienced here at university in my studies. I felt more confident to participate in the classroom because I actually know what I am talking about. It is not like when you come to the classroom and the teacher suddenly asks you what do you know about this and you start guessing and it is really risky to guess. I am always afraid of saying the wrong thing. That small thing I have in my mind before coming to class boosts my confidence… like no matter what I am going to say, it is not going to be completely crazy or wrong. (Abdelillah, Diaries)

Both Aya and Abdillah felt that the flip encourages them to trust their capacities and feel ready to face the classroom and teachers' demands. They both looked positive about their abilities and had a can-do character which allows them to perform better in the classroom.

Fatima in another technology scenario 'mobile learning', which involved students using personal mobile devices and presentation software to give feedback after their classmate's presentation, experienced a feeling of confidence. She noted that:

> Using the software, things were different: I could overcome some degree of shyness and tell what I think better than I do it orally because sometimes I have something to say but I can't say it just because I am afraid, they will laugh at me or at my accent. (Fatima, Diaries)

Along similar lines, Abdelillah wrote:

> When I am shy and I don't have enough confidence to give my opinion, the software and my mobile gave me the chance to participate. As if I am under door and this is the chance to say what I want to say. (Abdelillah, Diaries)

Here he approved of the use of mobile learning and the way it allowed him to participate in classroom learning but he was not sure this software would always be helpful since, according to him, it reduces human interaction:

> I am not sure this is good all the time. Sometimes, it is good to look to someone's eyes and interact. Besides, if I keep using the software to give feedback or participate in the classroom, I will never gain confidence and trust my abilities and do it orally. (Abdelillah, Follow-up discussion)

When Fatima appreciated the use of mobile-assisted language learning and interactive software to overcome shyness and cover her lack of confidence, Abdelillah considered both positive and less positive sides. He did not ignore that this technology scenario is encouraging him to have a voice in the classroom but such silent classroom participation is not enough for him and permanent use of the software could limit chances for oral participation and opportunities to build self-confidence.

Students also considered certain technology uses either by their teachers or classmates such as delivering lectures or presentations using the data projector as a sign of poor self-confidence. Ghoutia thought that:

> It somehow stigmatises the interaction between the teacher and students or between the presenter and other students in the classroom who are listening to him or her. Instead of him or her speaking and showing a confident body language and expressing what s/he knows and competencies s/he has, s/he relies on the data show showing pictures and reading slides. It is not used in the right way. (Ghoutia, Follow-up discussion)

Though some teachers brought technology to their classrooms to positively influence their students and boost their confidence, students did not automatically benefit from it. They built a kind of confidence and they learnt to trust their abilities in some uses and they lost confidence in others. Accordingly, occasional wise and careful implementation of technological aids is required in order to fully benefit from ELT technology scenarios.

Discussing different students' positive and less positive emotions and their psychological traits when using educational technologies here resonates with the concerns of Hockly (2017) who suggests that 'there is no point in using technology for its own sake' (p. 12), 'it is important not to assume that technology will automatically motivate students' and 'it is important to remember that it is the combination of technology, content, task type, student motivation and context that leads to learning' (p. 13).

6.4. Engaging in powerful learning through technology use

Using technology in language learning provides opportunities for students to deeply engage in powerful learning. Powerful learning takes account of classroom practices and learning experiences that engage the hearts and the minds of students. This section discusses aspects of powerful learning extracted form students' experiences in technology-mediated language learning situations which are unconscious learning and autonomous learning.

6.4.1. Unconscious learning and teaching

Among the powerful and influential aids that technology offers to its student users is the unconscious or implicit acquisition of knowledge. Both students and teachers appreciated the fact of being able to learn new things using technology without being aware of the process. Some teachers also enjoyed some technology uses that bring change to the classroom and make them less mindful to the difficulty of their work.

Abdelillah when describing lectures in the language laboratory cheerfully mentioned:

> The lecture in the lab is different and doesn't make you feel like studying. I feel happiness and amusement while getting information and that's a big step for technology. It breaks the tradition of you have to be quite and listen to the teacher guidelines to learn. I think this is how teaching and learning should be. The traditional way makes you feel learning is a hard task, using

> technology, however, I learn new things without being aware I am doing. (Abdelillah, Follow-up discussion)

Such a description revealed an unconscious learning experience which took place in a formal setting 'the language laboratory'. Along similar lines, he described the same feeling but experienced in different informal conditions:

> Actually, using technology, I am making less efforts and I am not even aware of the process. That's the good thing about technology. I can simply watch an instructional video on my way going to college (at the bus) I can just plug my earphones in and watch it. That's easier compared to having a long paper and memorising it which is effort demanding. (Abdelillah, Follow-up discussion)

Easily and rapidly acquired knowledge using technological aids is conceived here as unconscious learning. According to him, since his learning was happening implicitly when using technology and did not require from him great efforts, he was not conscious of the process of learning because a common and initial vision the participants have about teaching and learning is that it should happen in a formal setting where the teacher is giving instruction and the student is receiving knowledge.

Several participants in the focus group discussion also revealed that technology is offering multiple opportunities for unconscious learning. Ismail when telling of his experience with educational technologies noted that:

> Audio-visuals help me a lot… when using them I feel I want to listen more, I want to watch more and I don't even feel that I am doing or completing difficult learning assignments. Though, I finish the required work, I won't stop there, I want to learn more and know more because the method suits me. When I have free time, instead of playing a game or chatting, I watch instructional videos and the more I learn the more I want further. (Ismail, Focus group discussion)

Even when working on given assignments, this student appreciated the use audio-visuals which motivated him and gave him a strong will and determination to learn and explore more without being cognizant of the process or the difficulty of the task.

There is also evidence of other unconscious learning situations outside the classroom using educational technologies. Firdaws, a student participant, who commented on the Global virtual classroom experience as follows:

> In the GVC, every week there is a subject to talk about. Willingly or not, we learn something and it's a funny way to learn. I am not making great efforts and I am not going there to study; I go to train myself to speak and to communicate with native speakers. I was not even aware that I am learning something but I am learning a lot of things especially about different cultures. (Firdaws, Focus group discussion)

Here Firdaws referred to incidental learning which happened without awareness of what has been learned because the intention was to develop her speaking abilities but she learnt a lot about cultural exchange.

Some teachers as well declared that using technology, students are engaged in an unconscious learning process. Cylia commented on her students' experience of video- making as follows:

> Students who have done the work by their own, they learnt a lot of new things without feeling that they are learning. They said they worked a lot on it and they learnt how to use different software to make a video and edit it. You know they are not student of information and communication technology they are students of English and they did great efforts. (Cylia, Teacher interview)

Besides unconscious learning opportunities, Imene believed that technology is diminishing teaching difficulties and making her less aware of the teaching complications:

> Implementing technology is an entertaining way to teach and brings fun to the classroom. Bringing a video to the classroom, engaging students in flipped learning experiences and using blogs for example are teaching activities that help me teach without being aware that I am teaching and make me feel like I don't want to leave the classroom. (Imene, Teacher interview)

Teachers not only believe that technology use helped students learn accidentally without being aware of the learning practice but they also felt that educational technologies are offering unconscious teaching opportunities.

6.4.2. Autonomous learning

There is a shared view among the majority of student participants that emerging technologies facilitate autonomy in language learning. It seems clear that the first drive that motivated students to use technological aids both inside and outside the classroom is to be responsible and take charge of their own learning process.

Akram exemplified the way technology helped him study at his pace during secondary education till now in his higher studies:

> Using technology is not new in my learning process. When I entered the secondary school, I was a naughty student who didn't use to listen to the teacher, I wasn't focusing a lot in the classroom and I kept joking and talking to friends. But when I go home, I study what I missed in the classroom using the internet, I watch videos explaining that lecture and I understand easily. My teachers were really astonished how I could achieve good marks and I don't follow them in the classroom. First, I was doing this to make up what I missed in the classroom, but when I tried it, liked it and found it beneficial, it became my learning strategy and it made me responsible about my learning. (Akram, Follow-up interview)

Akram's intention about using internet and technology was to compensate for what he missed in the classroom. The result, however, was not only the compensation and the attainment of good marks, he also learnt how to learn by himself and take control of his learning.

Siham also pointed to a flipped learning situation where she experienced autonomous and independent learning:

> The teacher used to send us the content of the lecture in the form of a video, we watch it at home and when we come to the class, she briefly summarises the rules and the content of the lesson. Personally speaking, I learnt a lot from those videos… I felt like I'm relying on myself and when I extracted the rules and principles from the video, I couldn't forget them later on. (Siham, Follow-up discussion)

Here Siham referred to an autonomous learning experience recommended by the teacher. Aya, however, indicated an autonomous learning experience that she opted for after an unsuccessful auditorium learning experience:

> The course of Grammar, for example, we have it in the amphitheatre, I can't concentrate there as I do in the lab or the classroom: the amphitheatre is noisy, the teacher can't control all the students (200), we can't hear him or her well. I can learn nothing and I can't solve exercises because I couldn't understand the lecture. So, I just take notes of the headings and when I go home, I watch videos explaining that grammar point and I use grammar games and apps to understand and to be able to do activities in the following session in the classroom. (Aya, Follow-up discussion)

The three above-mentioned experiences refer to different autonomous learning situations experienced by students outside the walls of the classroom. Yet Ghoutia pointed to a different independent learning experience inside the classroom using mobile phones:

> In a session where I am allowed to use my mobile phone for learning, if I don't understand a word, I don't interrupt the teacher or ask him what you mean by this or that. I use my mobile dictionary, get the meaning and I carry on listening to the teacher. This helped me be more self-reliant in my learning and I wish all the teachers allow us to use them. (Ghoutia, Follow-up discussion)

The point here is that technological aids contribute to autonomous language learning and help learners be in charge of their learning both inside and outside the classroom. This reflects the view of Djouama (2020, p. 136) who concludes that:

> Technology becomes an opportunity to promote learner autonomy not only in the classroom but also beyond the classroom because learners (…) need a new language learning experience out of the classroom where they use what they know, feel comfortable, and can enjoy what they are doing.

Guerza also believes that learner autonomy can be enhanced by integrating ICTs in the Algerian EFL context. She introduced the CPP (content/ process/ product) model at the Department of English and explored its effectiveness for learner autonomy as mentioned in section 3.5. She revealed that ICT integration and mainly the CPP project provides EFL learners with autonomous learning opportunities and contexts (Guerza, 2015).

The findings reported above about technology integration in language learning and how it contributes to an autonomous language learning experience inside and outside the classroom are echoed in Mercado (2017, p. 45) who believes that:

> Technology makes it more possible than ever before for language learners to explore and learn the language on their own, in their own free time, with a potential for learning that can transcend beyond what has been accomplished through more traditional educational paradigms.

The findings above suggest that wise technology implementation in language classes assists in catering for learners' individual differences. In a similar vein, Akpan et al. (2013, p. 160) concluded that 'the use of ICTs for effective individualized instruction would minimize the effects of individual differences and reduce the teachers' challenges to cater for them'. In addition to this, when considering the results of this chapter, individual differences in technology scenarios are not only considered when students are exhibiting different psychological traits under the same technology implementation circumstances. They are also addressed when different students are approaching the same psychological trait or characteristic differently. The difference here lies in the source of the trait (section 6.1.2) and the outcome of the trait (section 6.2.1).

6.5. Discussion Summary

This section aims at recapitulating and expanding upon the major findings discussed in the chapter. This chapter has discussed the influence of technology integration in EFL learning on the psychology of individual learners. It has gathered a number of psychological variables which were highlighted as a result of technology integration in EFL learning, and which answer the second research question "*what is the impact of technology integration in EFL learning on the psychology of language learners?"*. This chapter discusses the complexity of the impact of TALL on individual learners by highlighting its influences on learners and their differences. It analyses the students' different psychological reactions to different and similar technology scenarios as well as the different manifestations of similar psychological traits in the same technology scenario.

This summary starts by addressing the features of pleasurable education experienced by language learners when using technology. It also discusses the role of TALL and educational technologies in accommodating students' different learning modes. Then, it moves on to

consider the relationship between educational technologies and students' motivation and self-confidence. Finally, it discusses aspects of powerful learning and teaching experienced by EFL students and teachers when engaged in technology-mediated language learning and teaching.

As discussed in section 6.1, some student participants when engaged in a technology-mediated learning environment, initiated by students themselves or by their teachers, inside or outside the classroom, reported certain features of pleasurable education. They referred to enjoyable learning and comfortable learning as two sources of pleasure that positively impact learning effectiveness, memory retention, and self-directed learning.

A number of participants shared the same feeling of amusement when using educational technologies, but what creates that feeling was distinctive. After multiple exposures to the flipped learning approach, student participants revealed that this approach brings joy and fun to the formal learning environment. The source of that joyful learning differs from one participant to another to include effortless learning and satisfying the needs of digital natives. Joyful learning, however, did not seem of interest to all learners. Some participants only wanted to receive instruction, regardless of the method or the material used by their teachers. When some participants experienced joyful learning differently, others did not care as much about the degree of joy when learning as they did about the content they are learning. This calls for differentiated instruction and suggests taking multiple approaches to the process of teaching.

Student participants also referred to TALL and the use of educational technologies as a relaxing and comfortable learning experience. The source of that comfortable feeling differs from one participant to another to include mental skills such as effortless comprehension, and easier learning activities. The flipped learning approach, for example, is believed to bring comfort to the students' learning experience in a variety of ways, amongst which are comfortable note taking and easier information retention. This approach ensured students are able to comfortably examine course materials and take notes at their own pace before coming to class. It also facilitated information retention since students were assigned lectures in the form of presentations or videos and engaged in an active learning experience that enabled them to understand the content easily. The use of instructional videos instead of print materials when preparing for a class also facilitated content comprehension and increased some students' engagement and willingness to participate in classroom activities. Exceptionally, a stressful learning experience, reported by participants, is the use of technology for assessment purposes.

Sitting for a listening test is the most anxious TALL situation experienced by student participants.

In addition to pleasurable education, there is a perceived recognition among language learners of the role of technology in accommodating their individual learning modes. Technology implementation in language classes helped some teachers vary their strategies and practise differentiated instruction by offering opportunities for visual learning and other idiosyncratic learning modalities.

A number of student participants highlighted the importance of the assimilation of information from visual formats when using instructional technologies. Visual presentation in different formats such as images, videos, charts, diagrams, simulations, slide shows, and flash cards facilitated information processing for visual learners who believe that they can understand better and gain more knowledge when they see things. The effects of visual support on learning manifested themselves differently among different students since this visual support assisted their learning on multiple levels. Visual support for learning facilitated remembering and retaining information and created an inclusive learning environment through attending to students' differences.

Some participants related the importance of visual learning to their ability to make sense out of the visual content, store it in their long-term memory, and increase their chances of remembering the material. The fact that visuals summarise content into smaller and easier chunks than text-based explanations helped some student participants to learn the presented material and made learning more memorable since they pair concepts with meaningful visual formats. Information retention, according to participants, increases dramatically when adding visual cues to textual content and oral explanations. Visual learning is of great interest to students inside and outside the classroom since it created a stronger and faster reaction than words, triggered emotions that influence information retention, and helped them engage with the content.

This leads to another outcome of visual learning, inclusion in the classroom and the learning process as a whole. Other student participants linked their interest in the use of visuals in language learning to inclusive education where students with different preferences benefit from the use of visual aids and get engaged more fully in the classroom. The degree of attention, interest, curiosity, and optimism shown by student participants when they are learning or being taught using visual aids, in a language laboratory for example, can be linked to their

engagement in the learning process. The use of instructional videos, images, 3D animations, and other visual formats increased the students' intellectual, emotional, and physical engagement.

Besides visual learning, technology integration assisted students to learn in the manner that suits their preferences. A number of idiosyncrasies have been identified among students when they are learning with technology. For example, different participants experienced the flipped learning approach differently, according to their learning needs and preferences. Reflecting students, for instance, appreciated the use of the flipped classroom because they are assigned lecture materials to be viewed at home and they have enough time to process information and understand things before acting. Deciding students, also, had the chance to cater for their learning modality using flipped learning. This category of learners is not able to focus in a noisy classroom, they have a clear aim, they tend to decide on problem solutions and concentrate on outcomes. The flipped classroom is advantageous to these students since it allows them to concentrate well and understand the content before coming to the classroom in order to achieve good learning outcomes.

The inverted classroom is also appreciated by acting students who are committed to a course of action. Using technology to prepare content before coming to class strongly motivated them and allowed them to practice their point of strength. The fact that these students have a reduced concern for risk or potential negative consequences, the flip, as a result, was an opportunity to prepare more questions to be discussed in class time and to maximise practice, discussion, and teamwork in the classroom. In addition to this, the flip was beneficial to students with an experiencing modality, who are open to emotions and able to find meaning from deep involvement in the experience. Receiving the lecture in the form of a video to watch before class time along with the animations in the videos assisted experiencing students in using their imagination to get closer to the reality and ensured their involvement in the learning experience. This leads to the conclusion that students experience different psychological reactions to the same educational technology scenario.

Not only does the flipped classroom accommodate different individual learning modes, but also other technology uses and approaches help students learn in the manner that suits them. For instance, sessions in the language laboratory were of great help to initiating students who enjoy taking action and generally taking a leading role in the classroom. The language lab is a space that transforms a passive language class into an active learning environment, where

students actively participate in language learning activities and get more practice time speaking and developing their oral proficiency than in a normal classroom. Initiating students feel at ease in the language lab, they get motivated, they move, participate, and volunteer to perform tasks.

Additionally, digital education opens up several avenues for teachers to offer and students to benefit from a psychological curriculum that provides affective education. Both student and teacher participants recognised the ability of instructional technologies to develop certain aspects of the psychology of the students. Appropriate technology implementation in the EFL classrooms was regarded as a technique for teachers to consider the emotional atmosphere of the classroom by boosting their students' motivation and building their self-confidence.

Starting with motivation, an overwhelming majority of student participants highlighted the motivating role of educational technologies in learning phonetics. They spoke highly about the use of the language laboratory for pronunciation purposes. According to them, the lab provides a facility that allows them to listen to model pronunciation, then repeat and record it, listen to their performance, and make comparisons with the model and classmates. It allows time for oral and auditory experiences and affords a well-designed opportunity for all students to practise listening and speaking. The auditory and visual materials get students closer to the information, boost their motivation for learning, and make them enthusiastic and impatient for another similar learning experience. Language laboratories serve as intrinsic motivators that catch students' interest and keep them away from boredom. The use of the language laboratory and instructional technologies in general is a motivational tool for teachers who use technology to engage their students, and also as an occasional antidote for students' boredom and passivity.

Furthermore, there is evidence among student and teacher participants that some ELT technology scenarios help students boost their self-confidence and learn to trust their abilities inside and outside the classroom. Using headphones and voice recorders, for example, is recommended by teachers for initial oral assessment. This way students feel more at ease to speak, have the chance to repeat if they are not satisfied with their recording, and gain more confidence in their ability. Another teacher believed that despite the fact that sessions in the lab are a new experience for university students, they allow some students to build self-confidence, volunteer to perform tasks, and participate more actively than in a normal classroom.

Another example is the use of flipped classrooms to help students believe in their competence and ability, and encourage them to have a 'can do' attitude in the classroom. Even students

with low-confidence correlated the flipped learning experience with an unusual feeling of confidence. Checking the content of the lecture before coming to the classroom helped them to trust themselves, participate, share their ideas, be ready to face the classroom and the teacher's demands, and contribute to classroom learning. Students, when engaged in a mobile learning experience involving the use of mobile devices and the presentation software 'Mentimeter' to give feedback about students' presentations, experienced a feeling of confidence, overcame shyness, and shared their points of view.

Such silent classroom participation, however, according to one student, reduces human interaction and limits chances for oral participation. Regular use of the software does not allow students to build self-confidence and trust their oral capacities. Other technology uses by students and teachers, such as relying on the data projector when delivering lectures or presentations, are also regarded as a sign of low self-confidence and a cover that hides the student's or teacher's lack of ability in the classroom. Accordingly, occasional careful implementation of technological aids is highly recommended in order to fully benefit from ELT technology scenarios.

Unconscious learning and autonomous learning are two aspects of powerful learning experienced by some student participants when engaged in technology-mediated language learning experiences. Technology integration in the teaching and learning process offered both teacher and student participants unconscious teaching and learning opportunities. Students enjoyed the use of technology and online material to learn new knowledge implicitly without being aware of the process. Lectures in the language laboratory, for example, broke the tradition of formal, quiet, teacher-centred classrooms and made students unaware of their learning tasks. The design of the lab, the seating arrangement, the use of the material, and spending the majority of time speaking and listening brought enjoyment and made students less conscious of the learning experience.

Besides unconscious learning in formal settings, students experience the same feeling in different informal situations. Anytime and anywhere learning through watching videos, playing games, and video-making are examples of unconscious learning since, according to participants in the study, students easily, rapidly, and implicitly acquire knowledge without being aware of the process or the difficulty of the task. Being involved in the GVC experience is another opportunity for incidental learning without being aware of what has been learnt since they learnt a lot about cultural exchange while the students' intention when getting engaged there

was to develop their speaking abilities. ELT technology scenarios, such as bringing a video to the classroom, engaging students in flipped learning experiences and using blogs also offered teachers unconscious teaching opportunities which made them less aware of the teaching complications.

