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Overcoming pre-service foreign language teaching anxiety with the help of virtual reality software

A contribution of the Ovation VR project

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Abstract

Non-native pre-service teachers of foreign languages face additional anxiety compared with other teachers, namely that of teaching in a language other than their mother tongue. This has given rise to the concept of Foreign Language Teaching Anxiety (FLTA). Unlike Foreign Language Anxiety (FLA), FLTA seems to have been less studied. Moreover, despite the negative effects of this phenomenon on teachers and students, few solutions and recommendations have been suggested to limit its consequences. This master thesis supports the hypothesis that virtual reality software can be a tool to help non-native pre-service teachers to reduce their Foreign Language Teaching Anxiety. In order to test this hypothesis, a study involving three pre-service language teachers has been carried out. The aim of the study was to find out whether the anxiety levels of the three participants decreased over the course of mini teaching sessions using virtual reality software called Ovation VR. Although the limitations of this study must be taken into account, the analyses showed that using virtual reality software would make future teachers more aware of their strengths while working on their weaknesses, enabling them to be better prepared and less anxious. In conclusion, it seems that VR software could be used as a means of bridging the gap between theoretical courses and internships.

LIST OF ABBREVIATIONS

Abbrevetion	Meaning
AR	Augmented Reality
ARIDLL	Augmented Reality Instructional Design for Language Learning
EFL	English as a Foreign Language
ESL	English as a Second Language
ETUCE	European Trade Union Committee for Education
EU	European Union
FL	Foreign Language
FLA	Foreign Language Anxiety
FLCAS	Foreign Language Classroom Anxiety Scale
FLL	Foreign Language Learning
FLTA	Foreign Language Teaching Anxiety
FP	Fast Pace
GR	Grammar Mistake
HiVR	High-Immersive Virtual Reality
ILO	International Labour Organization
ITE	Initial Teacher Education
KWIC	Key Words In Context
LiVR	Low-Immersive Virtual Reality
MIS W	Misused Word
MR	Mixed Reality
NTL	Not Speaking the Target Language
OECD	Organization for economic Cooperation and Development
P	Pause/Silence/Hesitation
Pr M	Pronunciation Mistake
SL	Second Language
TrV	Trembling Voice
TTP	Teacher Training Program
UNESCO	United Nations Educational Scientific and Cultural Organization
VR	Virtual Reality
XR	Extended Reality

1. INTRODUCTION

The importance of education, and by extension of teachers, today is hardly questioned. Indeed, education serves noble and important roles such as contributing to social justice, human capital development, individual development, promoting democratic values such as peace and freedom, and fighting poverty. However, the teaching profession is currently facing issues and challenges. Among the various problems that the education system is facing, this master thesis more specifically focuses on the teachers' shortage. One of the causes of the teacher shortage lies in the quality of initial teacher training, which is considered to be inadequate. Only in Belgium for example, more than one in five new teachers leave the profession within the first five years of teaching. Pre-service teachers and young teachers find a gap between their initial training and the concrete, complex aspects of the teaching profession. In order to tackle this issue, several studies have suggested that the teaching practicum and practical experience should be given greater importance, and that a new balance should be found between theoretical and practical teaching.

This master thesis has more particularly focused on the quality of the initial teacher training of non-native pre-service foreign language teachers. Non-native pre-service teachers of foreign languages face an additional difficulty compared with teachers in other subjects, namely that of teaching in a language different from their mother tongue. As a result, research has given rise to the concept of Foreign Language Teaching Anxiety (FLTA). Unlike Foreign Language Anxiety (FLA), which has already aroused a great deal of interest in the research field, FLTA seems to have been less studied. A review of the literature shows that the actual impact of FLTA is still poorly understood, as it has been little studied. Some authors argue that the contextual factors underlying FLTA need to be studied separately from those underlying FLA. It also appears that teachers and pre-service teachers of foreign languages are not always aware of the disabling factors associated with this type of anxiety. Several studies have shown that anxiety linked to teaching a foreign language is a very frequent phenomenon among trainee teachers. Various sources of FLTA are presented through this master thesis, chief among them: lack of confidence in mastering the target language, especially orally, lack of listening skills, inadequate classroom

preparation and comparison with native teachers. Other anxiety factors were also noted, such as lack of educational resources, workload, and classroom management, to note but a few.