The majority of student participants highlighted the role of educational technologies in facilitating autonomous language learning. The use of technological aids both inside and outside the classroom made some student participants more responsible and allowed them to take charge of their own learning process. Flipped learning experiences, for example, gave students control of their learning as much as possible and made them quite independent of teachers. The use of mobile devices, if allowed in the classroom, is also an opportunity for autonomous learning since they allow easy access to information, definitions, and explanations in just a few clicks. They allow students to be more self-reliant and more participative during class discussions. Technology also helped students study at their own pace and independently learn when they miss a class or cannot understand what is being taught in class.

This chapter has discussed the impact of technology integration in language classes on the psychology of language learners. It has considered learners' individual differences in different and similar technology-assisted language learning environments. It has provided examples of students' varying psychological reactions to technology implementation in their learning process. It also addresses different manifestations of the same psychological trait when using educational technologies.

The following chapter discusses the extent to which local beliefs and contextual approaches to technology integration take account of individual learner differences.

CHAPTER SEVEN

7. CONTEXTUAL APPROACHES TO AND LOCAL BELIEFS ABOUT TALL INSIDE AND OUTSIDE THE CLASSROOM AND THEIR IMPACT ON INDIVIDUAL LEARNERS IN ONE ALGERIAN UNIVERSITY

This chapter discusses findings related to the impact of contextual approaches to and local beliefs about technology use inside and outside the classroom on students' individual differences. All educational practices and their impact on the students and the teaching/ learning process in general need to be grounded in local considerations and existing conditions. Technology integration in the Algerian EFL setting has become a necessity that imposes itself but not completely or maybe sufficiently exploited. In an attempt to consider contextual approaches to technology integration, I inferred a number of context-related perspectives which demonstrated certain mismatches in terms of students' views and teachers' beliefs and decisions, and between inside and outside the classroom. These perspectives are of a huge significance for the psychology of language learners and their individual differences. In terms of the structure of the chapter, section 7.1 discusses properties of technology integration inside the Algerian classroom, while section 7.2 focuses on features of technology use outside the walls of the classroom. Section 7.3 then addresses contextual realities about educational technologies and individual differences in one of the Algerian universities.

7.1. Properties of technology implementation in the Algerian classroom

This section addresses properties of technology integration in the Algerian classroom context which result in an unavoidable reaction with the psychology of the language learner. Discrepancies between students' opinions and teachers' practice, incompatible familiarising and distracting roles of technology, the impact of technology on teacher/ student rapport and its influence on attendance, participation, and interaction are the main connections which resulted from technology implementation inside the classroom and which confirmed an impact on the psychology of the learner.

7.1.1. Discrepancies between students' opinions and teachers' practice

There is a perceived discrepancy between students' views and teachers' actions concerning technology and traditional teaching material use in the EFL classroom which does not allow catering for students' individual differences.

As I have already discussed in (chapter 5), students showed a variety of attitudes concerning technology implementation in their language learning process. Each linked technology use to his or her preferences and prerequisites in learning. Similarly, when comparing the use of traditional classroom material vs. technological devices, different students' opinions and their individual decisions could be summarised in three different categories of students. Categorising students in three different groups does not deny the fact that students can move from different categories according to the used technology, the way it is used and the learning experience:

- **Digital Students:** this category gathers students whom technology is taking an active role in their learning and life in general. These students increasingly expect their teachers to use some form of technology or other in their language classes. They only feel comfortable and satisfied when engaged in technological scenarios. This category includes cases like Ismail, Abdelillah and Akram who showed greater attention to educational technologies. These students, as discussed in section 5.3.1, reported a feeling of interest in technology and believed that language learning can be motivating, energizing and ambitious only if supported by technology incorporation.
- **Analog Students:** These students do not seem to have any preferences regarding technology use in their learning practice. Some of them enjoy technology and digital devices whenever they are not to do with learning purposes. They do not expect the use of instructional technologies in their learning and they involuntarily use them to fulfill some educational needs. This kind of students can be illustrated by the cases of Fatima and Malika who showed lack of concern and an apathetic approach towards technology use as discussed in section 5.4.1.
- **Adaptive Students:** are students taking benefit from both normal and technology experiences. They use both scenarios to adjust the pace and path of learning and they profit from an individual blend of both approaches. These students make use of alternative ways in order to meet their educational objectives. This group includes examples like Aya who uses digital learning to complement the classroom normal learning. She reported 'I enjoy combining both digital and traditional methods of learning. This provides flexibility in learning and offers multiple personalised learning experiences' (Aya, Focus group discussion).

Though each student expressed a different opinion regarding technology use providing different reasons, different feelings and different experiences (chapter 5), the above-mentioned categorisation simply provides a summary of three types of students according to their

relationship with technology. Each teacher's actions, however, did not show use of various strategies and different ELT scenarios to cater for students' differences. The majority of teacher participants undertook a fixed decision of either include or exclude technology use based on factors such as the nature of the module, students' needs and some personal preferences with the exception of one teacher who seems to vary her strategies and decisions to meet different students' expectations.

Focusing on the nature of the module, Amel clarified that the Oral Production modules necessitates the use of instructional technologies:

> I cannot rely only on the board and papers otherwise I won't get students' interest and attention. As a teacher I am obliged to use all the tools: the blackboard, pens, papers and technological aids to deliver information. Teaching Oral Production module requires a daily use of technology… I can't teach it without using technology. (Amel, Teacher interview)

Indeed, an incident reported in my field notes described an Oral Production session with the same teacher who asked students to practice listening using the lab material. These students spent the whole session listening and typing:

> In the Oral production session today, the teacher [referring to Amel] assigned the students a listening task in which they have to listen to a long recording and type their answers in a word document. Students spent the whole session (1h30) doing the same task. The classroom was completely silent, each student focussing on his or her pc. Signs of tiredness and boredom showed on some of the students' faces. (Field notes, December, 2019)

Cylia is another teacher who felt that 'The blackboard/ whiteboard is the most effective way to keep students on the track especially while receiving students' questions, explaining something new and when writing keywords' (Cylia, Teacher interview). When it comes to technology use, she routinely linked it to the demands of the module: 'as teaching study skills module, I found myself using technology every session' otherwise her belief is just 'if we don't need technology, we shouldn't press or oblige ourselves to use it' (Cylia, Teacher interview).

The above-mentioned cases, seemingly with little consideration of learners' needs and no reference at all to individual learner differences, referred to the nature of the module as the driving force behind using technology in a consistent manner in their teaching practice of

certain modules. Imene also referred to the module but as the obstacle which did not allow her to use technology. She mentioned:

> I believe on pens and papers as a teacher and as a researcher. I want to use technology in my teaching but the nature of the module I am in charge of doesn't require technology use. Teaching comprehension and written expression doesn't need technology but if I am teaching another module maybe it will be a necessity. (Imene, Teacher interview)

Amel, Cylia and Imene took the decision to constantly use or avoid technology use when teaching definite modules.

In addition to the nature of the module, there were other factors responsible for teachers' decisions about technology implementation. Rafik is another teacher participant who showed his personal preferences about technology at the very beginning of our discussion and before asking my first question, he addressed me saying:

> Please don't mention the word traditional! That's pejorative. That thing (referring to the blackboard) that people are calling traditional didn't bring great researchers and scientists? When I hear the word traditional or I encounter it in students' questionnaires I got nervous. What do they mean by traditional? Old-fashioned, no longer effective…! (Rafik, Teacher interview)

Rafik here linked the meaning of 'traditional' to something negative, old-fashioned and ineffective. In addition to this, he did not allow any kind of mobile use in his classrooms as mentioned in section 5.2.2.

In fact, he showed some curiosity about technology but not for teaching and learning purposes:

> I didn't have a Facebook account, and the first time I heard everyone talking about Facebook and Twitter it was in the time of the Arabic spring (2011) … I said in my mind what is this Facebook? I am still young, I am educated, I hold a diploma but I don't know how to use these things. It is impossible that technology will surpass me, I am still young. (Rafik, Teacher interview)

Even when he showed some curiosity about social media and technology in his normal life, that wasn't because of a personal desire but to take the challenge, keep pace with what is happening in the world and not to allow technology to go beyond his abilities.

In other circumstances, he confessed that ‘I simply cannot learn new things, renew lectures, and use new methods. I believe in something: the leopard can’t change its spots and old habits die hard’. When discussing his teaching practice, however, I realised that he could not deliver his Sociolinguistics and Pragmatics lectures without using the data projector which became normalised for him when teaching these two modules:

> I use the Data show almost each session and I come early in order to get one. The topics we are dealing with in the module call for data show use. When teaching Pragmatics and Sociolinguistics for example, I have to provide lot of examples and the data show is facilitating the task for me. The data show helps me cover many things in a limited time. (Rafik, Teacher interview)

Again, the sole use of technology which is integrating the data projector was required by the nature of the module. Otherwise, He did not approve of the teachers who use or allow their students to use technology in their classrooms. Till now, Students, their expectations and individual differences remained marginalised from the above-mentioned teachers’ considerations.

Even when students and their needs were taken into consideration and mentioned as a reference to teachers’ actions and decisions in the classroom, the majority of teacher participants did not seem to vary their strategies. In contrast, they decided to either include or exclude technology based on a generalised view they had about students’ needs. As mentioned earlier in section 5.2.1, Clara is a teacher who is considering her students’ demands when using technology in her teaching. These demands, according to her, were restricted to a call for change and innovation through technology implementation. Cylia, on the other hand, didn’t think that her students care or expect her to use any form of technology in her teaching. In view of that, she made a sweeping statement and she reacted accordingly by excluding technology without careful consideration of students’ individual differences.

Exceptionally, Rim is the only teacher participant who is varying her strategies and practices based on her students’ needs and expectations. As discussed in section 5.2.1, she decided to use technology in certain conditions, she withdrew her choice to use technological aids in other situations and she provided choice and facilitated the use of the material under different circumstances. All these various actions and behaviours were based on her students’ different desires and requirements.

This suggests that teachers have to consider different categories of students and satisfy their different needs simply by diversifying methods, strategies and the teaching material in the classroom.

7.1.2. From familiarisation to distraction

There is a perceived appreciation among students of the familiarising role of technology in EFL learning. These familiarising practices are generally considered by teachers and some students as distractions which prevent students' attention and responsiveness in the classroom.

The focus of some new students was on their experience with technology of becoming familiar with learning tasks. Akram appreciated the fact that he could use his mobile applications to familiarise himself with some pronunciations and definitions that he could not grasp in the classroom and did not dare to ask the teacher about them:

> I feel lucky and I am very satisfied of the use of mobile dictionaries in the classroom. Last time, the teacher provided an important keyword that I didn't understand; I couldn't stop the teacher and raise my hand in the Amphitheatre (with 200 students) to ask him about the meaning of the word and sometimes the teacher do not allow such kind of questions. So, I easily check the meaning of the word and its pronunciation in my mobile dictionary and I carry on listening to the teacher's explanation. (Akram, Follow-up discussion)

Fatima, when commenting about a blended learning experience using Mentimeter.com, wished her teachers did use this software with her at the beginning of the learning experience to get familiar with giving feedback and then with oral expression. She thought that:

> If teachers used this software with me in my first year, I would have the habit to say my point of view as it is (positive and less positive). I would also know how to give feedback especially that we didn't have the habit to do so in secondary school. So, we learn how to do it and we try it by writing first and then we do it orally. I don't know how to give a comment and they expect me to say it orally in the classroom. (Fatima, Follow-up discussion)

Both Akram and Fatima expressed gratitude for some technology uses which helped familiarise them with the content, learning tasks and skills as well. These uses, whether directed by the teacher or were student-initiated actions, played a significant role familiarising students with

learning. Some teachers' reactions, however, indicated that they consider such uses as a total distraction and a disruptive behaviour which affects the classroom order.

Rafik as a teacher appeared bothered by students who check or use their mobile phones in his sessions. He clearly stated:

> If I find someone holding his or her phone in the session, it will be a black day for him or her. So, I prefer to strike the first blow and eat them for lunch before they eat me for dinner. Classroom order is the first thing I look for: if my students don't want to attend or study, they are free but I don't allow them to disturb me, their classmates and classroom learning. (Rafik, Teacher interview)

Rafik, with his clear and strict instructions about mobile phones at his first meeting with his students (section 5.2.2), severely reacted to mobile uses and did not tolerate such practices:

> When someone tells me: Sir, I am just checking the spelling, another one says I am looking for the transcription or the pronunciation… I may close an eye but not always. I generally don't allow mobile use in my session and I don't accept such a disruption even for learning purposes. I am here in the classroom to respond to your questions and needs. Sometimes, I see a student with his hands under the desk doing something in his or her mobile phone and I am explaining the lesson, I am doing all my efforts to make them understand … I go and ask him or her to show me his or her phone and s/he won't stay in my classroom, I will kick him out. Why are they coming to the classroom? This way they are not respecting the sanctity of the classroom. (Rafik, Teacher interview)

Annoyance and anger caused by mobile phones use in the classroom are clear in this teacher's statements. He does not seem to tolerate mobile learning inside the classroom and he put strict rules in his classroom in order not to face problems and distractions in his sessions. This did not prevent students from secretly or invisibly using their mobile devices for different purposes maybe because 'forbidden fruits are the sweetest' or they may find it the only solution to familiarise themselves with some pronunciations, definitions and transcriptions. This teacher's reaction towards students' use of mobile devices in the classroom even for learning purposes

is explained by Sarnou (2020, p. 10) as 'the teacher's authority as the only knowledge-holder which must come to an end'.

Another teacher also seemed to generalise her students' uses of their mobile devices to things that take their attention away from what they are supposed to be doing. Imene seemed to avoid technology with her students because of distractions even if the teaching and learning experience was technology demanding:

> Even if I feel the need to use technology in my teaching or I feel that the task requires technology use, I won't use it in the classroom. You know it distracts students and instead of doing class work or interact with the task, you will find them in Facebook or Instagram. They won't follow me and concentrate on the lesson. (Imene, Teacher interview)

In respect of the above teachers' reactions to students' use of technological devices, Sarnou suggests that depriving learners of their mobile devices would not work as a solution to the problem. It could be more effective, however, 'to allow learners to use their own devices under the supervision of their teacher. In this case, the learner may feel not only comfortable with his/her own device but also responsible for his/her own leaning' (Sarnou, 2020, p. 11).

It is not only teachers who considered students' uses of technological aids as a distracting activity. Some students also thought that certain teachers' uses/ misuses of technology are diverting their attention in the classroom. Fatima recalled a previous classroom experience in which an inappropriate usage of the data projector by the teacher was preventing her from concentrating on the lesson:

> I remember two years ago, one of our teachers was always bringing the data show to her classes, she was presenting too much information (slides full of lines) in one session and she used the data show as an aid to give us a long lesson which should be delivered in no less than two sessions in one session (1h30). I remember that I left the room with no information in mind. When I used to see her entering the room holding a data show, I got bored though it was my first year at university and the use of the data show was new. She wasn't using it the right way and I found myself unable to concentrate and my attention diverted to things other than learning. (Fatima, Follow-up discussion)

Both uses and misuses of technology may lead students to be distracted. When the above-mentioned teacher participants generally referred to different students' uses as distractions to the student and disturbances for the teacher and the teaching/learning environment, some students also thought about certain of their teacher's uses of technology in the classroom as a total distraction and a factor that affects concentration.

7.1.3. Technology and the teacher-student rapport in the Algerian classroom

In addition to other classroom practices, some teachers integrated technology to create a rapport with their students and build effective relationships in the classroom. Such rapport could be avoided in favour of other variables and teachers' preferences. Students, however, might prefer equal and anonymous relationships with technology than asymmetric ones with teachers.

Several teacher participants referred to technology integration as one of the possibilities that contribute to developing rapport with students. Rim noted that:

> In addition to knowing students, direct contact with them, discussing things with them and always asking them questions, I use technology to integrate my students well in the classroom. I encourage them to use their devices; I give them the opportunity to collaborate with me doing my teaching process: I ask them for help to deal with possible technology troubles and some of them feel pleased and motivated to help. The more you create a certain environment in the classroom, the more they are aware about the importance of getting in touch with the teacher and it's a way to motivate them. (Rim, Teacher interview)

Here this teacher listed some behaviour for rapport building with students. In addition to some pedagogical classroom practices, she mentioned some tips to make a connection with her students using technology. There were a number of other similar references to the importance of technology integration for creating teacher-student relationships. Clara, when commenting on flipped learning experiences, emphasised the ability to spend more time in the classroom listening to the students and caring about them:

> We, as teachers, have a program to follow, lectures to prepare and time to respect. So, building a rapport with students, for some teachers, is a waste of time. They come to class, they start presenting the lecture, writing things on the blackboard and at the end asking some questions and not all students will

> have the opportunity to discuss with the teacher and later on when they start asking questions about the previous courses, the teacher with heavy load charge will keep discussions till the end and unfortunately, they won't have time to exchange with the student. For me I prefer to be late and not avoid this kind of communication in the classroom. But when flipping classrooms, I have enough time in the classroom to discuss, interact and listen to my students' desires and requests. (Clara, Teacher interview)

Here Clara compared a normal classroom where the teacher has a limited time to interact and communicate with students to a flipped classroom where class time is spent listening, communicating, discussing and caring about the students. Similarly, Fersaoui (2016) addressed the teacher-learner relationship in an online context and highlighted the fact that the teacher-student rapport is not comprised of face-to-face instruction only. Teachers, however, should guide, direct, train, and inspire students within an online teaching and learning context to benefit from a well-organised autonomous learning experience.

In addition to this, some teachers' classroom behaviour and approach to technology integration did not only help them create rapport with students but also assisted them in avoiding mobile distractions in the classroom. Rim revealed that:

> From time to time, I try to introduce and make good use of mobile devices in the classroom. I organise quizzes and vocabulary games and activities and allow them to use their mobile devices. They find it very funny and joyful classroom experience and they interact well with it. In addition, when I ask a question I have such direct eye contact with everyone, i.e., I am waiting an answer from all of you, I'm not working with people who would like to talk only and when I see that they are not sure or when they hesitate, I always put myself as an example sometimes even if I feel like I'm giving them personal details but they feel at ease with me and they forget their mobile phones for a certain moment and keep focused on the lecture. (Rim, Teacher interview)

By making the use of mobile devices something permissible in the classroom, making appropriate use of them for learning experiences and keeping close relationship with every student in the classroom, this teacher limited mobile distractions during sessions and developed positive rapport with her students which, according to her, facilitates their enjoyment of the course and enhances their receptivity to what is being presented.

The aforementioned teachers' approaches to technology implementation resonate with the modern view of teacher-student rapport and what Sarnou (2020) calls 'a two-way relationship' in which she highlights the importance of 'partnership' and 'mutual dependence' between the student and the teacher. Flipped classrooms, the BYOD approach and other technology scenarios support this kind of teacher-student rapport by allowing the student also to be a source of knowledge in the classroom and permitting the teachers to learn alongside with their learners.

Another teacher participant, however, preferred to leave behind these personal relationships with students. According to him, there are several ways other than technology integration to keep good relationships with students but he did not believe that's part of his teaching mission. He argued that:

> There are some teachers who play a great role in the classroom and they are more interesting than the material. Their social behaviour and building rapport with students have a great impact on students whether using technology or not. For example, teachers who have the habit to give good marks to students and teachers who are making a roof for their assessment marks are not seen similarly by students. For me, my job is to teach and help the learner that's all. I am here to teach and I am not here to like people and they like me. You will become a teacher here and you will see that this generation [the millennial generation] is different and rapport doesn't work for them. (Rafik, teacher interview)

In addition to the fact that building rapport with learners is not one of this teacher's priorities, he asserted that mobile use in the classroom is something that is harmfully affecting his relationship with students since he does not tolerate mobile use inside the classroom. He reported a classroom event which made him feel intense anger and unable to react calmly:

> One day, we had an exam, a student told me: can I answer the call, it is something urgent? I was shocked how dare he? I told him: are you serious. You are disrespectful. If someone is dying, will you save him? (…). Yes, I don't accept mobile phone use in my classroom and I am no longer such a kind teacher. (Rafik, Teacher interview)

Despite the fact that the student here wanted to use his mobile device for a personal reason, Rafik as mentioned in section 7.1.2 reacts with severity to mobile uses for learning purposes as well and he doesn't accept mobile learning in the classroom. Thus, the use of technology in such circumstances affects the teacher-students rapport and creates a kind of noise and disturbance in the classroom.

My student participants who had been taught by Rafik appeared psychologically affected by their teacher's words as I noted in my field notes after interviewing them:

> Three of my student participants who have been taught by Rafik referred to the classroom event [discussed earlier] and they all repeated the statement 'If someone is dying, will you save him?' The three participants pointed to 'how can I use technology with someone who did not care to human life in order not to be disturbed'. The teacher's reaction towards mobile phone use in the classroom negatively affected these students' emotions and was enough for these students to take a certain stance. (Field notes, January 2020)

Certain teachers' reactions have a strong influence on the students' psychological state and behaviour. For this reason, some students preferred distant and less personal relationships with technology and internet than direct rapport with some teachers. Abdelillah referred to his experience and compared online learning with normal classroom learning as follows:

> Teachers do not always use the correct method to communicate with students. They may just talk with smart people and give them all their attention and neglect other less smart students. Technology, however, doesn't separate between smart and less smart students and just provides information equally without harming, underestimating or judging our abilities. I feel I can't be ignored by technology. In a normal class, however, when the teacher is explaining I can be ignored, I can be obliged to ask questions or say answers that make me look not educated enough or not well equipped for this course. (Abdelillah, Follow-up discussion)

This student, here, preferred to use technology and keep equal and anonymous connections with it rather than personal and unequal teacher-student relationships. Impersonal interactions with technological devices are satisfying some students' expectations since there is no means for obligation, underestimation, being ignored or any other judgmental or unequal practice.