However, it is important to note that although there have been studies designed to measure anxiety in future foreign language teachers, there seems to be no study looking for a tool that could help non-native pre-service teachers to overcome FLTA. Therefore, this master thesis supports the hypothesis that virtual reality software could be a tool to help non-native pre-service teachers as a foreign language to reduce their Foreign Language Teaching Anxiety.

Indeed, the success of virtual and augmented reality in the classroom has already been highlighted in several studies. Several research have also shown the benefits of these technologies in the field of teaching and, more specifically, foreign language learning. In short, the main reasons for their success in the learning context are that they captivate and hold the learner's attention and offer positive pedagogical results. The scientific literature also shows that these technologies improve motivation and offer immersive, enjoyable learning experiences, helping to reduce the anxiety associated with speaking in a foreign language. However, this master thesis notes the absence of specific studies showing the advantages of virtual reality or augmented reality over the FLTA phenomenon.

Therefore, in order to test this master thesis' hypothesis, a study has been conducted. This study involves three pre-service non-native language teachers who have been teaching four mini sessions via a virtual reality software, namely, Ovation VR. This study aims to find out whether the anxiety levels of the participants decreased over the course of mini teaching sessions using virtual reality software. The study was carried out into four main stages. First, qualitative data was collected using background questionnaires, diaries, and interviews with each participant. Next, the second stage of this study corresponds to the recording of the participants' mini teaching sessions using Ovation VR. In addition, each mini teaching session with the virtual reality software was then transcribed and saved in a plain text file to be analyzed quantitatively using Lancsbox, a discourse analysis software. The last stage of this study is the combination of a quantitative analysis supplemented by qualitative data collection. While the quantitative analysis, via Lancsbox, will enable to

address the first research question of this thesis, which is: “To what extent can the use of virtual reality reduce the level of FLTA among non-native pre-service teachers?”, the quantitative data will, meanwhile, enable to simultaneously generate a more comprehensive understanding of the phenomenon and to tackle the second research question of this master thesis, which is: “To what extent can the use of virtual reality by pre-service non-native teachers serve as an alternative to traditional internships in a classroom context?”

2. STATE-OF-THE-ART

2.1. Chapter 1: An overview of education

The first chapter of this thesis' theoretical part aims to clarify the current stakes and challenges concerning teaching practices. As this thesis's goal is to promote qualitative initial training for upcoming language teachers, it seemed necessary to highlight the importance of teaching and the crucial role played by teachers in high quality learning. Thus, this chapter will first underline the key expectations placed on both teaching and teachers in our current society as to also substantiate the relevance of this thesis' topic: the quality of foreign language teaching. This chapter will then emphasize the obstacles the current teaching system faces. The latter encounters important issues related to teacher shortages and vocational crises all over Europe.Therefore, this section aims to expose data and statistics on those shortages and crises to get to the bottom of those phenomenons.

2.1.1. Importance of education

Although it has long been subject to debates and conflicts, be it in Belgium or other countries as pointed out in an article in the magazine PROF (2013), the necessity of a general public education can hardly be questioned nowadays. It is therefore proclaimed in the Universal Declaration of Human Rights (1948), Article 26, which underlines the goals this particular education should achieve: "Everyone has the right to education. […]. Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. […]" (UN General Assembly, 1948).