Such anonymous relationship with technology was considered by Alhumaid (2019) as a negative impact of technology integration in education by means of 'dehumanizing educational environments'.

When the use of technology helped some teachers to maintain a good rapport with students, other teachers regarded it as a source of classroom disruption which creates problems and harms teacher-student rapport. Each of the above-mentioned teachers' reactions, either by tolerating or prohibiting technology use, demonstrated a kind of teacher agency and a capacity to avoid and solve pedagogical challenges such as distractions. In the light of those circumstances, some students selected technology-assisted language learning settings in order to sidestep some teachers' default behaviours.

7.1.4. Attendance, participation and interaction

The inclusion of educational technologies and the availability of online educational services have both positive and negative impacts on students' interest in attendance, participation and interaction in the classroom.

Starting with attendance, technology implementation can be the source of different decisions according to the teacher's method of implementation and the utility of the technological learning experience. Abdelillah referred to lectures in the lab as 'amazing' and 'worth going to'. His attitude indicated a high motivational level and an interest in attending the lecture. He mentioned that:

> Lectures in the lab are actually my favourite sessions because of the way my teachers use videos and other technologies. These sessions are amazing and worth going to, you find me waiting for the lab session with passion and trying to expect what we will be doing. Last week, I couldn't attend a lecture in the lab in which the teacher played songs to teach students phonetic sounds. I would love if I just go back and do attend that class. (Abdelillah, Follow-up discussion)

Technology integration was not only responsible for students' interest and desire to attend classes. The availability of online resources and easy access also drove some students to skip lectures. Akram found that these lectures are unnecessary to attend and he explained that he could get the alternative in online services:

> I don't attend lectures that we have in the Amphitheatre or lectures in which the teacher is only dictating. The majority of the time I am here at university but I don't attend. I can't attend a lecture when the teacher is only reading from the slides or dictating and we [students] are only writing. I only attend 2 or 3 times in the semester in order not to be excluded. What I do? I ask for titles and I make research myself using internet. (Akram, Follow-up discussion)

Though the tradition is that students learn more and understand better when being present in the classroom, students like Akram did not attend classes which are teacher-centered; they only made minimum attendance for administrative purposes and to avoid exclusion of the module. This student claimed motivation for self-study and he easily found an alternative to classroom learning in TALL and educational technologies. The lack of perceived value of attending classes correlated with the students' own perception of the course quality and the role of the teacher in the classroom. Rafik as a teacher concentrated on the role of the teacher in technological learning environments when he claimed that:

> Here at university, we [teachers] are not supposed to dictate and the use of data show and PowerPoint presentations have techniques and regulations: We should not bring the slide full of words and we call it a slide. A slide shouldn't exceed 4 lines and 3 examples. We shouldn't put details there and we shouldn't only read what we provided in the slides. Otherwise, anyone could do the task of the teacher and technology can replace the teacher; we are supposed to discuss things and interact in the classroom and that's what I am doing with my students. (Rafik, Teacher interview)

This teacher put forward a number of guidelines and recommendations to be followed by teachers when implementing technology and more precisely when using the data projector in order to make it a fruitful experience which is based on content presentation, discussion and interaction. The role of the teacher, which encompasses both discussing the content presented by technology and creating interaction with the teacher and between students in the classroom, is the main factor which does not allow technology to replace the teacher. Wise teaching and careful implementation of technology by the teacher, therefore, make students careful about attendance and make classroom attendance completely different from learning using online resources.

Equally important, teachers also made use of virtual services to present what has already been taught in the classroom especially for master students who either couldn't or don't want to attend the class and to avoid repeating the same answer to students' inquiries about the missed content. Cylia commented that:

> The thing with that class is that not all of the students were attending and each time I get students coming by the end of the semester telling me I don't know what this module is about. You know master students think they are they are mature and they don't need to attend all classes. Other students are working or have other commitments. So, in order not to have to repeat everything each time I share with them an online document which contains everything about the module and all the necessary information. (Cylia, Teacher interview)

This teacher used technology to respond to absent students' needs and reduce her workload at the same time. Using technological aids, she provided an opportunity for these students to substitute what they missed. Such opportunity could be regarded by students as a chance to comfortably miss classes since the missed lessons will be delivered online.

It seems that the teacher's approach and strategy of technology implementation can be either a source of motivation and interest to attend classes or a chance for absence without missing what has been taught in the classroom.

When it comes to participation, certain technology uses appeared to encourage some shy and less-confident students to participate in classroom learning in a way that suits their personality. Silent participation and full engagement were observed when implementing a mobile learning experience and using an interactive presentation software to give feedback after a student's oral presentation. I noted that:

> The teacher asked the students to comment on their classmate's oral presentation using their mobile devices. Students enthusiastically took their devices and started writing their feedback (…). Though it took some time, more than 20 opinions were exposed on the screen. (Observation notes, December 2019)

The class teacher commented on the experience as follows:

> Though they did it silently, I felt that the whole class are engaged and taking part of the learning experience. That was the first time we got such number of comments on a student presentation. Even shy students and students with low oral capacities could express their opinions and participate to classroom learning. Just amazing! (Rim, Teacher interview)

The use of interactive presentation software made it possible for all students regardless their capacities or type of personality to give their feedback and participate in the classroom yet in a silent way. This was not only recorded in my observation notes and mentioned by teacher, it was also noted in learners' diaries by Rihab who confirmed that:

> I liked the experience because I am a student who can't give her feedback in front of her classmates… I feel shy. So, this helped me to express my ideas. It is something amazing that technology is taking my case as a shy student into consideration and giving me the chance to participate with my ideas because if I don't express it this way, I will never say it orally. I hope I see this kind of innovation in teaching and learning in the near future in our university. Maybe we students have to make the first step and demand change and new ways of learning. (Rihab, Diaries)

The same opinion was expressed by other participants such as Asma, Fatima and Feryal who were thankful for the use of the software which made their point of view known to their teacher and classmates when it is impossible to do it otherwise because of shyness and embarrassment.

Though the majority of participants valued silent participation through the software and found it an effective solution to give a chance to all students regardless their abilities or personality traits to contribute to classroom learning, there were some exceptions who reported some shortcomings of this technological learning experience. Marwa wrote the following:

> We could easily notice the difference in classroom participation, all students could share their point of view, and all students including shy students who never talked in the classroom were given the chance to give their opinions. Additionally, the fact that it is anonymous; this strategy can avoid many conflicts among students. On the other hand, it seems to neglect the speaking skill in the classroom and students will develop the habit of being silent and will never be able to express themselves. (Marwa, Diaries)

Despite the fact that she listed a number of benefits of the software, she insisted on the way the experience ignored the speaking skill and oral participation in the classroom. More precisely, another student mentioned that the use of this kind of software may reduce student/student interaction in the classroom and limit the use of other communication skills such as facial expressions and body language. Ghoutia wrote in her diary:

> The entire group could share their point of view. But I think such a method appears to neglect an essential part of classroom activities which is student-student interaction. Using this software, we couldn't comment and discuss each other's point of view. At least, orally it would be much easier and feasible. In addition to this, using this software you can't identify the students' real point of view through interpreting his or her facial expressions and body language. Next, for us as foreign language learners, the classroom should be the space where we express our opinions and train ourselves to speak and engage in discussions and this software is limiting classroom discussions. (Ghoutia, Diaries)

This piece of writing indicates an assumption that classroom discussion, interaction and both oral and physical communication were limited by the use of interactive presentation software. Though as its name suggests this software aims to create an interactive presentation, oral interaction, according to Ghoutia, is more valuable in foreign language learning. Underlying Goutia's words was an indication of a confident learner who is able to express her thoughts and wants to learn by engaging in discussions in the classroom.

This also makes it important not to assume that technology implementation is automatically satisfying all students and calls for a consideration of students' different personalities and different learning motivations by providing variety and choice when integrating technology.

7.2. Features of technology use outside the walls of the classroom

The purpose of this section is to address key features of students' technology-enhanced language learning practices outside the classroom during the study. These technology scenarios were either students-initiated strategies to develop their capacities and take more control over the learning experience or set out by the university as a response of the education sector to the critical Covid-19 circumstances.

7.2.1. Digital collaborative practice

It could be argued that technology-assisted language learning offers multiple collaborative learning opportunities for students outside the classroom by means of group assignments, peer editing and scaffolding learning. These students-initiated strategies shift more responsibility to students in their learning process.

There is recognition of the role of technology to help students learn more collaboratively in informal settings introduced by students themselves. Some students appreciated the fact that technology creates connections between students outside class time through social network which is enabling them to socialise and collaborate. Ismail stated that:

> We created a group on Facebook and it is really helpful. We share lectures, homework, and assignment deadlines. We ask questions about lectures or points that we couldn't understand or we missed in the classroom. We share experiences and we reflect on each other's' work. (Ismail, Focus group discussion)

Ismail provided several examples of collaborative learning activities through social media which were of a great significance for him and his classmates in their learning process. Siham, moreover, showed appreciation and expressed gratitude to social media which facilitated cooperative group learning for her and her classmates when preparing a group assignment:

> Last time, I and three classmates had to present something in group and it was the end of the week and you know students come to university from different regions. We live far from each other and we couldn't meet to work on the presentation. Thanks to social media, we gathered and we created a messenger group where we made a list of all work that needs to get done, then we divided it fairly and distributed roles, we discussed what to include in each section and once we finished, we practised orally in a group call. (Siham, Focus group discussion)

In this instance, Siham gave an example of the way technology supports collaborative learning. She provided the complete process they undertook together to prepare for a classroom presentation using social media and present a collaborative product.

There was also an indication to collaborative pair work through peer editing using social networks by Malika who stated that:

> I really appreciate the fact that I can use social media for learning purposes. You know sometimes when the teacher gives us homework, I don't trust what I do and I usually doubt my abilities. What I do? Before I hand the paper to the teacher for grading or before presenting what I prepared, I send a draft to my friend on Facebook and I ask her to read it and provide feedback. She helpfully leaves comments on my work and resends it to me. I revise it based on her comments and confidently submit the work. (Malika, Follow-up discussion)

This student suggested another example of digital collaboration through peer editing. Underlying her decision to send work to a peer for editing was a feeling of low self-esteem and a trust of peer abilities. These feelings played a critical role in Malika's decision to ask for her friend's review of her work and therefore engage in digital collaborative practice. This kind of collaboration did not only help this student to perform better when doing homework but to boost her confidence and self-esteem as well and develop her learning experience.

In addition to this, Kawther pointed to another effective and encouraging collaborative learning experience during the Covid-19 period. In this critical period and after university closure and a total educational shift, some students found it difficult to adapt and understand the courses delivered in online documents. Hence, students of the same group collaboratively appointed module leaders to scaffold the learning of other weaker students. She described the experience as follows:

> As a response to Covid-19 situation, some teachers started giving lectures on online platforms. Others, however, managed by simply sending us lectures in the form of a document. Not all of us could understand the content of the document and this was not convenient to students with different abilities. So, we decided to create a Facebook group and collaborate together to support each other's learning. Each student who is strong in a certain module is required to teach, help and facilitate weaker students' learning. It was really effective; we created an encouraging learning atmosphere and we could easily understand our classmates' instructions. (Kawther, Follow-up discussion)

By students collaborating in digital environments, they could scaffold the learning of other students and maximise understanding. Students in this group could assist each other's learning,

create a positive learning environment and address their friends' learning needs which couldn't be satisfied by the online documents sent by teachers. I can also point to the fact that students might find it easier and more helpful to ask for peers help than asking for clarifications from the teacher.

All the above-mentioned learning experiences and examples referred to digital collaborative learning situations outside the classroom which were initiated by students themselves to meet their diverse learning needs. These experiences did not only demonstrate that students are informally collaborating outside the classroom using technology but they were also taking more responsibility over the learning process.

7.2.2. Online self-directed learning

There is evidence of multiple digital learning opportunities where students learn independently choosing from different available resources outside the classroom. Technological learning experiences promote self-directed language learning in which students have a say in what they learn and a choice in how they learn.

This self-paced learning method allowed students to design their own learning experience according to their own interests and learning preferences. Fatima as a student appreciated the fact that technology helped her to choose and access the materials and the content that she feels comfortable with apart from the syllabus set out by the key stakeholders in the educational process. She revealed that:

> During breaks and holidays, I get bored easily. I take rest the first two or three days then you find me surfing on the net trying to learn new things. I read the books that I like and I watch the instructional videos that I prefer not in order to learn something specific or to accomplish learning activities and assignments. That's only to satisfy a personal craving. (Fatima, Follow-up discussion)

This student developed her skills and capacities by taking control over the content and the pace of her learning using technological aids. Apart from teachers' instructions, assignments and homework, Fatima accessed Internet to satisfy an internal learning desire.

Another instance of self-directed learning was Ghoutia's case who listens to audiobooks online simultaneously when doing her job. She stated the following:

> I am someone who studies at university and works at the same time. I love literature and I enjoy reading books but I have no time for that. So, while I am doing my job, I wear my earphones and listen to audiobooks. That's an effortless hobby that makes me feel happy and knowledgeable at the same time. (Ghoutia, Follow-up discussion)

Using her mobile device and earphones, Ghoutia listens to audiobooks and immerses herself in a self-motivated activity that is done for enjoyment and gaining knowledge at once. Though one was done to fill in free time and the second was done during working hours, both Fatima' and Ghoutia's online learning practices resulted in a profitable self-directed language learning experience.

When the above-mentioned cases referred to online self-directed language learning experiences using personal devices that are at their disposal, other students went beyond available resources and voluntarily engaged in digital educational programs outside the walls of the classroom. Linda talked about her experience in the Global Virtual Classroom (GVC) which is, according to her, a mind opening experience through cultural exchange between the world's universities. She described it as follows:

> The GVC is the place where each student brings an original version of himself or herself to contribute to a rich and memorable learning experience. I could learn to get familiar with unfamiliar perspectives and understand others' cultures along with my culture. Through an exchange of ideas with partners from different universities around the world, I opened my mind to different people, different identities and different cultures. (Linda, Follow-up Discussion)

Students like Linda selected the GVC Programme to further develop their speaking and communication skills. She opted for a less formal learning experience outside the classroom to open her mind and try to see things from new perspectives and to accept different ideas and opinions.

Another student's approach to self-directed learning was to participate in a worldwide student competition in which they have to solve a social issue around different topics that needs to be dealt with immediately. Two of my students' participants collaborated as a team to create a digital copybook that replaces the paper and the pen:

> By participating in Hult Prize competition and working on this digital note taking device, we are engaging in a motivating and self-instructing experience. We are developing our knowledge in the field of digitalisation and gaining new insights about collaboration, self-teaching, challenge and competitiveness. (Ismail and Kawther, Follow-up discussion)

Ismail and Kawther when participated in Hult Prize competition and Linda when enrolled herself in the GVC programme, they had a voice and a choice in their own learning. Technological experiences create opportunities and help students engage in more self-directed learning atmospheres. This, in turn, help students take control over their learning and develop a sense of responsibility and self-motivation.

Online self-directed language learning opportunities available beyond the classroom grabbed some students' attention and helped them make decisions and take control over their own learning experiences. Online self-directed language learning experiences outside the classroom are considered by Mercado (2017, p.45) when he notes that:

> A successful twenty-first-century learning experience no longer depends solely on what can be accomplished in the classroom but also on what students can discover, learn and practice outside of a formal instructional setting.

Students-initiated approaches including both digital collaborative practices (discussed in section 7.2.1) and online self-directed learning (discussed in section 7.2.2) are of the major forces shaping an andragogical theory of adult learning (Knowles et al., 2015) which is based on precepts like 'the need to know why to learn, the learners' self-concept, the role of the learners' experiences, readiness to learn, orientation to learn and motivation' (p. 43-47).

7.2.3. Online educational delivery imposed during Covid-19 pandemic

The only university-initiated and imposed online learning experience outside the walls of the classroom came as a reaction to Covid-19. Though the pandemic situation made online learning possible to happen, it resulted in poor educational outcomes and a troubled learning experience which dissatisfied students. Besides the lack of hardware and connectivity, students' attitudes and expectations were challenged by the imposed, sudden, unusual and inappropriate implementation.

University and school closure was the initial response of the Algerian educational system to the Covid-19 pandemic situation. During such critical phase and before issuing any decisions or implementing any changes by the Algerian government, teachers reported a need to adopt an online educational program outside the classroom since students, teachers and other staff were forced to stay at home:

> We stopped the academic year in the middle and the students needed to be aware of some remaining lectures before they went to the next level. I knew the situation wasn't going to get better very soon and that by the time the students will be back to university we wouldn't have time to cover all the lectures (which actually happened). So, I had to think about delivering the remaining lectures online, and make them available for students whenever they needed them. That was encouraging enough to take the step. (Cylia, Follow-up discussion)

> The need to adopt a new way of teaching, learning and testing was urgent but not easy to implement in a country where the E-learning is not already well integrated in our universities. In addition to this, the structure of our educational system doesn’t support completely online practice. (Rim, Follow-up discussion)

Both teachers conveyed the necessity to adopt an online educational system which could incorporate E-teaching, E-learning and E-testing. Cylia’s greatest interest was to deliver the outstanding lectures and make them accessible to her students. She focused on technology as a solution and she was stimulated to take action due to time constraints which will make it challenging to make up for the missed lectures and carry on with the syllabus when they are back to university. Rim, however, expected difficulty since the delivery of learning through digital resources was not well incorporated in the setting and the rigid structure of the system in the setting restricted online learning.

Despite the fact that teachers were the first agents who felt the need of an online educational delivery before any governmental decision, they referred to the educational shift to remote learning advised by policy makers as a sudden and rapid transition. Rim believed that the

pandemic situation enforced many changes to the mode of teaching and learning which in turn showed that the students, teachers and the university were not prepared for such a shift:

> Either due to the lack of laptops or absence of Internet connectivity, not all of students were able to attend the E-sessions; viva voces were organised online but without an online presentation; E-testing was organised individually by teachers without any experience; Exams were postponed till we were back to university and instead of setting a timetable of 15 days, it was a timetable of 9 weeks to avoid a big number of students at once at university. Things are not well structured and it is clear that we are not ready for such sudden situation in our country. (Rim, Follow-up discussion)

This teacher mentioned a number of changes which were imposed by the pandemic situation and which resulted in disruption and disorganisation in the teaching/learning process. She associated those difficulties with both the lack of hardware and internet connectivity in the setting and the fact that the shift happened in an abrupt manner. She considered the pandemic situation as a test for the Algerian educational system which showed its unpreparedness for online educational delivery.

Another teacher participant viewed the way the Algerian university could face the Covid-19 situation and tried to adopt an online educational system as an achievement in itself regardless of the emergent complications and insufficiencies. Cylia highlighted the fact that:

> The Algerian university has taken the matter seriously and started action very rapidly. Platforms for online lectures were ready within one week from the first confinement and the lectures were quickly uploaded to the website. Though lectures were not accessible to all learners, things were under control only when students went back to university in September and we are expecting a huge delay in starting the new academic year, we can say we could cross that barrier. Online learning in Algeria was a challenging idea and the Covid situation made it possible to happen or to dare. (Cylia, Follow-up discussion)

Here, there was recognition of the university's ability to provide online learning outside the walls of the classroom in such a critical period. Since online learning was uncommon and unusual in the setting even in normal conditions, the fact that it was possible and it occurred as

a reaction to educational interruptions caused by Covid-19 was of a great importance to this teacher. Such a reaction associates to '*the commitment of reformers to see a particular desired change implemented* and which can be *a barrier to setting up an effective process of change'* (Fullan, 2007, p.108). In this case, Cylia, rather than concentrating on 'how to work through a process of change', she was more committed to 'what should be changed'.

When it comes to educational outcomes, however, Cylia expressed disappointment:

> On the one hand, the students seem to have a good knowledge of the content of the lectures that were provided to them online. They started making their own research and taking responsibility of their own leaning. On the other hand, the evaluation of the content that was provided to them before and during the pandemic showed that they forgot everything they did in class and they did not benefit from the revision provided online; they could hardly remember anything. (Cylia, Follow-up discussion)

Students' poor outcomes dissatisfied their teacher's hopes and expectations during the process of online learning. Taking into consideration the students' views, apart from students from financially challenged backgrounds who might find it difficult to afford the material and internet access and analog students who did not seem to have any preferences regarding online learning, even digital and adaptive students and those who have easy access found it a challenging and an ineffective experience. Abdelillah revealed that:

> It was a bad and stressful experience and I did not feel like I am learning. It is felt like we were forced to learn many information in a short amount of time and we weren't given time to use and discuss what we learn like we did before Covid-19 crisis. It's felt like teachers were ordered to teach us all of those things as fast as possible and we just had to deal with the repercussion. The university didn't live up to my expectations: they controlled things at first but they gave up afterwards, and the teachers flooded us with homework and submissions. (Abdelillah, Follow-up discussion)

Similarly, Kawther commented that:

> It was hard to accept such boring online learning experience. I was obliged to attend the lectures that my teachers provided online, but my feeling about the experience has nothing to do with what I feel when I study online by

> myself. I only felt I am learning when I was back to university after 6 months pause. (Kawther, Follow-up discussion)

Both students referred to the perception they had about online learning during that specific period as a compelled learning experience which was obliged and guided by the university. Abdelillah felt restricted by time, bothered by teachers assigning excessive homework, concerned by the lack of chances to discuss what he studied. Kawther couldn't associate this experience with autonomous and self-directed online learning experiences and she summarised the case when mentioned that she only experienced learning when education returned to the usual face-to-face classroom context.

The point I want to make here is that though the Algerian university made possible efforts to deliver instruction online and they took the matter seriously to accomplish students' learning in such a critical period, they could not meet students' expectations. It seems that the more technology use is enhanced in the department the more some students are expecting higher resources and wiser implementation.

Teachers and students when evaluating the online teaching and learning experience during the pandemic period referred to a number of both internal and external barriers that affected the adoption of online learning experience, namely: the lack of hardware and internet connectivity, rigidly structured systems, the sudden and rapid change, the imposed shift, the unusual situation, and ill-advised implementation.

Other research conducted in the Algerian context during the pandemic situation also reported challenges that affect the adoption of online teaching and learning. Kerras and Salhi (2021, p. 32) identified 'the lack of fluid communication between the teacher and the student, the unavailability of equipment and internet connection, the lack of an interactive database for the student, and the absence of some communicative and psycholinguistic teaching methods', while Benmensour (2021, p.275) highlighted 'students' negative attitudes, lack of training, lack of ICT skills, and computer anxiety'. A shared barrier among the above-mentioned studies and the present study is the lack of hardware, software and internet connectivity. Other challenges, however, differ from one EFL setting to another.

The failure of online learning reported in both students' and teachers' statements can be linked to not considering the three necessary dimensions of any educational change discussed in section 2.1.3. According to Fullan, 'the possible use of new or revised materials, the possible

use of new teaching approaches and the possible alternation of beliefs together represent the means of achieving a particular educational goal' (2016, p.28).

7.3. Contextual realities about TALL and individual differences in one Algerian university

Technology implementation as any other educational technique needs to be based on local and contextual considerations. This section addresses contextual realities about technology integration in the setting and their impact on the teachers' decisions about and students' different reactions to technology integration. Contextual concerns including the need of training, wise use of the material and IT help and some generalised beliefs about technology showed that technology is not sufficiently exploited in the context and seem to impede differentiating instruction and catering for individual differences.

7.3.1. The need of training, IT help and wise use of the material

There is considerable awareness among students and teachers of local concerns which did not allow teachers to use technology and engage in differentiated teaching. The need of training, IT help, and wise use of the material were the major concerns of students and teachers in the setting.

Low IT skills and the lack of teacher training seemed to be serious obstacles which did not allow some teachers to use the existing material and vary their strategies to meet different students' expectations. Clara mentioned that though technological tools in the Algerian university are limited to projectors, teachers may not know much about them and find it difficult to use them:

> Up to now, the data show is the extraordinary technology that we have and not all of us know how to use it. When it comes to theory, we know what does it mean and most people read about technology. But when it comes to practice, we don't have technological skills and the university didn't bother to set up short training sessions. I know some students expect it but teachers haven't been shown how to use it as well. (Clara, Teacher interview)

This teacher admitted that some teachers are not prepared to use even the less complex technological tools in the setting. As a result, she expressed the need of sufficient training for technology use in the classroom in order to be able to use it and live up to different students'

expectations. She did not seem to focus on the greatest or the latest trends in technology, but she focused on instructing teachers how to use technology to support students' learning.

Another teacher concentrated on the need of IT support and help for teachers and students. He suggested that the university should appoint IT specialists who help with fixing the material and be available to sort out technical problems which occur in the setting. Rafik said that:

> Last time a plug exploded in my hands and the electricity went off in the entire floor. Where is technology? And how can we use technology in such conditions? Each time you need the data show you should take it from the administration to the room and fix it and when we complain they tell us they couldn't supply each room with a fixed data show because they are afraid of steal… They could at least employ a specialist who takes responsibility of the material and help us to fix it. (Rafik, Teacher interview)

Besides the need of teacher training and IT support, both students and teachers focused on the necessity of wise decisions and careful implementation by teachers and other stakeholders. Abdelillah was concerned by the availability of hardware in the setting and the fact that it should be accompanied by a skilful hand of a wise decision maker who uses it in a way that makes learning more effective to different students:

> Teachers are not using technology in the way it should be used… They have all these amazing technologies but they don't make it useful and they stick to traditional methods of teaching. Our generation is calling for change and for the application of different methods and strategies. If only they make use of available devices in the university from time to time, they will respond to many students' demands and make the learning experience more efficient. (Abdelillah, Follow-up discussion)

Here this student refers to the teachers' resistance to change and the fact that they have no plans to use the available technological material. The teacher participant Rafik provided a justification for such resistance and other limitations such as ignoring certain language skills. He explained that:

> Among the reasons why I haven't included listening is the fact that they [administrative staff] planned oral production sessions in a normal classroom and other modules which don't necessitate the lab in the lab. Once I brought

> a pc and speakers and I tried to fix things in the normal classroom and it didn't work and I got disturbed. Listening should be done in the lab. The labs used to exist at that time but we didn't use them, we didn't even know how to use them. In addition to this, the lab can hold only 20 students and we generally had groups of 50 students, I don't have the right to split them in two groups. How would I use technology or teach them listening in such conditions? (Rafik, Teacher interview)

Here Rafik explained that his decision not to use technology and not to teach the listening skill to his students was due to poor organisation of schedules and wrong decisions by administrative staff. Indeed, he showed a negative attitude about technology integration (chapter 5) but inappropriate contextual approaches and local decisions, such as not using language laboratories for their real purposes and when the number of students in the group goes beyond the lab's capacity, did not allow him to use technology and vary his techniques.

Making a similar point, he refused to follow an online programme suggested by another teacher who is the module leader when teaching Oral Production module in order to differentiate instruction and care for individual learners' differences. Rafik said that:

> The oral production module leader provided us with an online programme and the administration required us to follow it. They suggested a kind of harmony between different groups of the same level. I resisted and I didn't use it since I have two groups and different students who call for different teaching methods. (Rafik, Teacher interview)

Regardless of his reaction, the case here reflected an administrative decision which ignores different students' expectations by providing teachers with an online programme and asking them to use it with all students of the same level.

The local concerns discussed here are in line with the psychological obstacles reported by Benmansour and Benmansour (2022) when investigating the teachers' readiness for integrating educational technologies in the Algerian EFL context. They revealed that the lack of training, insufficient ICT skills, technology anxiety, fear of technical breakdowns, resistance to change, and no perception of benefit are the main challenges that prevent effective implementation of ICTs. Another research conducted by Ladaci at Chadli Bendjedid University in Algeria revealed that there is no correlation between the teachers' positive attitudes towards technology

and their limited adoption of technological devices in their teaching practices because they receive no support for technology use. She revealed that 'the department does not encourage teachers to use technological aids for teaching the language except for the language laboratories which do not satisfy their aspirations nor meet their learners' needs' (2017, p. 166).

Contextual realities discussed in this section or what is called by Kumaravadivelu (2001) 'the parameter of particularity' apply a layer of contextual sensitivity, according to physical constraints or any other contextual restrictions, which explains certain teachers' decisions in their use of technology. These particularities require a specific use not only according to the different learners needs in the context but also teachers' beliefs about language learning and about the role technology can play for them and their learners (Motteram et al., 2013).

7.3.2. Generalised beliefs about TALL

Among contextual realities, there were a number of generalised beliefs about technology and learning which had a huge impact on views and decisions about TALL and the use of educational technologies at higher education in Algeria. Such beliefs proved to limit teachers' considerations of students' individual differences.

In the data, there is little reference to the view that the millennial generation embrace the digital life and cannot spend a moment without a device. Starting from parents who represent the students' first point of contact, they make a general statement concerning their descendants' relationship with technology. Aya stated that:

> My dad always blames me saying that you are the addicted generation, why have we studied and succeeded without tech and you can do nothing without the mobile, the computer and internet… In fact, I can study without technology, and we have some modules in which we are studying in a completely traditional way but my feelings about learning, my reaction and the speed of learning and understanding won't be the same in both conditions. (Aya, Follow-up discussion)

Aya looked confused by her father's view about her generation and the way he generalised their addiction to and reliance on technology. She made it clear that she is able to study without using technology but different processes were noticed and different attitudes were distinguishable in both scenarios.

Moving to education staff, teachers also seemed to make sweeping statements about their students' use and relationship with technology. Clara believed that students are increasingly adopting technology for purposes other than learning and if they do, they do not use it in the intended way:

> This digital generation accept technology whenever it is not to do with learning purposes, they like it for leisure, entertainment, social media. But when it comes to doing research, preparing project works… they either copy and paste from internet or be distracted by other uses. All in all, they misuse it. (Clara, Teacher interview)

Another teacher assumed that students, who are not interested in learning in a traditional classroom environment, automatically do not show interest in TALL and ELT technology scenarios which are more attention and effort demanding:

> Some students don't show interest in normal classroom learning, they keep complaining and they don't care to the simplest classroom activities. How would they do when using technology which requires attention and extra efforts from the student as well? (Imene, Teacher interview)

Furthermore, Rafik believed that technology acceptance and adoption are age-related and younger teachers tend to be more open to mobile phone use in the classroom. He addressed me saying:

> You and your generation won't feel bothered by mobile use in the classroom when you become teachers because you come from the same age basket with students. I am from another age group and I believe in something: you cannot teach an old dog new tricks and old habits die hard. (Rafik, Teacher interview)

Similarly, a student participant commented that 'some teachers are old and not ready to implement change in the classroom. The opportunity should be given to younger teachers who belong to our generation' (Ismail, Focus group discussion).

Another teacher's generalised belief was about the unsuitability of technology to the Algerian context. Rafik also believed that technology integration is not the right decision for the Algerian educational low-resource context:

> It is said: when in Rome, do as the romans do. I am in Algeria where access to technology is very limited. So, of course I cannot make it. During the baccalaureate exam, they cut internet supply on the whole country. Europeans have born in technology and they control it but we are not and successful technology implementation is something impossible in our context. (Rafik, Teacher interview)

The above five quotes represent instances of generalised beliefs among some teachers and students concerning technology integration into the Algerian educational context. These beliefs include: the student generation's acceptance of technology for purposes other than learning, students who are reluctant to learn in normal conditions will not show interest in TALL and educational technologies, technology acceptance and adoption is age-related and the unsuitability of technology integration to the Algerian context. By making generalisations about students' attitudes and the context and taking action accordingly, teachers will inevitably ignore individual differences and limit differentiated instructional practices.

Accordingly, Sarnou (2020, p.12) concludes that the Algerian schools and universities cannot be modernized only by providing the needed technological equipment. In fact, it has more to do with 'changing the mentalities' of the key stakeholders in the educational process including: teachers, parents and policy makers. She also suggests that 'personalizing the learning process' and 'considering students' needs and preferences' should be prioritised if we want to implement educational change.

7.4. Discussion Summary

In this chapter, I have discussed the impact of local considerations and existing approaches to TALL inside and outside the classroom on individual learner differences. It considers a number of context-related perspectives which demonstrate an impact on the psychology of language learners and their individual differences. Discussions in this chapter answer the third research question: "*to what extent do local beliefs and contextual approaches to technology integration take account of individual learner differences*?". The answer could be seen at the level of the students' views and the teachers' decisions, the technological experience inside and outside the classroom, and the realities of technology integration in the context.

The chapter discusses the dynamism of the impact of TALL and the use of educational technologies on individual learners by highlighting its constant change according to the local

realities. These realities include the discrepancies between students' views and teachers' actions, the mismatch between the technological experience inside and outside the classroom, the generalised beliefs about technology integration in the context, and the rapid and unplanned shift to online educational delivery during the Covid-19 pandemic. The chapter starts by discussing the properties of technology integration inside the classroom. It also addresses features of technology use outside the walls of the classroom. Then, it considers contextual realities about TALL and individual differences in an Algerian university.

In an attempt to consider the properties of technology implementation in an Algerian classroom, an unavoidable interaction with the psychology of the learner has been identified. Discrepancies between students' opinions and teachers' practice, incompatible familiarising and distracting roles of technology, the impact of technology on teacher/ student rapport, and its influence on attendance, participation, and interaction are the main features that characterise the technological experience inside the classroom. These connections do not take a full account of individual learner differences.

As discussed above, student participants showed different attitudes concerning technology integration in the language learning process. Regarding these attitudes, students can be classified into three different categories, namely digital students, analog students, and adaptive students. Categorising students, however, does not deny the fact that students can move from one category to another according to the used technology, the way it is used, and the learning scenario. Digital students are used to technology use and technology is taking an active role in their learning. They show a great interest in TALL and educational technologies and expect their teachers to integrate different forms of technology in their classes. Analog students, however, prefer not to use or be taught using digital devices in their learning process. They do not expect their teachers to include technology when teaching them, although they unwillingly use it to fulfill some educational needs. The third category gathers adaptive students who take benefit from both technology-based and more traditional learning scenarios. They profit from a blended learning approach and make use of both ways to meet their educational needs.

Based on the students' different opinions regarding technology use, they were classified under three different categories from which they move according to the circumstances. The majority of teachers, however, did not show a willingness to use different strategies and approaches to take account of these differences. They undertook a fixed decision of either including or excluding technology in their teaching based on the nature of the module and the content they

are teaching, perceived students' needs, and personal preferences with the exception of one teacher participant who varies her strategies and practices based on her students' needs and expectations. This shows a discrepancy between students' varied opinions and needs and the teachers' fixed decisions. Teachers, therefore, need to diversify their methods, strategies and materials in order to take account of different students' categories and satisfy their needs.

There is also a discrepancy between the students' and teachers' views about the role of technology in language learning. What is considered by students as a familiarising practice in language learning is regarded by teachers as a distraction that prevents students' attention in the classroom. Among the familiarising roles of technologies in the language classroom, students mentioned the use of mobile dictionaries and other applications to familiarise themselves with pronunciation, meaning, and definitions. Students also appreciated the use of presentation software such as Mentimeter to familiarise themselves with giving feedback on their classmates' presentations and giving oral presentations at the initial stages of their learning experience. Some teachers, however, considered such technologies as a distraction that can disrupt the classroom order. They either set clear and strict instructions at the very beginning of the year about the use of mobile phones in the classroom or do not tolerate and severely react to such uses.

In addition to this, there is consideration of the impact of technology on the teacher/student rapport. Some teacher participants use technology with their students to create rapport and build effective relationships with them in the classroom. In addition to some classroom practices, teachers mentioned some tips for rapport building with students using technology such as implementing the BYOD approach in the classroom, encouraging students' collaboration using technology, and asking for students' help to deal with technology issues in the classroom. The use of the flipped learning approach also allows teachers to spend more time discussing, interacting, listening to their students' requests and desires and caring about them compared to a traditional classroom when teachers have a limited time to do so. Mobile learning, according to a teacher participant, allows teachers to maintain a good rapport with students. By making the use of mobile devices permissible in the classroom and making appropriate use of them for learning experiences, teachers are keeping close relationships with students in the classroom, limiting mobile distractions during sessions, bringing enjoyment to the course, and enhancing the students' receptivity to what is being presented.

Another teacher participant, however, preferred to avoid such kind of rapport with students in favour of other variables and personal preferences. He did not believe that building rapport is part of his teaching mission. He also asserted that mobile use in the classroom harmfully affects his relationship with students and creates a kind of noise and disturbance in the classroom. Such reactions have a strong influence on the psychology of learners and stimulate them to opt for equal and anonymous relationships with technology than asymmetric ones with teachers. Impersonal interactions with technological devices satisfied some students' expectations since there is no risk of obligation, underestimation, being ignored, or any other judgmental or unequal practice.

The teachers' approaches to ELT technology scenarios and the inclusion of internet services in the context have also both positive and negative impacts on students' attendance, participation, and interaction in the classroom. The teacher's strategy of implementation and the utility of the technological experience can motivate students to attend classes regularly. The availability of online resources and easy access to the curriculum on the internet drive some students to skip classroom sessions, especially teacher-centred classes, and get the alternative from online services. These students prefer to self-study at home and only attend occasionally for administrative purposes. The lack of perceived value of attending classes correlates with the teachers' role in the classroom which can either make classroom attendance something important and different from learning using online resources or give students the chance to comfortably miss classes without missing what has been taught in the classroom since it will be delivered online.

In addition to attendance, the use of educational technologies in higher education confirms both positive and negative impacts on the students' participation and interaction in the classroom. The mobile learning approach, for example, appeared to encourage shy and less-confident students to participate in classroom learning in a manner that suits their personality. Using students' devices and interactive presentation software can engage all students in the task regardless of their capacities and personality type and encourage them to silently participate and give feedback on their classmates' presentation. Besides the aforementioned benefits of this mobile learning experience, some participants highlighted its shortcomings in students' participation such as the way it can ignore the speaking skill, reduce student/student interaction in the classroom, and limit the use of communication skills including body language and facial expressions.

Moving to outside the classroom, technology-enhanced language learning scenarios either initiated by students themselves to develop their capacities or by the university as a response to Covid-19 have both positive and negative impacts on students' learning. There is recognition among some student participants of the role of technology outside the classroom in promoting both collaborative practice and self-directed learning. These however have not prevented students from experiencing a troubled learning experience as a result of the imposed, sudden, unusual, and inappropriate technology use during the Covid-19 pandemic.

TALL and the use of educational technologies outside the walls of the classroom is believed to offer multiple collaborative learning opportunities which give more responsibility to students in their learning process such as group assignments, peer editing, and scaffolding learning. Student participants showed gratitude to social media, which allowed them to collaborate when preparing for group assignments. They also appreciated the role of social networks enabling pair work through peer editing which made it possible for students to ask for their peers' help to review their work, engage in digital collaborative practice, develop their abilities and learning experience, and boost their confidence and self-esteem. Student participants also showed gratitude to social media, which facilitated another collaborative experience through scaffolding learning for each other to maximise understanding, especially during the pandemic when the majority of students were not satisfied with courses in the form of online documents sent by teachers. These digital collaborative learning experiences helped students address their diverse learning needs and create a positive learning atmosphere.

There is also evidence of online self-directed learning opportunities outside the classroom in which students have a say in what they learn and a choice in how they learn. Students enjoyed this method of learning since it allowed them to design their own learning experiences according to their interests and learning preferences. Learning material available online such as documents, presentations, images, songs, and videos help students develop their skills and capacities by taking control over the content and the pace of their learning. An instance of self-directed learning is listening to audiobooks simultaneously when performing other work. By doing so, students are immersing themselves in a self-motivated activity that is done both for enjoyment and for gaining knowledge at the same time.

The use of technology also helps learners go beyond the available opportunities and voluntarily engage in digital learning experiences outside the classroom. Engaging in the GVC programme is an instance of students' approaches to self-directed learning. Students selected the GVC to

benefit from a less formal learning experience where they develop their speaking, communication and cultural exchange skills. Participating in the Hult Prize worldwide competition is another example of self-directed learning experienced by student participants in which they created a digital notetaking device. It is a self-instructing experience where they develop their knowledge in the field of digitalisation and develop their collaboration and competitiveness skills.

Collaboration and self-directed learning resulted from technology learning scenarios initiated by students themselves. The only online learning experience initiated by the university resulted in poor educational outcomes and a troubled learning experience which dissatisfied students. Though the pandemic made online learning possible, the students' attitudes and expectations were challenged by the inappropriate implementation of online education. Teachers and students linked the online teaching and learning experience during the pandemic to a number of both internal and external barriers that affect the adoption of the online learning experience, namely: the lack of hardware and internet connectivity, rigidly structured systems, the sudden, rapid and imposed shift to online learning, the unusual situation, and ill-advised implementation.

Other contextual realities about technology integration in the setting seem to have an impact on the teachers' decisions and the students' reactions to technology integration in higher education. The need for training, IT help, and appropriate use of the material are the main concerns of teacher and student participants. These make it difficult to apply a differentiated teaching approach and impede catering for individual differences. Some teachers were not prepared to use even simple technological tools in the setting and expressed the need for sufficient training in technology use in the classroom in order to be able to use it effectively and live up to different students' expectations. Another teachers' and students' concern is the need to appoint IT specialists to help with any technical problems which occur in the setting. Participants also focused on the necessity of appropriate decisions and careful implementation of technology by teachers and other stakeholders. Students are concerned about the availability of hardware in the setting and the fact that it should be accompanied by a skilful hand of a wise decision-maker who uses it in a way that makes learning more effective for different students. Inappropriate contextual approaches to TALL and ELT technology scenarios, such as not using language laboratories for their appropriate purposes or when the number of students in the group goes beyond the lab's capacity, did not allow teachers to use the material available there and vary their strategies using technology.