Other key texts and international institutions recognize the right to everyone to education: full and equal opportunities for education for all is also a part of the Constitution of the United Nations Educational, Scientific and Cultural Organization (UNESCO). In 1960 the UNESCO reinforced the notion of education for all by adopting the Convention against Discrimination in Education. Unlike the Universal Declaration of Human Rights that has no legal scope, this Convention is according to UNESCO itself "the first legally binding international instrument which is entirely dedicated to the right to education." (UNESCO,1960). This means that all states that ratify the Convention must conform to

all rights and obligations it lays down. However, this convention is not the only one with a legal scope. This also applies to the Convention for the Protection of Human Rights and Fundamental Freedoms, more commonly known as the European Convention on Human Rights, adopted by the Council of Europe in 1950. In Article 2 of the first Protocol, the European Convention on Human Rights also ensures the right to education as follows: "Everyone has the right to go to school. No person shall be denied the right to education. This right is crucial to the exercise of the other human rights, and to the freedom and independence of every person. […]" (Council of Europe, 1950).

2.1.2. The various roles of education

As mentioned before, the importance of the right to education goes hand in hand with the roles assigned to it. Education is not seen as an end in itself, but as a way to reach high and noble goals. Education is expected to contribute to social justice, human capital development, individual growth, the promotion and maintenance of democratic values such as peace and freedom, the fight against poverty, etc (Dubet, 2020). Those considerations are not new. They were brought forward by various visionary thinkers and pioneers such as French mathematician and philosopher Nicolas Condorcet (1743-1794), who was behind the first public education system in France. Condorcet sees in the diffusion of education to all individuals the possibility to emancipate themselves from the dependence on others and an occasion for them to develop their natural abilities, no matter their social background (Le Chapelain, 2010). Condorcet was also among the first to advocate for equal access to education for girls and boys (Prairate, 2019), an issue that is still topical (UNESCO, 2023).

2.1.3. Teaching quality, a critical factor

The foregoing content points to the vital role played by teaching and education in society. What is true for teaching is also true for teachers. As Silvia Montoya, director at UNESCO Institute for Statistics, points out: "without good teachers, there cannot be good education" (Montoya, 2019). Moreover, in the *Study on Policy Measures to Improve the Attractiveness of the Teaching Profession in Europe*, financed by the EU, the authors note that improving the teaching quality is an important dimension of the European Union's strategy *Education and Training 2020* (European Commission, 2014). They also state a growing emphasis on the critical nature of teachers quality, as they are facing new

challenges and new expectations from all stakeholders (parents, students, businesses, politicians, etc.) (European Commission, 2014).

There are of course multiple factors that influence student learning. The OECD's *Attracting, Developing and Retaining Effective Teachers - Final Report: Teachers Matter* (OECD, 2005) details the influence of student's behavior, resources, family attitudes and support, skills, peer group attitudes and behavior, organization, school climate, qualifications, knowledge, teachers' attitudes and practices, etc. However, this report also points out that among the variables on which public decision-makers could possibly act, " factors to do with teachers and teaching are the most important influences on student learning. In particular, the broad consensus is that 'teacher quality' is the single most important school variable influencing student achievement." (OECD, 2005). Other studies confirm the crucial role played by teacher quality in learning. An original study carried out in 2003 by the Swedish National Agency for Education, which comprised 120 schools, 1,668 teachers and 6,788 students, shows that "the higher the teacher's methodological and didactic competence, and the more pleasure he or she takes in describing the teaching of his or her subject – i.e. the teacher's professional self-esteem – the better the conditions for student learning" (Éducations & Formations, 2008, personnal translation). In other words, this means that the teacher plays a key role in developing these motivations.

2.1.4. Teacher shortage and its consequences

From all the above, it can obviously be concluded that teachers play a crucial role in quality education. As such, the shortage of qualified teachers that Europe has been facing for many years is not without serious repercussions on the roles assigned to teaching. The main consequence of this shortage is an accumulation of learning deficits, particularly among students with learning difficulties (Fapeo, 2012). In 2002, the International Labour Organisation published a report with UNESCO indicating that the teacher shortage also poses a serious threat to the quality of educational provision (ILO, 2002). In addition, according to Pol Defrère (a former Belgian school headmaster), it undermines social

equality (Defrère, 2022), and a survey conducted by the FAPEO[1] in 2020 also indicates that it is likely to cause tensions within families over the distribution of free time/school time.