Contextual realities also include a number of generalised beliefs about TALL and educational technologies which limit the teachers' considerations of students' individual differences. These beliefs include: the student generation's acceptance of technology for purposes other than learning, technology acceptance and adoption being age-related, and the unsuitability of technology integration in the Algerian context at the present time. By making generalisations about students' attitudes and the context and taking action accordingly, teachers are inevitably ignoring individual learner differences and limiting differentiated instructional practices.

This chapter has discussed contextual approaches, local beliefs, and mismatches in understandings about TALL and technology integration in higher education and their impact on individual learners in one Algerian university. It considers the approaches used in the context and uncovered mismatches between students' views and teachers' actions in technological educational environments. It highlights local properties of technology implementation both inside and outside the classroom and contextual realities which result in a confluence with the psychology of language learners and impede differentiated instruction.

CHAPTER EIGHT

8. CONCLUSIONS AND IMPLICATIONS

In the light of understandings gained from previous chapters, I have been able to determine the unrecognised impact of technology integration on the psychology of learners and the extent to which contextual approaches to technology take account of individual learner differences. This leads to identifying the change gaps and the possible ways forward for technology use and educational psychology in the setting concerned and similar contexts. This chapter starts by giving an account of the general findings of the study in section 8.1. Then, section 8.2 considers the implications of the current research in terms of catering for learner differences through wise and context-dependent TALL.

8.1. Putting it all together

This section gives a summary of the research findings and concise answers to the research questions. Then, it explicitly provides a holistic view over the impact of technology integration in general and local approaches to technology integration in particular on the individual learner differences.

8.1.1. General findings from the study

In this section, I briefly recapitulate my research findings which were extensively discussed in chapters 5, 6, and 7 by providing answers to my research questions.

i. *How is the use of technology in EFL teaching and learning perceived by Algerian university students and teachers?*

Both student and teacher participants' perceptions about the use of technology in EFL teaching and learning were identified in a balanced number of positive and less positive attitudes. These attitudes were determined based on competing factors which contribute to both students' voices and teachers' reflections about technology integration in EFL teaching and learning.

The determinants of students' attitudes towards technology use in EFL learning are summarised in the following points:

a. The level of students is a significant factor shaping students' views about TALL and educational technologies at higher education. Students at advanced levels show less

positive attitudes towards technology compared to students at lower levels. Their interest in technology use decreases gradually from their first year at university till their Masters studies.

b. The novelty of the technological experience in the language classroom plays a decisive role in determining both undergraduate and Masters students' attitudes. It is a factor standing behind students' positive claims as well as other negative attitudes and anxious feelings.

c. The teachers' strategy of technology implementation is also responsible for different positive and negative students' responses. Varying technology scenarios in the classroom, encouraging students' reflection on the experience, and supporting students' interaction, engagement, and collaboration via technology are the main teachers' strategies praised by students. Students, however, criticised the teachers' frequent use and over-reliance on the material, the absence of the presentation and explanation of the new technique, and immediate testing after the experience.

Teacher participants' attitudes towards and decisions about technology use in their teaching process are affected by a number of factors:

a. Based on perceived students' needs, some teachers make a fixed decision of either including or excluding technology use in their teaching. Others, however, seem to vary their decisions about technology integration according to their students' needs and expectations in different circumstances.
b. The students' misuse of technology is also a determinant of teachers' negative attitudes about technology integration. The majority of teacher participants linked their negative thinking about technology to the students' use of mobile devices in the wrong way or for the wrong purpose.
c. The utility of the technological experience for the teachers' comfort and students' benefit is an important factor revealing the teachers' positive thinking. The utility of technology for different content areas, its applicability for different modules, and its effectiveness for assessment purposes, attract the teachers' attention, facilitate their mission, and decrease their workload.
d. The teachers' status is a determinant of their negative perceptions of online communications with students and their decision not to integrate technology in their teaching

ii. . *What is the impact of technology integration in EFL learning on the psychology of individual learners?*

Technology integration in EFL learning influences the psychology of individual learners in a number of ways:

a. The use of instructional technologies in the language classroom drives some students to show increased interest in learning. Their interest in technology does not only help them to perform better in technology-mediated learning scenarios, but also encourage them to engage in technology-enhanced projects beyond the classroom. Others, however, report a feeling of boredom and lack of interest in learning when engaged in TALL experiences and ELT technology scenarios.
b. TALL and the use of educational technologies in higher education are offering student participants a degree of freedom and choice in their learning process. Technology use, both inside and outside the classroom, engages students in a free self-determined learning experience which responds to their needs and assists them achieve a level of self-teaching and decision making about their learning.
c. The diversity of use and resources offered by technology such as online courses, instructional videos and images, instructional games, online dictionaries, and educational software and applications enrich the learning experience and adjust it to the different students' needs.
d. Certain uses of technology, such as reading the content of the presentation from the phone or tablet and taking pictures instead of taking notes, induce laziness to the learning process, hinder their thinking capacities, and encourage students to opt for easy solutions.
e. Technology integration brings joy to the formal learning experience. The source of joyful learning is exclusive to each learner and differs from effortless learning to the satisfaction of needs of digital natives. Joyful learning, however, is not of interest to all students; some of them care about gaining knowledge regardless of the method or the material used.
f. Integrating technologies makes EFL Classes a comfortable and relaxing learning environment, with the exception of technology use for assessment purposes which is considered a stressful experience. The sources of comfort include effortless comprehension, easier learning activities, comfortable note taking, and easier information retention.

g. TALL and the use of educational technologies in higher education offer students multiple opportunities for visual learning which facilitates memorising and retaining information, and promotes students' engagement and inclusion in the classroom, that is apparent in the degree of attention, interest, curiosity, and optimism shown when they are learning or being taught using visual aids.
h. TALL and technology integration at higher education accommodate students' idiosyncratic learning modalities. Technology scenarios such as the flipped classrooms are advantageous to students with reflecting, deciding, acting, and experiencing modalities. The use of the language lab, however, is of a great help to initiating students who enjoy taking action in the classroom. This way technology both accommodates different students' needs and challenges other students' preferences.
i. The use of the language laboratory boosts the students' motivation to learn pronunciation and make them enthusiastic for similar experiences. Occasional technology use is also a suggestion of teachers as a motivational tactic to engage students and overcome their boredom and passivity in the classroom.
j. Some ELT technology scenarios such as mobile learning and flipped learning help students to boost their self-confidence and learn to trust their abilities. Other technology uses, however, like relying on the data projector when delivering lectures or presentations or permanent use of interactive software instead of oral interaction, are regarded as a sign of low self-confidence and a cover that hides the student's or teacher's lack of capability in the classroom.
k. ELT technology scenarios offer teachers and students unconscious teaching and learning opportunities. Lectures in the lab, watching videos, and playing language games help some students to implicitly acquire knowledge without being aware of the process or the difficulty of the task. Teachers also appreciate flipping classrooms, bringing videos, and using blogs which make them less mindful of their teaching duties.
l. The use of educational technologies facilitates autonomous language learning and allows students to take control of their learning. Flipped learning and mobile learning experiences, for example, make students more responsible, self-reliant, and quite independent of teachers.
m. Technology integration at higher education offers multiple collaborative learning opportunities for students outside the classroom by means of group assignments, peer editing and scaffolding learning which shifts more responsibility to students in the teaching/learning process.

n. Technological experiences create opportunities for students to engage in more self-directed language learning environments outside of a formal instructional setting. Students, in this case, have a voice in what they learn and a choice in how they learn.

iii. *To what extent do certain local beliefs and contextual approaches to technology integration take account of individual learner differences?*

The local beliefs and contextual approaches to technology integration restrictedly take account of individual learner differences because of: (limit the consideration of IDs)

a. The mismatch between the students' views and the teachers' decisions about technology integration in the setting: there is a perceived discrepancy between the students' opinions about technology use and the teachers' practice in the EFL classroom. Students show a variety of attitudes concerning technology implementation in their learning process which can be summarised in three different categories (digital, analog, and adaptive students) from which students can move according to the technology used, the way it is used, and the learning experience. The majority of teacher participants, however, undertook a fixed decision to either include or exclude technology based on the nature of the module, students' needs and some personal preferences, with the exception of one teacher who seems to vary her strategies and decisions to meet different students' expectations.

   There is also a perceived discrepancy between the student and teacher participants' opinions when considering the role of technology in the classroom especially mobile-assisted language learning experiences. The majority of students appreciate the facilitating and familiarising role of technology uses in EFL learning. Some teachers, however, consider such uses a disruptive distraction which affects the classroom order.

b. The mismatch between the technological experience inside and outside the classroom: When considering technology integration inside the classroom, both student and teacher participants highlight its positive and negative impacts on students' interest in attendance, participation, interaction, and teacher-student rapport in the classroom.

   When it comes to student-initiated technology scenarios outside the classroom, student participants shift attention to other variables and elements of learning, focusing on the fact that technology is facilitating collaborative practice, promoting self-directed learning, and shifting more responsibility to students in their learning process.

c. Other contextual realities about technology use in the setting which limit the consideration of learners' differences: The need for training, for IT support, and wise use of the material are the major local concerns in the setting which do not allow teachers to use technology and engage in differentiated teaching. There are also a number of generalised beliefs among some teachers concerning technology integration into the Algerian educational context which inevitably ignore students' individual differences. These beliefs include: the unsuitability of technology to the Algerian context, that technology acceptance and adoption is age related, and the student generation's acceptance of technology for purposes other than learning.

   The shift to online educational delivery during Covid-19 also resulted in a troubled learning experience which dissatisfied students. Student participants' attitudes and expectations were challenged by the imposed, sudden, unusual, and inappropriate implementation of technology in the setting. The more technology use is promoted in the department, the more some students are expecting high-tech resources and wiser implementation. Though the Algerian university made possible efforts to deliver instruction online and they took the matter seriously to maintain students' learning during Covid-19, they could not meet the students' expectations.

8.1.2. A holistic view

The aim of the study has been to explore individual learner differences in TALL environments and to delineate the impact of technology integration on the psychology of the learner within the context studied. The overarching argument is that the impact of technology integration in the EFL context on the psychology of individual learners is both complex and dynamic. This, therefore, helped me uncover detailed and unrecognised influences of educational technologies on the psychology of student participants.

This study goes some way to extending knowledge about the impact of technology integration on individual learner differences, which is both complex and dynamic. It is complex in the sense that it affects the students and their differences and is shown in the following aspects:

a. Different positive and negative psychological constructs experienced by learners when engaged in different TALL and ELT technology scenarios.
b. Different psychological reactions to the same technology scenario: different students experience different feelings under the same technology integration circumstances. For example, the flipped learning experience which affects various

psychological traits of language learners including: pleasure and enjoyment, comfort, self-confidence, autonomy and different learning modalities.

c. Different manifestations of similar psychological traits within the same technology scenario: the difference here lies:

    Either in the source of the trait, for instance, when student participants experience comfort in a flipped learning situation, the source of that comfortable feeling varies between comfortable note taking and easier information retention.

    Or the outcome of the trait: different learners benefit from visual learning when using instructional videos in language learning. The effects of such visual learning experiences include information retention and inclusion and engagement in the classroom.

It is dynamic in the sense that it is characterised by constant change according to contextual approaches to and local realities about technology integration in EFL learning in the setting. These realities include: discrepancies between students' attitudes and teacher' actions, mismatches between technological experiences inside and outside the classroom, local concerns and generalised beliefs about TALL and educational technologies in the context, and the rapid and unplanned shift to online educational delivery during the Covid-19 pandemic situation. The influence of such realities restricts the consideration of individual learner differences in the setting. This reminds us that there is no point in educational technologies being available without meaningful implementation, enough awareness of the context, and careful consideration of students' needs.

The following diagram represents a summary of the whole findings of the study:

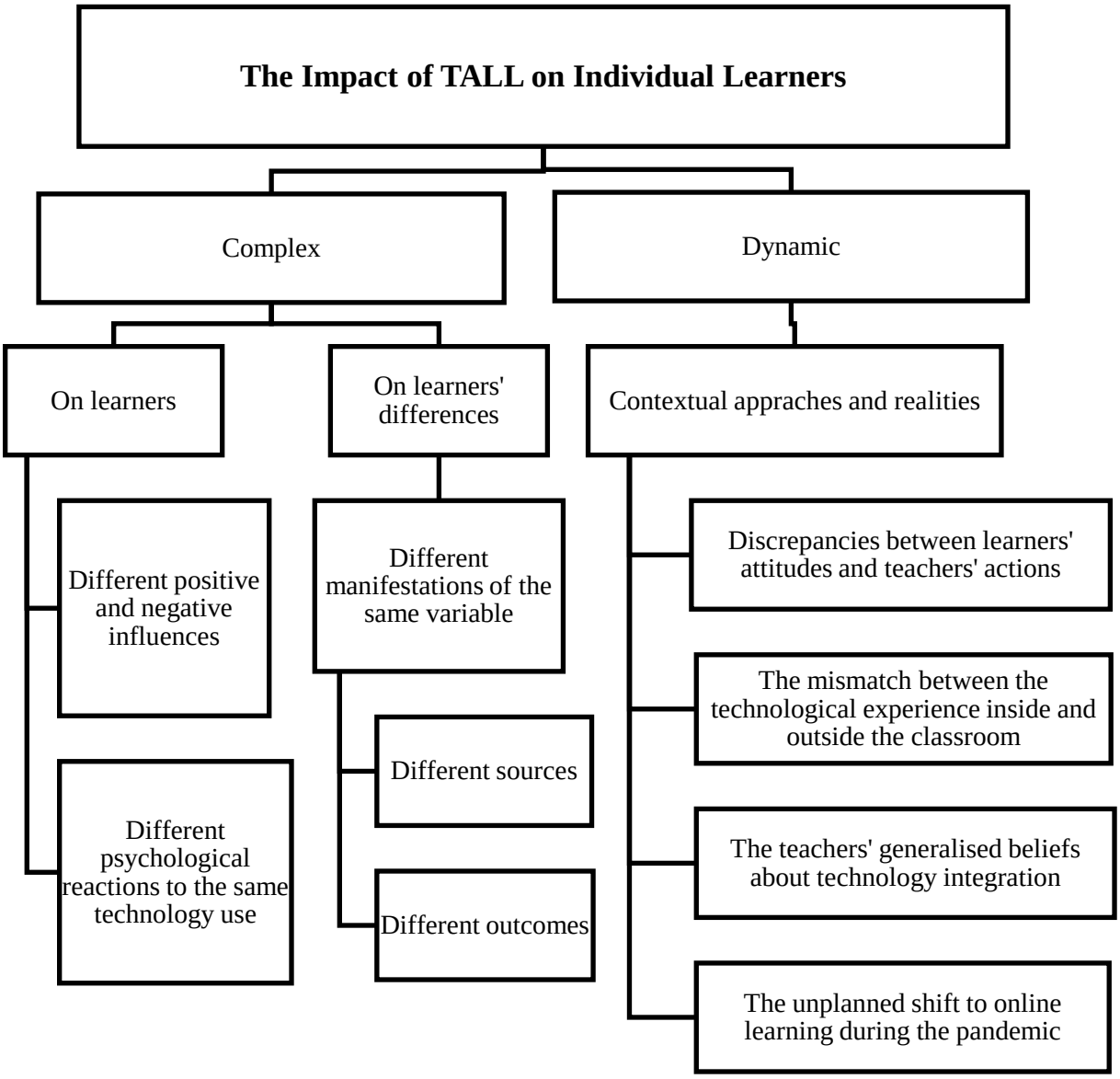

Figure 1: Diagram illustrating the major findings of the study

8.1.3. New knowledge

This section represents the aspects of originality and contribution that the findings of this study can add to knowledge about the impact of technology on individual learner differences.

This thesis further develops understandings of existing literature by providing further detail about the impact of technology integration in higher education on individual learner differences. The literature includes papers and research works which have emphasised the impact of individual differences in the field of technology-mediated learning. These works look at psychological factors which affect not only learning in normal classes but also in TALL environments including CALL (for example, Lever-Duffy and McDonald 2008; Foroozesh-nia 2015; Nami 2015; Tayebinik and Puteh 2015). However, a reverse research process investigating the impact of TALL on learners' individual differences in general has received relatively little attention, although there are recent works which consider isolated psychological variables in TALL, such as motivation and engagement (Abderrahim and Navarro González 2020), autonomy and responsibility (Huang 2020), and mindset and willingness to communicate (Chism and Graff, 2020).

It must be noted, however, that a broader view of the general impact of technology integration on individual learner differences remains underemphasised. Zarrinabadi and Freiermuth (2020) refer to their research work on technology and the psychology of second language learners and users as 'a rare compilation of how technology affects the various strands of the psychology-related constructs' (p. 600). They summarise technology's influence on language learner psychology via a balanced number of positive and negative psychological traits.

The present study, however, has yielded a range of findings, some of which seem to be strongly related to the unrecognised impact of TALL and educational technologies on the psychology of language learners. In other words, it seems that such an impact is complex, affecting the learners and their differences. The unrecognised impact is shown in the different manifestations of similar psychological traits within the same technology scenario. The difference lies either in the source or the outcome of that trait.

What is original about this research is that it attempts to understand the complexity of the impact of technology use on individual learner differences. It also seeks to uncover the different variables that are included as individual differences influenced by technology integration in language learning inside and outside the classroom. The present thesis has uncovered a list of individual differences which includes a number of cognitive, affective, and social variables,

namely self-determination, visual learning, unconscious learning, interest, enjoyment, comfortable learning, learning modalities, motivation, anxiety, high/low self-confidence, autonomy, collaboration, and lazy thinking.

The following section seeks to provide a list of implications of the research.

8.2. Implications for educators

This section determines a number of areas which require change and suggests different ways forward for ELT in Algeria and similar contexts in the light of the discussions about local perspectives on technology integration and its impact on individual learner differences. It considers several factors and processes which determine suitable pedagogies and innovative teaching approaches which assist in catering to individual learner differences. I will make suggestions derived from the collected data which seem to indicate a need for alternatives and additions to certain teacher practices in the setting.

8.2.1. A call for awareness of and adaptation to individual learner differences

Considering the discrepancies between student participants' varied attitudes towards technology integration in their language learning and the majority of teacher participants' fixed decisions and practices in the classroom, a call for more awareness of and responsiveness to learners' differences is needed.

8.2.1.1. Awareness of individual learner differences

It seems necessary for teachers to always remind themselves that language learners are individuals approaching the learning process in their own unique way. These individual learning differences can be an important determinant of how learning happens and inevitably have an impact on students' learning outcomes. Teachers need to consider individual variation among students and understand that they are facing learners with different dynamics in order to identify and meet individual learner needs and therefore create interest in learning and achieve quality in teaching.

I suggest then the following strategies and teaching practices that assist teachers in becoming aware of learners' differences and preferences in their classrooms:

✓ **Getting anonymous feedback from students on the teaching behaviour and material**

Honest attitudes from the students about the kind of teaching they think is best for them and anonymous feedback on the teaching practices and materials would be a valuable opportunity

for student voice, reflective practice, and culture-building in the classroom. There are multiple tools teachers can use for this purpose such as end-of-class anonymous notes, immediate comments, and periodic surveys and focus groups … Getting feedback from students when integrating technology in the classroom was one of the strategies suggested by teacher participants to benefit from an appropriate use of the material:

> … I can understand if it [technology integration] was successful or not through their interaction and getting their feedback by the end. I ask them what do they think and whether they want me to use it again. (Clara, Teacher interview)

Anonymity also was highlighted and praised by students' participants for being a source of self-confidence when using anonymous interactive presentation software in the following instances:

> When I am shy and I don't have enough confidence to give my opinion, the software and my mobile gave me the chance to participate. As if I am under door and this is the chance to say what I want to say. (Abdelillah, Diaries)

> Using the software, things were different: I could overcome some degree of shyness and tell what I think better than I do it orally because sometimes I have something to say but I can't say it. (Fatima, Diaries)

Accordingly, getting anonymous feedback from students could be an opportunity for teachers to discover their students' attitudes and prerequisites in learning as well as a way to show that their students' views and voices are valued and prioritised.

✓ **Using group dynamics**

An awareness of group dynamics, which refer to the understanding of the characteristics and the behaviours of students who are working in small groups, helps teachers know about their students' variables and individual learning modes. This was highlighted by a teacher participant when she mentioned:

> Observing students interacting in groups and their behaviour could be an effective determinant of students' differences. We as teachers can easily understand students and identify their needs through their communication, interaction, cooperation, and competition (Rim, Teacher interview)

In accordance with Dörnyei and Murphey (2003), group dynamics are strong determinants of the classroom climate and students' characteristics. Students when cooperating to work towards a common goal need to communicate with each other, challenge each other, assign roles and show abilities. This could be a valuable occasion for the teacher to observe and recognise individual learner differences.

✓ **Identifying individual learning strategies**

Different learners use different techniques to achieve their learning goals. Learning strategies are chosen deliberately by learners in order to fit their preferred learning styles. These different options selected by different learners assist the teacher in revealing individual variation in the classroom and uncovering idiosyncratic learning modalities among students. This point was raised by a teacher participant as a reference to her actions and decision making in the classroom:

> I always pay attention to the motivation and the desire of my students to work with something rather than the other in order to help them challenge themselves, improve, and evolve… (Rim, teacher interview)

Teachers, therefore, need to identify their students' learning strategies either by observing their behaviour or discussing and asking them questions in order to recommend goals that are appropriate to their students' learning.

8.2.1.2. Adaptation to individual learner differences

Being aware of students' individual differences in language classrooms is of paramount importance but not completely sufficient to provide an optimal learning environment for every student. Teachers also need to respond to their students and acknowledge their unique characteristics. Teachers are asked to adapt their teaching strategies in order to accommodate different students' needs and ensure that instruction is inclusive for diverse learners. Below are some techniques to make the classroom environment more welcoming to multiple and various students' personalities:

✓ **Instructional adaptation**

Adaptations include changes that teachers make in order to offer differentiated input to language learners. Adaptive teachers, according to Parsons and Vaughn, 'are able to balance instructional mandates, beliefs of instruction, and their students' interests, cultures, and instructional needs into the classroom' (2016, 14). This method of instruction requires the

teachers to vary the content they present in the classroom, the process of giving instruction, the product through which students demonstrate knowledge, and the learning environment. Teachers are also encouraged to provide choice and flexible-pace learning in order to allow students to study in a way that sparks their interest and sustain their engagement. An example of instructional adaptation can be found in section 5.2.1 where I discussed different reactions and teaching behaviours of a teacher participant 'Rim' who varied her strategies in order to meet her students' different needs and expectations. She varied the process of giving instruction by deciding to use technology tools based on her students' desire in certain conditions and withdrawing such a decision in other circumstances. Another instance of instructional adaptation can be the teacher's decision to change the content dealt with in the classroom based on her students' desire:

> … Most of the group would like to dedicate their session for reading because they come from a literary background and they have already read many books. Though I am not specialist in literature and I don't read literary books, I agreed on that and each session we selected one student to speak about a famous literary book and explain it … (Rim, Teacher interview)

✓ **Adopting new instructional strategies**

By including interactive tools and digital resources, teachers are allowing the use of different materials and tools which may highlight a passion in digital students for whom technology is taking an active role in their learning, and challenge other students to approach learning from different angles. Additionally, digital resources offer diverse learning opportunities which suit different learning preferences and enrich the learning experience. Different students suggested that:

> Using a video, I see things and I can take part of them… I use my eyes and ears to grasp the meaning … Listening to the teacher giving instructions, however, is sometimes boring. (Abdelillah, Follow-up interview)

> Seeing a video is not like reading a text…Visuals, animations and scenes do stick in my memory and the day of the exam I can remember them easily. This is a great way to memorise things and keep them in mind for a long time. (Linda, Follow-up interview)

A valid reason teachers give when 'harnessing technology for adult learners' is the way it allows them 'to fill some particular needs gap (…) and provides for individualised and differentiated tasks' (Motteram 2013, p. 77). Similarly, the discussion of the data in chapter 6 above raises the major theme that technology integration has a great impact on the psychology of individual language learners. Such an impact is represented in different social and psychological reactions such as joyful learning, comfortable learning, unconscious learning, visual learning, autonomy, self-confidence, motivation and collaboration.

- ✓ **Using one-on-one conferences**

Even when varying teaching strategies, teachers may feel that they are unable to reach all their students effectively. Individual verbal conferences, either face-to-face or online, could be central to supporting students and addressing their individual needs. An observed teacher behaviour was recorded in my field notes as follows:

> A frequent behaviour that attracted my attention in the setting was the way one of my teacher participants accompanied one or two of her students at the end of the session when leaving the classroom. One day I asked her about this and she revealed that talking privately to students on her way to the teachers' room helped her better understand her students and their needs and build comfortable academic relationships with them, especially with those that are quiet or rarely asked for help. (Field notes, January 2020)

When communicating with students, teachers can identify and cater for students' different learning abilities and preferences. One-on-one conferences should be short and productive in order to manage a slot for every student and maintain motivation to conference.

8.2.2. Undertaking a context approach to technology integration

Taking into consideration the fact that participants' local concerns and generalised beliefs about technology integration proved to limit the teacher participants' responsiveness to their students' individual differences, a context-based approach to technology integration is recommended.

The context or the learning environment is considered an important influencing factor on how successful language learning may or may not be. It seems necessary for educators to always remember that the student exists and interacts within a 'sociocultural and ecological' environment which has an effect on students' affective reactions and provides both benefits

and constraints to the language learning experience (Griffiths and Soruç, 2020). Accordingly, a context-dependent approach to technology integration is recommended instead of making generalisations about students' attitudes towards technology and the unsuitability of technology integration into the Algerian context as revealed by Rafik who said that:

> It is said: when in Rome, do as the romans do. I am in Algeria where access to technology is very limited. (…) Successful technology implementation is something impossible in our context. (Rafik, Teacher interview)

Instead of making similar generalised beliefs, teachers need to consider a context-dependent approach and they need to be aware of multiple and varied strategies and teaching techniques so that they can offer choice and variation. In this vein, Harmer (2003, p. 289) suggests that the teacher needs to marry his distinct beliefs and ideas with 'a convincing sensitivity to the students' wants and needs so that somewhere between them a learning bargain is struck to the benefit of all'. In order to address the multiple complex individual students' variables and needs in the language classroom, teachers need to identify the important characteristics of the learning context before deciding what and how to teach. Key aspects of the learning context, according to Bax, include 'an understanding of individual students and their learning needs, wants, styles and strategies as well as the coursebook, local conditions, the classroom culture, school culture and national culture' (2003, p. 285). Giving as much importance as possible to these factors when integrating technology in the classroom allows for an eclectic approach that meets varied learners' needs. Teachers need to be passionate and committed to the situation as they are required to deal with such variability appropriately according to the context analysis.

A practical suggestion here could be the consideration of a revised version of the technological, pedagogical, and content knowledge (TPACK) framework of technology integration by Mishra (2019) which is context-dependent. It considers contextual knowledge in addition to the initial components of the framework which are knowledge of the subject, the way students learn best, instructional strategies required to meet students' needs, and the available digital tools which are appropriate for the syllabus. Contextual knowledge includes 'everything from the teacher's awareness of available technologies, to the teacher's knowledge of the school, district, state, or national policies they operate within' and represents 'another knowledge domain that teachers must possess to integrate technology in teaching' (Mishra, 2019, p. 1). Not only do attempts at integrating technology in the language classroom need to be context-sensitive but also a normalised state of technology use 'needs to be viewed as a complex, dynamic, context-

dependent and community-based process [which] may result in more realistic context-appropriate goals being set in terms of technology use' (Balchin and Wild, 2020, p. 18).

Among ELT technology scenarios described by Hockly (2017), I consider 'the low-resource scenario' as best describing the research setting "an Algerian university". Access to resources and technology in the setting imposes a low-resource context approach to technology integration in language teaching and learning. Though I am categorising this Algerian university as a low-resource context, the digital divide within the institution suggests a difference in access to technology between different classrooms, and accordingly some classrooms have greater access to technology and can be considered high-resource contexts such as the language laboratories and the global virtual classroom (GVC).

Teachers in low-resource contexts need to bear in mind the choice of the hardware, the software, the teaching approach, and the design of materials and align them to the reality of the local educational context. They may not teach all courses using ICT and they can create possibilities to innovate their teaching strategies such as a BYOD approach in which students bring their own devices to the classroom and use them when necessary, or a blended learning approach in which teachers can start by giving their students additional simple online homework to supplement face-to-face classes, then as they gain confidence with this, they might consider replacing some face-to-face classes with online learning. Additionally, the flipped classroom approach, which encourages students to do preparation work online before they come to the class via instructional videos and spend class time on practice and discussion, can be an effective way to use technology in low-resource contexts. Teachers when planning to integrate ICT in their teaching in a low-resource context need to consider that the fruitful technology-assisted language learning experience is the one in which they make use of the technology which already exists in the setting, the one they know how to use, and can afford. Another concern should be how sustainable is the teachers' educational technology strategy. Teachers need to expect and plan for devices to break and for the novelty of the experience to wear off. Technology use when embedded in and adapted to educational contexts results in sustainable teaching innovations (Niederhauser et al, 2018).

As part of the context, I consider the Covid-19 pandemic situation which imposed a sudden transition to emergency online teaching and learning. The imposed online delivery in this specific setting resulted in poor educational outcomes and a troubled learning experience as reported by different teacher and student participants:

> The need to adopt a new way of teaching, learning and testing was urgent but not easy to implement in a country where the E-learning is not already well integrated at university. In addition to this, the structure of our educational system doesn't support completely online practice (Rim, Teacher follow-up discussion).

> The evaluation of the content that was provided to students before and during the pandemic showed that they forgot everything they did in class and they didn't benefit from the revision provided online; they could hardly remember anything. (Cylia, Teacher follow-up discussion)

> It is felt like we were forced to learn many information in a short amount of time and we weren't given time to use and discuss what we learn like we did before Covid-19 crisis. (…) The university didn't live up to my expectations: they controlled things at first but they gave up afterwards, and the teachers flooded us with homework and submissions. (Abdelillah, Student follow-up discussion)

In such critical conditions, Abou-Khalil et al (2021, p. 16) suggest student–content interaction as the most effective student engagement strategy in low-resource settings. Accordingly, in order to meet students' needs and expectations, teachers are required to facilitate interaction between the student and the content by 'diversifying means of content delivery, providing and receiving feedback, and continuously clarifying the requirements'. In addition to this, 'personalizing student-teacher interactions, providing a space for student-student interactions, and turning students into creators of content' are important strategies to engage students and support their learning during emergency online learning in low-resource settings.

8.2.3. Provisions for individual differences through technology integration

As has been discussed, different participants revealed different impacts of technology integration on their psychology of learning. The use of educational technologies at higher education is responsible for students' different psychological reactions and different exhibitions of the same psychological trait, each according to his or her needs and preferences. This helped me realise the importance of using instructional technologies to differentiate instruction according to the students' different requirements. The need of technology integration as a means to tailor instruction to meet individual needs came out of this.

Planned and purposeful technology integration in language classrooms can help teachers address the educational needs of different students and achieve differentiated instruction. The use of instructional technologies in language learning allows for varying the content, classroom practice, the rate of instruction, teaching and learning strategies, assessment strategies, complexity levels. Taking advantage of these different modalities offered by technology, teachers can provide students with multiple ways to receive knowledge, and process ideas and accordingly offer an opportunity to learn effectively. Different uses of technology initiated either by teachers or students themselves inside or outside the classroom are responsible for different effective and affective learning experiences. The use of technology does not only represent one of the avenues to differentiate instruction but recent research work shows that 'the teachers' unwillingness to use modern teaching strategies' and 'the lack of modern classroom equipment' are among the biggest constraints facing teachers during the implementation of differentiated instruction (Al-shaboul et al, 2021).

A language classroom environment which shifts from 'a single-size instruction' and supports differentiation, according to Tomlinson (2017), entails a number of characteristics which help teachers better meet the students' diverse needs. These characteristics include:

- ✓ *Being 'proactive'* in a way that the teacher keeps in mind that students learn differently, anticipates what might happen in the classroom, and 'proactively plans lessons that provide a variety of ways to "get at" and express learning' (Tomlinson, 2017, p.5). Internet resources provide plenty of suggestions, practices and online development courses which allow the teachers become acquainted with different teaching options which challenge and engage different learners in the classroom. Teachers, when using technology, are providing diverse learning opportunities and strategies to students through different written, visual and auditory input which represent a source for students' satisfaction in the following participants' statements:

> Teaching Oral Expression module has changed nowadays. Before the module was all about speaking, now technology is allowing us to include listening as well… (Amel, Teacher interview)

> I enjoy when I use videos to learn something or revise my lessons. Videos are no more than 15 minutes long but I understand better… (Sarra, Focus group discussion)

> I frequently do research on the net and I try to find reports and short summaries about the lectures we do in class… (Linda, Focus group discussion)

In addition to this, technology implementation in language classes, as discussed in section 6.2.2, helps address different learning modalities in different learners, challenge what other learners want and believe, and push them beyond their comfort zones. Teachers when implementing educational technologies in language learning are accommodating different students' desires as suggested in what follows:

> The flipped learning strategy is really helpful for students who need time and repetition again and again to absorb information. They have enough time before coming to class to read or see the content of the lecture. (Imene, Teacher Interview)

> Students who like taking action and generally take a leading role in the classroom enjoy lectures in the lab. I noticed that they feel motivated and they move in the room. They participate and they volunteer to perform tasks in the session. (Amel, Teacher interview)

Each teacher, in the previous statements, is referring to the fact that each category of learners finds its fit in a certain technology scenario. So, being proactive and integrating different technology uses in their teaching, teachers are differentiating instruction, unconsciously addressing different students' learning modalities, and challenging other students' learning desires.

- ✓ *Being 'more qualitative than quantitative'*: a quantitative approach to differentiation looks inefficient since one assignment can be too demanding for a struggling student and more than one task can be regarded as a punishment by advanced students. For this reason, teachers are required to alter 'the nature of the assignment' to accommodate different students' needs. Technology seems to effectively contribute in offering qualitative education to students as revealed by Abdelillah who believe that, 'the variation in technology use makes me enjoy its use, understand better and learn independently' (Abdelillah, follow-up interview). Accordingly, the diversity of use and resources in educational technologies provide teachers with increased opportunities to adjust the learning experience according to students' abilities and requirements.

- ✓ *Being 'rooted in assessment'*: a formative assessment approach is required in order to determine how the learning is taking place and to assess 'the students' developing readiness levels, interests, and approaches to learning and then design learning experiences based on the latest, best understanding of students' needs' (Tomlinson, 2017, p. 7). Rim suggested that 'using technology for assessment purposes is of paramount importance since it helps us to track the students' progress over time and identify individual students' knowledge gaps' (Rim, Teacher interview)

Teachers have access to a wide variety of technology-based assessment tools which allow them determine students' learning modes, strengths, weaknesses, interests and needs effectively. So many options are available for teachers to evaluate their students faster and more easily. They can use interactive presentation software to embed questions into the lesson or check understanding at the end of the lesson. Digital journals represent a great opportunity for students to reflect on the content delivered in the classroom and discuss what they understood and what they did not. Digital journals can be used after class time because of the limited class time and in order to give a chance for shy students and those who need time to process the information to take part of the experience.

- ✓ *'Taking multiple approaches to content, process, and product'*: by varying these elements, teachers are visualising differentiation in a practical way which diversify what students learn (input), how they learn (the process), and how they demonstrate what they learned (the output). Implementing a technology-based learning approach, teachers allow their students to access and use different content areas and procedures. This reminded me of Ghoutia's words when she stated:

Technology is giving me a certain degree of freedom, variation and more space. It is up to me to choose how to learn, what to learn and when to learn (Ghoutia, follow-up interview).

Educational technologies offer an opportunity to create content and a rich environment where students are both producers and consumers of knowledge. Technology integration in higher education also supports the use of different learning approaches and processes such as: autonomous learning, collaborative learning, unconscious learning, affective learning, enjoyable learning, flipped learning, and blended learning (as discussed in chapter 6). Demonstrating learning in a variety of ways is reinforced by the use of technology as well. Digital tools afford multiple ways to show verbal ability (creating audiotapes, presenting,

debating, and discussing online through audio- or videoconferencing), written ability (research papers, essays, practice writing in a class social network), visual ability (using posters, illustrations, images, videos...), kinaesthetic ability (using language games, exhibitions…).

✓ *Being 'student-centered'*: the students' centered approach to language learning is also a key to differentiation in instruction. Differentiated instruction is considered a kind of responsive instruction since it puts students at the centre of attention in the language classroom and allows them to decide what to learn and how to learn. Accordingly, 'teachers who differentiate instruction in academically diverse classrooms seek to provide appropriately challenging learning experiences for all their students' (Tomlinson, 2017, p.8). The use of educational technologies in higher education demonstrated that it supports student-centeredness and add some degree of motivation and responsibility in the learning process as revealed by Ghoutia:

I like the university's system because everything is based on the student and we are using educational technologies which encourage student-centred education in the classroom. (Ghoutia, follow-up interview)

Evidently, research suggests that the use of educational technology in language teaching and learning facilitates student-centred learning (Trinidad and Ngo, 2019). It also suggests that technology plays a major role in a student-centred learning environment since it engages learners in critical thinking, problem solving, collaboration and self-directed learning (Samaranayake, 2020). This clearly reinforces what emerged from the data in section 7.2 in which I highlighted the role of technology integration at higher education in promoting collaborative practice and self-directed learning.

8.2.4. Lessons learnt from online educational delivery during Covid-19

The students' and teachers' experiences during Covid-19 reported in section 7.2.3 revealed a number of challenges which resulted in poor educational outcomes. Students' low academic performance was paired with the difficult psychological state they went through. Participants' statements were laden with words and expressions like 'hard', 'boring', 'difficult', 'challenging', and 'a bad and stressful experience' which reflect the difficulty they experienced. To start with, a number of barriers were identified as responsible for the unsuccessfulness of the online learning experience which are: the lack of hardware and internet connectivity, rigidly structured systems, the sudden and rapid change, the imposed shift, and ill-advised implementation. Then, I focus on a number of lessons learned from the Covid-19

online learning experience that I believe have applicability for improving the teaching and learning experience and taking care of the psychology of the learner.

8.2.4.1. Lessons about technology integration

Technology integration, from using email with students to completely online learning, has enabled the university to continue delivering lectures during the Covid-19 pandemic under certain circumstances. The rapid shift to online education was not easy even for universities and institutions which are used to blended and online learning. The challenges mentioned previously, the local conditions and strategy of implementation helped me highlight a number of elements regarding technology integration that should be taken into consideration:

- ✓ **Choose contextually appropriate technology use**

The shift to and online teaching and learning process does not guarantee good teaching and learning conditions and outcomes. Choosing technology that fits the teaching and learning context is a fundamental factor to ascertain its applicability in different conditions. Each context has very different level of access to resources and technology and not all learners have the same facilities for online learning at home including hardware, software and internet connection. Within the concerned context, students had limited access to internet and technological devices which made it difficult or impossible to engage in a completely online learning scenario as revealed by Rim:

> Either due to the lack of laptops or absence of Internet connectivity, not all of students were able to attend the E-sessions; viva voces were organised online but without an online presentation… (Rim, Follow-up discussion)

Accordingly, it is important to opt for the teaching scenario (no-resource/ low-resource/ high-resource) that harmonise with the local infrastructure considerations.

- ✓ **Invest in technology that works online and in person**

Instructional technologies available at the concerned setting were not enough to deliver equal learning opportunities to an on-ground experience as reported by teacher participants:

> The structure of our educational system doesn't support completely online practice. Exams were postponed till we were back to university. (Rim, Follow-up discussion)

> Things were under control only when students went back to university in September and we are expecting a huge delay in starting the new academic year. (Cylia, Follow-up discussion)

Hence, the closure of schools and universities, the stay-at-home orders, and the uncertainty about the future of teaching and learning in the current circumstances are prompting decision-makers to invest in technologies that can seamlessly transition between in person and online learning when necessary. Adopting hardware and software that is designed to be implemented in any learning environment online or in the classroom helps to facilitate and not to limit the shift to online education. The ability to shift quickly between in person and online teaching allows institutions to operate smoothly and keeps students safe and productive without going through downtime or delays.

✓ **Take advantage of online learning**

Though the shift to online educational delivery was rapid, sudden, imposed, and did not result in positive learning outcomes in the concerned setting, it remains possible to take advantage from the experience. Students when engaged in online learning can benefit from added flexibility and self-paced learning as revealed by Cylia:

> The students seem to have a good knowledge of the content of the lectures that were provided to them online. They started making their own research and taking responsibility of their own leaning. (Cylia, Follow-up discussion)

When learning online, students can study material at their own pace and get the most out of the lessons. They can revisit past material and recorded lectures and perform additional research. Online learning is also an opportunity for students to create their own schedules and better manage their time. In addition to this, students will get familiar with new technical skills, tools, and software.

8.2.4.2. Lessons about institutional strategies

Institutions and universities need to make the necessary changes to fit the demands of sudden and imposed conditions like the Covid-19 pandemic. The sudden virtual delivery of courses in this critical period raised our awareness to some strategies which should be taken into account by education sector:

✓ **Provide budget for essential hardware for online teaching**

The use of technology and digital alternatives has been the only solution for schools and universities to continue their mission during the pandemic and institutions closure. Online services made it possible for students to study, teachers to teach, and staff to work. Rim commented that:

> The need to adopt a new way of teaching, learning and testing was urgent but not easy to implement in a country where the e-learning is not already well integrated in our universities. The structure of our educational system doesn't support completely online practice. So, the first thing to do so that online learning could have been improved in the Algerian educational context is to specify a budget for the necessary hardware and put the right person in charge of the system. (Rim, Follow-up discussion)

In view of this, institutions need to specify a budget which allows them to bring the necessary tools and material to facilitate emergency remote teaching. The must-have resources for emergency online teaching include: a reliable internet connection, desktop computers or laptops, headphones and a microphone in addition to videoconferencing software.