More specifically in Belgium, the 2022 edition of the *Education and Training Monitor* report published by the European Commission points to the consequences of this shortage, and in particular the reduced access of disadvantaged pupils to experienced teachers. The report also points out that appointments based on teachers' seniority, qualifications and contractual status, combined with the fact that teachers prefer to work in privileged schools, tend to result in an inequitable distribution of teachers (European Commission, 2022). As a result, socio-economically disadvantaged schools have lower rates of experienced and fully trained teachers. This is also the case, according to the report, for schools with a high concentration of students whose first language differs from the language of instruction (European Commission, 2022).

2.1.4.1. A worldwide phenomenon

This vocational crisis is not limited to Europe, but affects almost the entire globe, notes UNESCO, for whom 69 million teachers are needed worldwide to achieve universal basic education by 2030 (UNESCO, 2022). Still according to UNESCO, while this shortage is most severe in sub-Saharan Africa, Europe is also strongly affected by this phenomenon. In the European Union, according to the European Commission's report *Teachers in the European Education Area*, around 25 percent of school headmasters report a shortage of qualified teachers. (European Commission, 2021).

2.1.4.2. The situation in Belgium

The situation seems even more critical in Belgium. Still according to the last edition of the *Education and Training* Monitor report by the European Commission in 2022, the teaching vacancy rate in Belgium is almost twice as high as in the euro zone (3.2% in the

[1] FAPEO stands for *Fédération des Parents et des Associations des Parents de l'Enseignement Officiel*. It is an organisation that acts to defend the interests of parents and pupils in schools in the official network in Wallonia and Brussels, Belgium

first quarter of 2022 versus 1.7%). Worse still, more than one in five new teachers leave the profession within the first five years of teaching (European Commission, 2022). For the purposes of this master thesis, the focus will only be on the Wallonia-Brussels Federation. However, it is important to note that the shortage affects both Flanders and the Wallonia-Brussels Federation, but that the data might vary from one to another. The 2022 edition of *Indicateurs de l'enseignement* [Teaching Indicators] for example, indicates that new teachers of professional practice at secondary level in most cases do not have the required or sufficient qualifications. Shortage or unlisted titles are also particularly frequent (>22%) among teachers of philosophy and citizenship, ethics/religion, and Germanic languages, in lower secondary education and among teachers of geography, philosophy and citizenship, ethics/religion and mathematics in upper secondary education. In Brussels, according to other minimum and maximum estimates drawn up in 2016, there would be a shortfall ranging from 281 to 1,822 full-time teachers for the 2019-2020 period, for all levels of education combined (Warsztacki, 2018). However, the teacher shortage in the Wallonia-Brussels Federation is nothing new. Jean Hindriks, a professor of economics at UCLouvain, points out that it was already the subject of a French-speaking education round table some twenty years ago, which led, in August 2002, to an action plan designed to combat the shortage (Hindriks, 2021).

2.1.4.3. Teacher shortage's causes

The phenomenon of teacher shortages has been widely studied internationally. Among the causes most often put forward are various factors, including the ageing of the teaching workforce (Cabot, 2022). In the European Union, for example, 40 percent of lower secondary school teachers are aged 50 or over. And a third of them will retire in the next decade (European Commission, 2021). The current teacher shortage is also due to the increasing number of resignations of existing teachers and a lack of new vocations (European Commission, 2021). A number of factors account for this lack of attractiveness of the teaching profession: salaries deemed insufficient, work overload and deteriorating working conditions that make the profession less attractive, loss of status suffered by the profession, stress, too many administrative burdens, class sizes and pupil-teacher ratios, changing parental expectations, as well as changing mentalities, attitudes and behaviours among pupils, particularly with regard