- ✓ **Teachers' training must include digital literacies**

Besides being a fundamental 21st century skill, developing teachers' digital literacy skills became an indispensable strategy that should partake teacher training programs in this critical period. Setting up training sessions which help teachers make effective use of digital technologies prepares them for inevitable transitions in the teaching and learning process. Some teachers in the concerned setting were reluctant to integrate technology in their teaching as they clarified:

> Even if I feel the need to use technology in my teaching or I feel that the task requires technology use, I won't use it in the classroom. (Imene, Teacher interview)

> I am in Algeria where access to technology is very limited. So, of course I cannot make it. (Rafik, Teacher interview)

Obviously it will not be easy for these teachers to engage in a completely virtual teaching scenario under the pandemic circumstances since they did not show readiness to use technology with their students even in normal conditions. In addition to knowledge about the content and

pedagogy, teachers need to develop their knowledge about instructional technologies and how to use them to teach different subjects in specific educational contexts.

- ✓ **Develop mitigation plans**

The government and educational systems took a considerable period of time in order to respond to the pandemic situation. After closing schools and universities and when waiting for the government to issue decisions and make changes, teachers started developing options and actions to continue teaching and carry on with the syllabus:

> I knew the situation wasn't going to get better very soon and that by the time the students will be back to university we wouldn't have time to cover all the lectures (which actually happened). So, I had to think about delivering the remaining lectures online, and make them available for students whenever they needed them. (Cylia, Follow-up discussion)

> The need to adopt a new way of teaching, learning and testing was urgent but not easy to implement in a country where the E-learning is not already well integrated in our universities. (Rim, Follow-up discussion)

It seems crucial for teachers and institution staff to develop plans and long-term strategies that reduce the impact of challenging circumstances. The teachers' reaction and their willingness to make lectures accessible to students before any governmental decision motivated them to adopt an online educational program without resistance. Educational institutions need also to create a support team which provides advice and encouragement to enhance teaching and improve the students' and teachers' response to the challenge.

8.2.4.3. Lessons about the psychology of the learner

In addition to the practical difficulties experienced during the Covid-19 pandemic period, a number of impacts of emotional overwhelm on students and their learning emerged. Such challenges taught the educational milieu some strategies to better connect with students and understand their needs and expectations:

- ✓ **Set specific expectations**

Despite the fact that the Algerian university made online learning possible to happen and took the matter seriously to accomplish the teaching and learning process during the pandemic, they could not meet students' expectations as revealed by students' participants:

> It's felt like teachers were ordered to teach us all of those things as fast as possible and we just had to deal with the repercussion. The university didn't live up to my expectations. (Abdelillah, Follow-up discussion)

> It was hard to accept such boring online learning experience. I was obliged to attend the lectures that my teachers provided online, but my feeling about the experience has nothing to do with what I feel when I study online by myself. (Kawther, Follow-up discussion)

An important implication here is that teachers need to manage students' expectations and to match between what students expect and what they experience in the learning process. They need to communicate with students and clarify what challenges online learning in the concerned setting entails. Preparing students for the transition to online learning and showing readiness to help when needed become a necessity in similar conditions. Getting feedback from students and asking them about their expectations is of a great help for teachers to understand their students' requirements.

- ✓ **Stimulate self-regulation**

The shift to online learning placed high demands on the learners' ability to autonomously regulate their learning process. Participants in the concerned context found it difficult to control their learning and manage their time and tasks as Abdelillah argued that:

> It is felt like we were forced to learn many information in a short amount of time and we weren't given time to use and discuss what we learn like we did before Covid-19 crisis… they controlled things at first but they gave up afterwards, and the teachers flooded us with homework and submissions. (Abdelillah, Follow-up discussion)

Despite the fact that there is evidence about the efficacy of online learning experiences in promoting self-paced learning (section 7.2.2) and facilitating autonomy in language learning (section 6.4.2), not all learners are able to control their own learning during the pandemic period. Therefore, online learning necessitates an appeal to stimulate the self-regulating capacity of students by adjusting learning strategies, managing their time and tasks and adhering to deadlines (Pelikan et al, 2021). Students also need to learn how to plan their tasks and be more self-reliant in their learning. They are required to set priorities in their learning and benefit from the opportunity to individualise their learning process.

✓ **Understand home dynamics**

During this unprecedented time, home studying became the only option for students and teachers to carry on with the teaching and learning process. Studying from home is the biggest change experienced by students and which may create a big challenge due to a number of reasons. Some students may find home as a supportive learning space, others however experienced a number of barriers to effective learning as revealed by Kawther:

> It was hard to study from home during this critical period. I found myself easily distracted by my family members, we have a small study area and one computer to share with three sisters and other responsibilities which limit my learning. (Kawther, Follow-up discussion)

An implication here is that teachers need to take into account home dynamics and to expect challenges like lack of space or study areas, the limited access to the material and internet connectivity, the inability to balance studies and home responsibilities, and being easily distracted. These conditions remind teachers and educational staff that a completely online learning scenario entails a number of difficulties whatever the situation might be. In addition to this, students, in their own, need to use some strategies which make this challenging experience more manageable like: creating a dedicated study area, establishing a structured routine, avoiding distractions, setting realistic goals, and reach out for help and provision of learning material.

8.3. Key limitations of the study

One possible limitation of the study is that it considers a particular group at one university in one country. The fact that the research requires technology integration and the context where I collected data is a low-resource context does not allow the findings to represent a wider population and different settings. The digital divide within the institution and the whole country suggests a difference in access to technology between different classrooms and different universities. Accordingly, my findings simply represent the targeted context and similar contexts and cannot be generalised to other contexts.

Another concern I had during the study relates to not following up enough on the interviews during the Covid-19 pandemic. During that period, I could only interview two students and two teachers online. I could neither travel to access other participants in Algeria because of travel restrictions nor reach them online. It is clear from the collected data that the teachers' and

students' use of and attitudes to technology shifted during the pandemic period. Evidently, greater access to more participants, at that stage, would make a further contribution to the quality of data.

Another limitation within the study concerns my view of individual differences which did not consider gender differences. These differences were not mentioned by participants and I could not notice significant differences according to gender. Thus, I focused on the variation between individuals than between the sexes.

8.4. Conclusions

This section sums up the main points tackled in this research. It reviews the route that I have pursued to conduct the research, restates the overarching argument and the key findings of the study, and presents directions for further research.

This qualitative ethnographic case study research has explored the way technology integration in EFL learning influences individual learner differences. Instead of stressing the different positive and negative impacts of technology integration at higher education on the psychology of the learner, the objective of this study has been to uncover the complexity of such an impact by addressing other aspects of the influence of educational technology use on individual differences. More specifically, this research aimed at exploring both students' and teachers' attitudes towards the use of technology in EFL learning; investigating the impact of technology integration in EFL learning on the psychology of individual learners; and examining the extent to which contextual approaches to technology integration take account of individual learner differences. In order to bridge technology and educational psychology, this study explores the nature of the impact of technology integration in language teaching and learning on the psychology of individual language learners inside and outside the classroom.

In order to address the research aims and questions, I recruited 17 main teacher and student participants from a university in the north-west of Algeria and used focus-group discussions, follow-up discussions, teachers' interviews, learners' diaries, observation, and field notes. This study has uncovered the complexity and the dynamism of the impact of technology integration on individual learner differences. It has revealed the way this impact is shown in multiple aspects and the way technology affects the learners and their differences. It has also highlighted the way such an impact is characterised by constant change according to contextual approaches to and local realities of technology integration in EFL learning.

Besides collaborating to knowledge, this Ph.D. research serves as a fruitful personal learning experience for me as a researcher and as a preparation for my teaching journey which requires an understanding of individual learner differences. What I have learnt from undertaking this research is that in the very same classroom, the technology that brings comfort to one student's learning experience may cause immense anxiety in another, when the source of comfort is effortless comprehension for one learner; information retention is the source of another student's comfort, a student who is highly motivated when engaged in a technology scenario may become bored when the novelty wanes, and of course these psychological variables are not set in stone and can change according to the context and over time. This research has helped me become more reflexive prior, during and after implementing any technology scenario in my teaching and more aware of the necessity of instructional adaptation and differentiated instruction.

To conclude, the findings of this study can serve as a platform for further research in the field. Since my study is an exploration of individual learner differences in TALL at higher education and did not consider teacher differences, it would be valuable to investigate the impact of technology integration on the psychology of the teacher. As my research into the impact of technology use on the psychology of the learner was conducted in a low-resource context, it could be possible for further research to investigate it in a high-resource context to explore other variables which the findings of this study did not uncover. Since my research required new ways of learning and I used two ELT technology scenarios, namely the flipped classroom and mobile learning, further research needs to use other technology scenarios such as blended learning and online courses. And finally, since my positionality as a researcher in the setting was 'partial insider'/ 'partial outsider' as I described in section 4.2.4, it would be worthwhile to explore how a completely 'outsider' researcher would investigate the same topic by highlighting reflexivity and the way it affects the research process.

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LIST OF APPENDICES

Appendix 1: Example of learners' diaries entry

My Learning Diary

Date:

Name:

Please describe todays' experience in COE module. You are required to mention what have you enjoyed most and least and what have you felt when using your mobile phone or computer to give feedback to your classmate.

You may find the following questions useful to guide your writing:

- What do you think of how we used technology today?
- What was new for you? Was there something that changed the way you are learning?
- To what extent does this strategy serve your needs?

Please write your feedback and feelings, in as much details as possible, openly and honestly as if you were keeping your personal diary. You may use Arabic, French or English to report your feelings.

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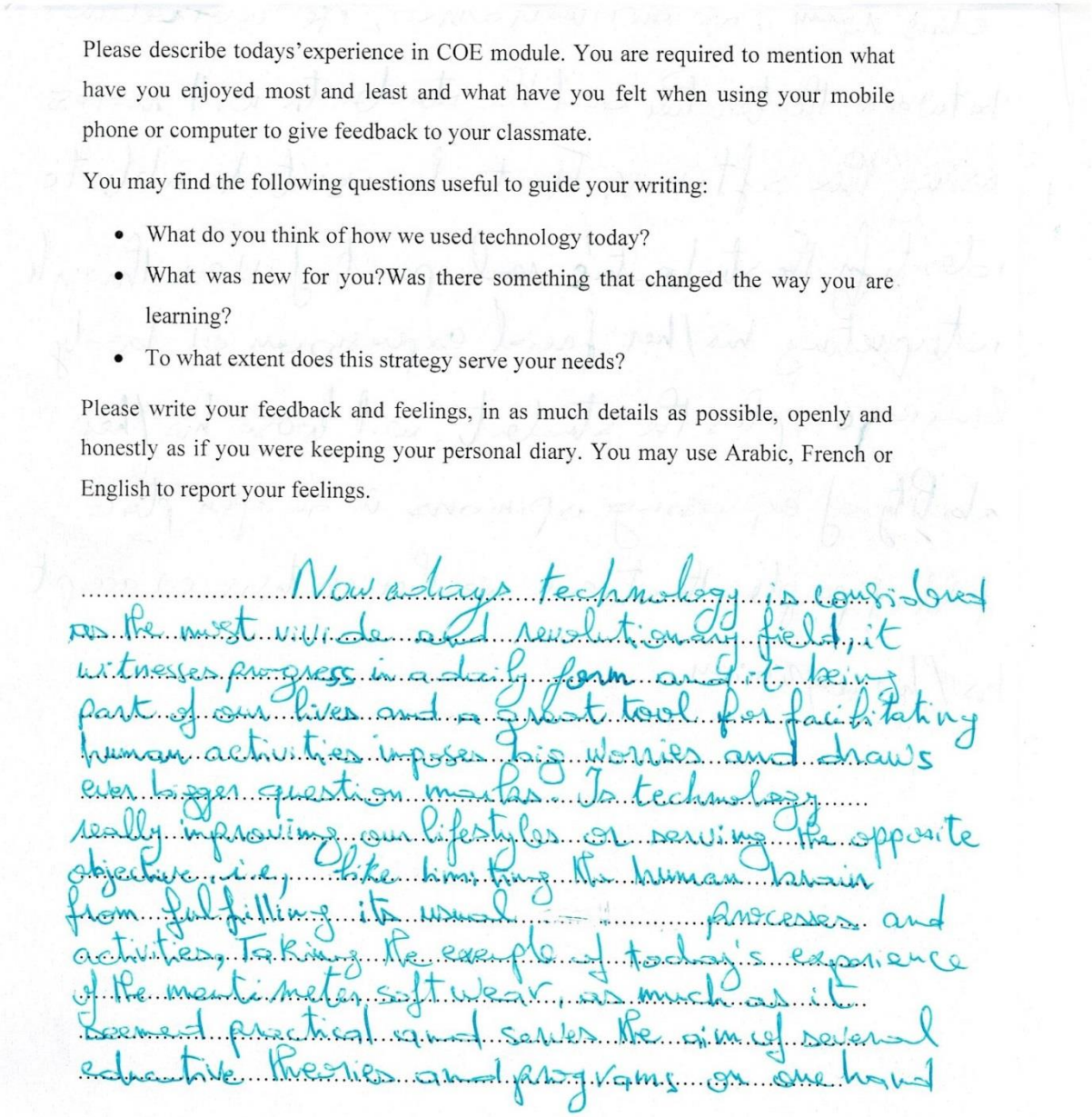
Appendix 2: Example of learners' diaries

Names of participants have been removed to preserve anonymity.



Please describe todays'experience in COE module. You are required to mention what have you enjoyed most and least and what have you felt when using your mobile phone or computer to give feedback to your classmate.

You may find the following questions useful to guide your writing:

- What do you think of how we used technology today?
- What was new for you?Was there something that changed the way you are learning?
- To what extent does this strategy serve your needs?

Please write your feedback and feelings, in as much details as possible, openly and honestly as if you were keeping your personal diary. You may use Arabic, French or English to report your feelings.

Nowadays technology is considered as the most wide and revolutionary field, it witnesses progress in a daily form and it being part of our lives and a great tool for facilitating human activities imposes big worries and draws ever bigger question marks. Is technology really improving our lifestyles or serving the opposite objective, i.e., like hindering the human brain from fulfilling its usual processes and activities. Taking the example of today's experience of the mentimeter software, as much as it seemed practical and saves the aim of several educative theories and programs on one hand

Please describe todays' lecture in COE module. You are required to mention what have you enjoyed most and least and what have you felt when using flipped learning.

You may find the following questions useful to guide your writing:

- What do you think of how we used technology in our lesson?
- What was new for you?Was there something that changed the way you are learning?
- To what extent does this strategy serve your needs?

Please write your feedback and feelings, in as much details as possible, openly and honestly as if you were keeping your personal diary. You may use Arabic, French or English to report your feelings.

I think that our session today was so
Wonderful because I prepare the lesson
in my home when I see the video so after
this lesson I know the benefit and the
positive of technology and how it help me
to give more information about this lesson.
To hope this manner will applied in
all the modules because I feel comfortable
and this way are successfuly for students
to understand the lesson in the house and
come to the university just to revise
what he done. So it perfectly and easy

Appendix 3: Example of teacher interview questions

1. It is said: “The blackboard, pens and paper are outdated”. Do you agree? Explain why please?
2. Is there any reason that makes you feel you should use /start using technology with your students?
3. Do you think students expect you to use any form of technology in language classes? Why?
4. What do you think about presenting lectures using instructional technologies?
5. Give your opinion on how much should technology be used in the classroom?
6. How often do you have your students use the computer lab? Why?
7. What factors do you think influence your decision to integrate technology in your classroom?
8. How can you describe an appropriate use of technology in language learning?
9. How much do you think students consume and produce information with technology? Give examples, please?
10. Do you think that the time and effort spent using the technological tool worth it? Explain why, please?
11. What are the positives and negatives of having technology in the classroom?
12. It is said: “the success or failure of technology-assisted language learning depends on the IT skills of the teacher”. Do you agree?
13. Do you think that technology increases your workload? Explain how please?

15. In what way do you think technology integration could have been improved in Algerian educational contexts?

Appendix 4: Extract from teacher interview transcript

I: It is said: "The blackboard, pens and paper are outdated". Do you agree? Explain why please?

R: No (not outdated), they call it if you want traditional way of teaching and I think this part of tools should be part of classroom management and should be kept till even if we use audio visual aids, technology… etc. It is something that is necessary to both students and teachers. If I can give you an example one day I was just doing things with my students, all the session was based on a video and we discuss later on… A student gave me a word and I couldn't hear her well or she mispronounced it, I asked her to come to the board and write it down, we provided also the whole meaning. I think such direct contact with student either for spelling, for checking vocabulary or exchanging it… I think there is no other way to do some classroom activities or some tasks inside the classroom if we don't have our traditional blackboard or whiteboard, our pencil and piece of chalk. Using traditional things and we complement our teaching using technology is something not old fashioned, updated, necessary and complementary in all cases.

I: Is there any reason that makes you feel you should use /start using technology with your students?

R: I was in charge for a long period of time and I 'm still in charge of first year students and third year students. So, I see their behavior at the starting of their studies (1 st year), in the middle (3 years later) and at the end (I meet them during their master studies) and I do the investigation and I realised that it changes completely, they start having a very basic point of view… 1 st year students come at the university waiting for lot hopes and changes. So, when I start welcoming them in the language lab, they were really curious about using technology, new things, new ways and even the shape of the classroom is completely different from a traditional one. So, that's why having this new environment could push them and motivate them to learn more and behave positively in the classroom and then I realised that the mare of stress and the lack of experience… technology is necessary in that case for example when I organised my first exam or assessment with them, they were afraid to speak, to ask questions because they are not used to communicate in the classroom in the secondary level (it happens rarely). Some teachers fortunately are using projectors but they are rare too. So, when they come to university with a certain inhibition, stress and lack of confidence, if you put them for the first experience in front of a screen by themselves using headphones, they feel more at ease,

they have the chance to repeat again if they are not really satisfied with a voice version etc. So, talking to themselves could be more beneficial at that level. Later on, starting from second, and mainly third year, I started doing the same thing with students when we had the chance to use language labs and I realised that students are not behaving the same way, they are less positive, they are just complaining. I decided to investigate and do kind of questionnaire with them and ask them… I was really surprised that more than 60% of the whole L3 students are against using too much technology in the classroom. Do you believe that? And at a certain stage of their learning they prefer to have face to face communication with the teacher.

I: Why is that?

R: They found it very fruitful, the fact that they see their teacher giving them importance, discussing with them, sharing ideas etc. They see the behavior and the reaction of their teacher. It is also important not to dedicate all the lectures and all your energy for that: you can have technical problems, the light off, problems with the system. So, you should know how to manage the class without it. We should also take into consideration the fact that this generation are working and training themselves the same time as they study. So, if they have the chance to discuss or exchange lectures, ideas and questions with their teachers and classmates at least using Facebook (because we don't have MOOCS in the university). So this gives the chance and motivates students who are working and studying at the same time.

I: Do you think students expect you to use any form of technology in language classes? Why?

R: It depends on the students you are facing. As you know it is a learner centered approach in which everything is based on learners. I am in charge of oral production module and listening in parallel. Everything is based on my learners. I always pay attention to the motivation and the desire of my students to work with something rather than the other in order to help them challenge themselves, improve, evolve …etc. Then, of course if I find the majority of students are in favour of using technology more than the classical method, I use that but most of the time it is 50% technology 50% traditional teaching. I use traditional methods and I complement my teaching using technology. But sometimes it depends. For example, I am not specialist in literature, I like it but I don't read too much books, one day I faced a group of students the most of them from LC specialty, to improve their speaking skills more than other skills, I asked them to select something that they would like to do. Most of the group would like to dedicate their session for reading because they come from a literary background and they have already read many books. Though I am not specialist in literature and I don't read literary books, I agreed

on that and each session we selected one student to speak about a famous literary book and explain it. So, we that group we didn't need to use technology… It depends on the purpose of learning. Nowadays, students when they see handouts they start reading the first maybe the second page and they give up rapidly but if you give them a PowerPoint presentation with a video maybe; they will be attracted by the visual aids and they follow with you.

As far as I 'm concerned, a mixture should be the perfect way. So, I cannot work without it… For example, instead of printing papers I display the content maybe a picture in the screen in order to save papers and save time and then they express themselves and comment on it I take the point of view of everyone So we engage in a conversation using only that picture… we don't need too much technology but at least in the starting point of the lecture.. So it is necessary to complement the traditional way of teaching.

I: What do you think about presenting lectures using instructional technologies?

R: Technology integration is useful, necessary for the digital generation, something that we must master and know how to manage since everything nowadays is done through internet even paying your bill is done online. It should be something complementary in education. For example, if a student can't come, can at least email his or her teacher, keep in touch with his classmates, and benefit from lectures posted online. So, technology is part of our life but we shouldn't be addicted to it. Reading a printed book is better than an e-book as an example to protect your eyes health.

I: What factors do you think influence your decision to integrate technology in your classroom?

R: Sometimes I'm ready to start the lecture, I 'm supposed to use technology to gain time, when I reach the language lab either we lost connection or we have technical problems and I call someone to fix it. So, we lose time trying to fix the problem. So, we should avoid counting only on technology because you can find issues … sometimes you want to work with something and you can't download it, you should pay for it.

The number of students doesn't affect my decision to integrate technology or not… I like having large classes… I got lost if I have only few students in front of me I started my career that way and I know how to manage them well. But I think a large class in the oral production module is challenging for me and for the student. For example, during exams, I take three labs and I do the exam in one hour and a half but if we don't have technology (labs), I have to see students one by one, face to face. So imagine working with 120 students in one day. You can

divide a group in 2 or 3 but not more because of lack of time and the time we should respect of assessing people. So, using technology for assessment purposes is time saving.

I: What are the positives and negatives of using technology with students?

R: In addition to knowing students, direct contact with them, discussing things with them and always asking them questions, I use technology to integrate my students well in the classroom. I encourage them to use their devices; I give them the opportunity to collaborate with me doing my teaching process: I ask them for help to deal with possible technology troubles and some of them feel pleased and motivated to help. The more you create a certain environment in the classroom, the more they are aware about the importance of getting in touch with the teacher and it's a way to motivate them. From time to time, I try to introduce and make good use of mobile devices in the classroom. I organise quizzes and vocabulary games and activities and allow them to use their mobile devices. They find it very funny and joyful classroom experience and they interact well with it. In addition, when I ask a question I have such direct eye contact with everyone, i.e., I am waiting an answer from all of you, I'm not working with people who would like to talk only and when I see that they are not sure or when they hesitate, I always put myself as an example sometimes even if I feel like I'm giving them personal details but they feel at ease with me and they forget their mobile phones for a certain moment and keep focused on the lecture.

We can also use Facebook to keep in touch with students but to a certain degree: when we are in the class you can put limits and keep respect when communicating with students but we can't manage disrespect when we are behind the screen because some students behind a screen can feel more at ease to discuss and overstep the limits. So, that's why we should know how to fix limits with our students through technology.

I: It is said: "the success or failure of technology-assisted language learning depends on the IT skills of the teacher". Do you agree?

R: Definitely no…. Of course when you are a specialist that's better but it doesn't mean that those who are not skilful won't manage to use it in their teaching. I encourage my students to use some academic applications and even for me to organise my lectures I use "Trello": it's a very necessary app to organise and plan lectures, journeys, meetings … etc. You put all your first objectives and what you are supposed to reach at the end of the week and then if you reach one of your objectives you put it in the other box dedicated for the final day of the week and

you will challenge yourself to reach the others… when you have them visually using your mobile phone it will motivate you. So, it should be used in a correct way, appropriate moment and in a short period of time.

I: Do you think that technology increases your workload? Explain how please?

R: It depends, when I have technical issues, yes definitely, It is an additional workload. When I don't, it's really a gain of time.

I: In what way do you think technology integration could have been improved in Algerian educational contexts?

R: Using the right method; putting the right person in charge of the system; helping with teachers training (they ask you to use technology but they don't train you).

[…]

Appendix 5: Extract from focus group transcript

I: It is said: "The blackboard, pens and paper are outdated". Do you agree? Explain why, please?

Ismail: Yes, pens and papers are outdated and don't seem to fit the twenty-first century. We can write on a tablet, we can just pick up our phones and take notes and that's more enjoyable and practical. The world nowadays is using advanced techniques and we, as a part of this world, have to keep up with those countries and use the methods they are using in education.

Fatima: I totally disagree, I can see myself and my experience in writing when I use a paper and a pen… When typing I sometimes forget how to write the word and I frequently get confused about which letter or vowel to use in a certain word. That's not because I don't have the habit to do it, I type on the computer regularly because some teachers are obliging us to bring material in a word format… However, I can only express myself well and enjoy what I am writing when I use a paper and a pen… It's a personal preference.

Ismail: I am working on a new device that replaces the paper and the pen. It is a digital note taking device or you can call it a smart copybook. We all know that hand writing is something important especially for pupils but why not to write on a digital copybook. It is not a tablet and students using it cannot connect to the internet or get distracted with something else. It is simply a note taking device. By the way papers have lot of negative effects on the environment and they are increasing the problem of global warming. Hand writing is something obligatory especially for primary school pupils but why not to write on a digital copy book.

Akram: I think since their first year, pupils should use a tablet since one day they will end up using a computer or tablet or another device. So, hand writing is not that necessary. We should make them use laptops from early years.

Sarra: We can say that the pen and papers are outdated but we need them… I understand more using a pen and a paper.

I: Ok, do you care about the way the teacher presents his or her lecture? I mean using technology or not?

Akram: Of course, I do and I am not satisfied about the way we are taught.

Kawther: If all our studies were done online, it would be amazing!

I: What does learning with technology look like for you?

Kawther: Technology is making the world smaller, we can access whatever we want in few minutes.

Amira: Technology makes learning easier. I can search for any information I need and I can access whatever I want in few minutes. I don't even have to write everything, I just copy what I need.

Anas: You said I copy and this is a disadvantage I think. If you take the information without researching deeply and making efforts, you will easily forget it.

Amira: But when you are making research, you are automatically reading the information and understanding it before copying it.

Ahlem: Not all of us are doing this. Sometimes I am in a rush or I feel lazy. So, I don't read carefully I just start copying without doing efforts. Technology is making me lazier. Besides, we can find wrong information in the net.

I: In which ways do you think technology can help you inside the classroom?

Aya: Our teacher of phonetics is using the language laboratory and videos to teach us sounds. The session was really motivating and informative. I could easily identify the sound patterns and pronounce it correctly.

Kawther: Let's say 20% of our teachers are using technology in the classroom. I am not talking about sending files and sharing lectures, I am talking about classroom technology use.

Akram: I think it depends on the teacher and the way he views technology. Those who believe that technology could be a great instrument that assists learning are using it regularly.

Abdeillah: And the module as well, teachers of Oral production and Phonetics modules use the language laboratory frequently. They use videos, short films and rarely use the blackboard.

Fatima: Even if the module requires technology use, if the teacher is not ready or don't want to use it, we can say nothing. We have a teacher who tell us insult me and don't use your phone in the classroom. One time, a student had an emergency and she had to answer the call. He told her: 'will you save lives if you answer this call?' I know it is not appropriate to answer calls

during class time, but how would you expect from this teacher to use technology or allow technology use in the classroom?

I: Ok, what about outside the classroom?

Sarra: Yes, I always use videos to learn something or revise my lessons. Videos are no more than 15 minutes long but I understand better.

Linda: I frequently do research on the net and I try to find reports and short summaries about the lectures we do in the class, because it is impossible for me to read a handout of 5 or 6 pages.

Salah: I am really grateful to 'uncle Google' which is providing detailed information in a variety of ways. I sometimes use images and videos to understand better. Sometimes, I play instructional games to learn vocabulary, in other times I simply use online dictionaries.

Ismail: Audio-visuals help me a lot… when using them I feel I want to listen more, I want to watch more, and I don't even feel that I am doing or completing difficult learning assignments. Though, I finish the required work, I won't stop there, I want to learn more and know more because the method suits me. When I have free time, instead of playing a game or chatting, I watch instructional videos and the more I learn the more I want further.

Siham: Last time, I and three classmates had to present something in group and it was the end of the week and you know students come to university from different regions. We live far from each other and we couldn't meet to work on the presentation. Thanks to social media, we gathered and we created a messenger group where we made a list of all work that needs to get done, then we divided it fairly and distributed roles, we discussed what to include in each section and once we finished we practised orally in a group call.

Ismail: We also created a group on Facebook and it is really helpful. We share lectures, homework, and assignment deadlines. We ask questions about lectures or points that we couldn't understand or we missed in the classroom. We share experiences and we reflect on each other's' work.

Abdelillah: The GVC also is a wonderful experience in which we can exchange information, ideas and cultures with students from all over the world… I am sitting for the test soon. I want to know more about other cultures, I want to talk with native speakers and practice speaking using technology. We use communication software, speakers and a microphone, we see the other students in the screen… so we change the traditional class routine.

Firdaws: I totally agree, in the GVC, every week there is a subject to talk about. Willingly or not, we learn something and it's a funny way to learn. I am not making great efforts and I am not going there to study, I go to train myself to speak and to communicate with native speakers. I was not even aware that I am learning something but I am learning a lot of things especially about different cultures.

I: Great, and are there any technologies that you dislike or would prefer to avoid?

Salah: I don't dislike it, but social media is always distracting me inside the classroom. I can't concentrate with the teacher when I have internet access in the classroom. I only stop checking it if the teacher is in front of me and I couldn't use my phone.

Ismail: We like technology, teachers do not. At the beginning of the year we created a Facebook group and asked our teachers to join it because it is easier to share stuff. They all have Facebook accounts but they didn't accept to join the group. They want to keep their private life away from education.

Abdelillah: Some teachers think that there should be a barrier between them and their students and if we keep in touch with them on Facebook it means we are not respecting them anymore. I think they have their reasons, they want us to respect their privacy and personal lives.

Ismail: You know using Facebook we can do anything and say anything, create a fake profile and say what we can't say in real life and in front of a teacher and this can be dangerous.

[…]

Appendix 6: Extract from students' follow-up interview

[…]

I: Do you think such a reaction has to do with the novelty of the experience?

Abdelillah: No, if it will happen another time, I would have the same feeling certainly. That's not about it happened the first time or 50 times, it was more of amusement and pleasure. It was fun to learn in such a way. I always use videos to learn and I am always enjoying. I will definitely feel the same. It makes learning easier when I am home and I want to learn something or revise my lessons I just use internet but when I come to university and we have to learn in ancient ways… there you feel the difference why I can't just use my phone or laptop or just watch a video like we did. For example, last time our teacher of civilization asked us about Magna Carta and told us to do research about it. So, I printed nearly six pages about it and I read them and then I found a video on YouTube and the speaker was explaining using images and 3D animations, the video was 5 minutes long but I understood better and easier than reading the printed papers I had. When we came to class and the teacher asked us to tell her what we prepared … when I read mine … she told me that it was good and she felt like I knew what I was talking about… I could easily express myself and answer the teacher's questions about the topic.

I: What did you like most about the use of instructional videos?

Abdelillah: Animations help me understand more… when I place the picture in my mind and I carry on using my imagination, I get much closer to the reality and I have an idea about the real situation but when I read the information …I feel like it stays on the paper, I can't extract it and place it in real life unlike when I see it in a video I feel like I can relate to it.

Visual learning is much better than printed staff … In the past (previous years) I wish I had videos to explain tough lessons (there were many difficult lessons) that require much energy. You just read and read and read for 4 or 5 times in order to grasp the meaning … I think I wasted more time in reading than actually understanding. I memorise something and as soon as the test comes and I write it, it's gone. However, when I see it in a video it's stuck in my memory… till now I remember the Magna Carta and why it happened just because of those visuals.

When I don't understand something that we did in the classroom, I just go home and google search… the best thing about google is the variety of methods I can use to learn something but in the classroom I have only one way to do it (following the teacher's guidelines) and no other choice. The diversity of technology resources makes me enjoy its use… there is teachers online, 3D visuals, videos explaining and other amazing things that we can use. Here at the classroom, you have to do a certain thing in a certain way otherwise it is wrong. The teacher is leading the way and you are just following… I don't feel like I am doing much work. So, using technology is actually fun but makes me work better and understand more.

Watching a video make me question myself what's going to happen later, I wonder what will happen in the video, but if the teacher is just talking and talking, it's the same thing for the past 12 or 13 years. But, using a video, I see these things; I take part of them… I use my eyes and ears to grasp the meaning. Listening to the teacher is sometimes boring; the teacher is always the same and delivering information in the same way.

Lectures in the lab are actually my favourite ones just because of the way the teacher uses videos and other technologies. In the lab, I feel excited and I want to learn. I couldn't attend the Phonetics session last time when the teacher played a song to teach them vowels. I would love if I just go back and do attend that class. You know we had this old way of teaching and it's being around for many years. So, I think it is going to take lot of time for me to feel bored if they use technology with us.

I: And what do you think about the software that we used together?

Abdelillah: I prefer to use this software to give all my answers even when I am 100% sure that my answer is correct I always have this fear of people making fun of me. All in all, it depends on the person; there are students who are confident even if they say the wrong thing and others who don't care to what they are saying**.** When I was shy and I didn't have enough confidence to give my opinion, the software and my mobile gave me the chance to participate. As if I am under door and this is the chance to say what I want to say. But, I am not sure this is good all the time. Sometimes, it is good to look to someone's eyes and interact. Besides, if I keep using the software to give feedback or participate in the classroom, I will never gain confidence and trust my abilities and do it orally.

It depends on the experience. When we used flipped learning, for example, I felt more confident to participate in the classroom because I actually know what I am talking about, I have an idea.

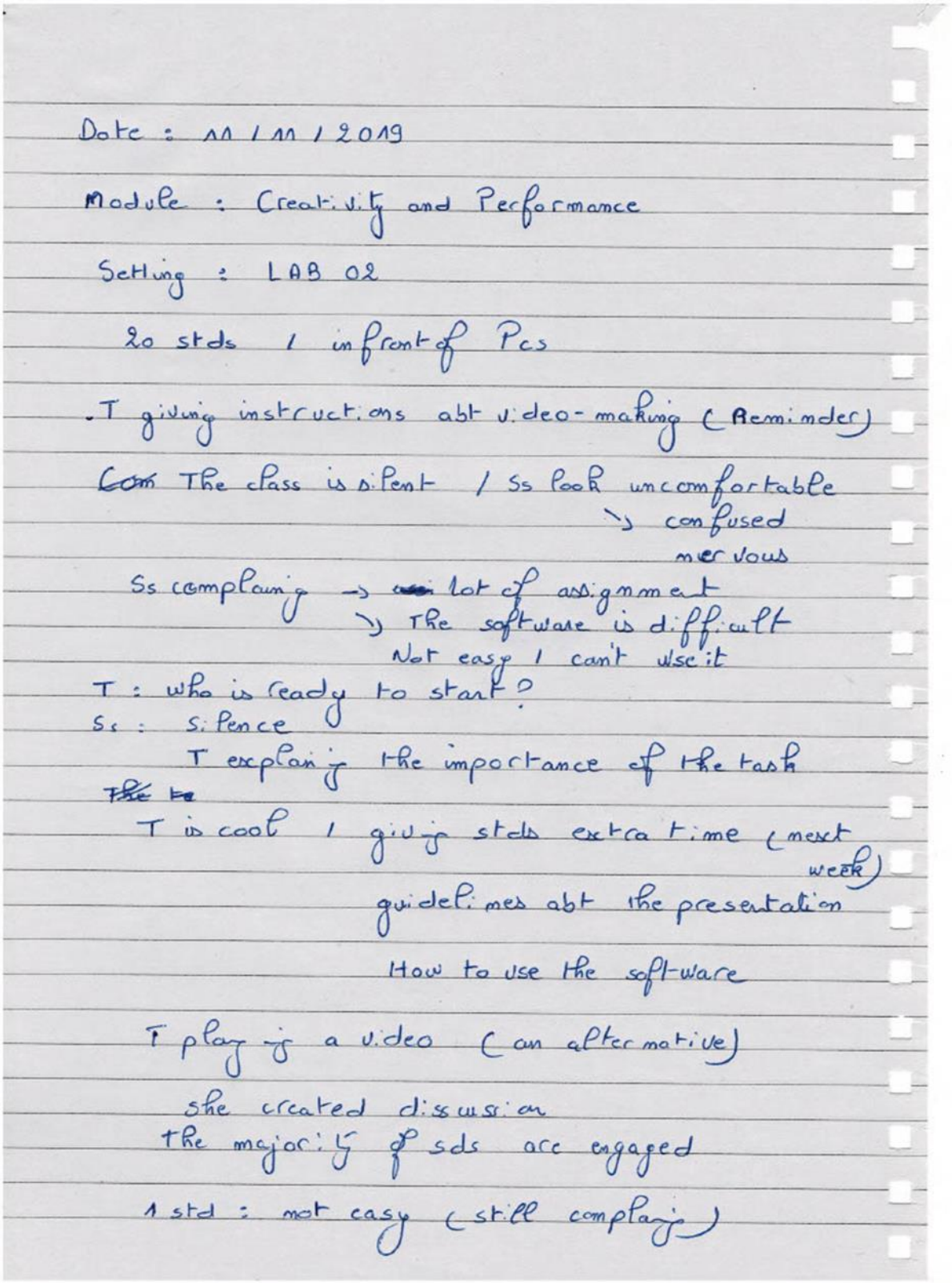
It is not like when you come to the classroom and the teacher suddenly asks you what do you know about this and you start guessing and it is really risky to guess and I am always afraid of saying the wrong thing. So, when you have an idea at least that small thing you have in your mind before coming to class, it boosts your confidence… like no matter what I am going to say, it is not going to be completely crazy or wrong; at least I know what am talking about. When the teacher gives me a video and I have to watch it at home is among the amazing things I experienced here at university in my studies.

…Actually using technology, I am making less efforts and I am not even aware of the process. That's the good thing about technology. I can simply watch an instructional video on my way going to college (at the bus) I can just plug my earphones in and watch it. That's easier compared to having a long paper and memorising it which is effort demanding.

In addition to this, teachers do not always use the correct method to communicate with students. They may just talk with smart people and give them all their attention and neglect other less smart students. Technology, however, doesn't separate between smart and less smart students and just provides information equally without harming, underestimating or judging our abilities. I feel I can't be ignored by technology. In a normal class, however, when the teacher is explaining I can be ignored, I can be obliged to ask questions or say answers that make me look not educated enough or not well equipped for this course.

[…]

Appendix 7: Example of my observation notes



Date : 11 / 11 / 2019

Module : Creativity and Performance

Setting : LAB 02

20 stds / in front of Pcs

- T giving instructions abt video-making (Reminder)

~~Com~~ The class is silent / Ss look uncomfortable
→ confused
nervous

Ss complaining → ~~was~~ lot of assignment
→ The software is difficult
Not easy / can't use it

T : who is ready to start?

Ss : Silence

T explaining the importance of the task

~~The~~ ~~T~~

T is cool / giving stds extra time (next week)
guidelines abt the presentation

How to use the soft-ware

T play is a video (an alternative)

she created discussion

The majority of sds are engaged

1 std : not easy (still complain)

Appendix 8: Examples of field notes

Extract from field notes (November, 2019)

In my focus group discussion with students today, students appeared uncomfortable and not at ease to share with me their attitudes and experiences. They gave me the impression that they were careful to what they were saying, they were making kind of superficial answers and kept calling me 'Miss' simply as they do with their teacher. Such reactions made me feel uncomfortable with them as well. Despite the fact that I gave them the choice to use whatever language they feel comfortable with (Arabic, French or English), some of them are making efforts to speak in English.

When I turned back time, I realised that this is the group I invigilated two days ago at an examination. Their teacher requested my help when she coincidentally saw me in the corridor when looking for someone to replace her, because she had to leave for a moment. These students gave me the status of one of their teachers and didn't feel comfortable to share their experiences with me.

Extract from field notes (January, 2020)

Today, three of my student participants who have been taught by Rafik referred to the same classroom event. When a student had an emergency and she had to answer a call, he reacted with severity. The three students repeated his statement 'If someone is dying, will you save him?' Though it is not appropriate to answer calls during class time, the teacher's reaction had a strong influence on the students' psychological state and behaviour.

The three participants pointed to 'how can I use technology with someone who didn't care to human life in order not to be disturbed'. The teacher's reaction towards mobile phone use in the classroom negatively affected these students' emotions and was enough for these students to take a certain stance. The use of technology in such circumstances is affecting the teacher-students rapport and creating a kind of noise and disturbance in the classroom.

Appendix 9: Examples of data analysis

Rim: When I started welcoming first year students at the language laboratory, they were really happy and curious about using it at that level….Later on, in their second and third year, whenever we had the chance to use the lab I realized that students are not behaving the same way, they are less positive and just complaining…. I was really surprised that more than 60% of third year and Masters students are against using too much technology in the classroom and they prefer to have face to face communication with the teacher.

Commentaire [UW1]: The level of students

Rim: Everything is based on my learners. I always pay attention to the motivation and the desire of my students to work with something rather than the other in order to help them challenge themselves, improve, evolve… etc. If I find that the majority of my students are in favour of using technology more than the classical method, I use it but most of the time it is 50% technology 50% traditional teaching. I use traditional methods and I complement my teaching using technology.

Commentaire [UW2]: The students' needs

Firdaws: In the GVC, every week there is a subject to talk about. Willingly or not, we learn something and it's a funny way to learn. I am not making great efforts and I am not going there to study, I go to train myself to speak and to communicate with native speakers. I was not even aware that I am learning something but I am learning a lot of things especially about different cultures.

Commentaire [UW3]: Unconscious learning

Kawther: As a response to Covid-19 situation, some teachers started giving lectures on online platforms. Others, however, managed by simply sending us lectures in the form of a document. Not all of us could understand the content of the document and this was not convenient to students with different abilities. So, we decided to create a Facebook group and collaborate together to support each other's learning. Each student who is strong in a certain module is required to teach, help and facilitate weaker students' learning. It was really effective, we created an encouraging learning atmosphere and we could easily understand our classmates' instructions.

Commentaire [UW4]: Digital collaboration

Kawther: By participating in Hult Prize competition and working on this digital note taking device, we are engaging in a motivating and self-instructing experience. We are developing our knowledge in the field of digitalization and gaining new insights about collaboration, self-teaching, challenge and competitiveness.

Commentaire [UW5]: Self-directed learning