to all forms of authority (European Commission, 2014). It should be noted that the reasons most often cited by teachers to explain their disaffection with the profession can vary from country to country. Therefore, as pointed out in the *Study on policy measures to improve the attractiveness of the teaching profession in Europe*, when asked "Why would you consider changing profession?", the top answer in countries such as Austria, Belgium and Spain was " the decline in prestige of the profession", while in Bulgaria, Greece or Poland, for example, the answer is "better pay", and in Germany and Finland, "stress" (European Commission, 2014). It should be noted, however, that these answers may have since changed, as this study was published in 2014.

2.1.4.3.1. Lack of formation

Among the many factors that explain the current teacher shortage, those concerning the quality of initial teacher training, deemed insufficient, and teachers' lack of a sense of self-efficacy, are particularly relevant to this work. They could indeed be improved by relatively targeted, short-term measures (Sellier & Michel, 2014), including, as it is tested out throughout this master thesis' experimental part, the use of virtual reality teaching techniques.

As pointed out in the report *Teacher Education in Europe*, published in 2008 by the European Trade Union Committee for Education, initial teacher training still fails in many respects to prepare teachers adequately for the complexities of today's teaching career, despite the reforms introduced in various countries (ETUCE, 2008). The importance of these two factors has been emphasized on several occasions. The OECD report *Attracting, Developing and Retaining Effective Teachers,* for example, highlighted the shortcomings common to all the countries surveyed, including the difficulties encountered in attracting people to the profession, and the lack of teacher skills in relation to the levels required (OECD, 2005). Among the key priorities to be developed at international level, this OECD report stresses the need to develop teachers' knowledge and skills, as well as their initial training (OECD, 2005).

The *Study on Policy Measures to Improve the Attractiveness of the Teaching Profession in Europe* also stresses the need for high-quality initial training to combat teacher shortages (European Commission, 2014). Among other things, this study examined the views of the various players in the education sector on initial teacher training. For example, responses to questionnaires from in-service teachers show that the concomitant model of initial teacher training, sometimes with a clear predominance of field experience and peer training to the detriment of academic skills, is clearly favored in certain countries such as Finland, Ireland and the UK (European Commission, 2014). On the other hand, in the Slovak Republic, Poland, Greece and Spain, the majority seem to favor the transfer of knowledge through courses. In conclusion, while some in-service teachers believe that initial teacher training should be provided by peers, others are in favor of a more balanced approach that includes knowledge transfer and field experience (European Commission, 2014). The hypothesis underlying this master thesis is that the use of virtual and augmented reality software, halfway between learning academic skills and field experience, could help to meet both preferences.

The study includes a monograph analyzing the teaching situation in French-speaking Belgium and notes that the *agrégation*[2] has been reformed to adapt it to the new demands of the teaching profession (European Commission, 2014). However, as this study points out, initial teacher training is still seen as too theoretical and subject oriented. The importance of internships is too low, and there is not enough interdisciplinarity or versatility of subjects (European Commission, 2014). The study notes that the Initial teacher training was evaluated in 2009 by a university team (Degraef, 2012) and that one of the main findings was that many respondents felt that there was a gap between their initial training and the concrete, complex aspects of the teaching profession (European Commission, 2014). In view of this, the study's main recommendations were an awareness of the fundamental importance of professionalization through initial teacher education (ITE); the value of internships and practice; the need to strike a new balance between theoretical and

[2] The *agrégation*, in its full name *"Agrégation de l'Enseignement Secondaire Supérieur"* (AESS) is a 30-credit course leading to the title of *agrégé*, which enables students to teach in upper secondary education (UCLouvain, 2023).

practical teaching; and the need to improve the training of teacher trainers (European Commission, 2014). More generally, the Study on *Policy Measures to Improve the Attractiveness of the teaching Profession in Europe* shows that most respondents consider salary, social status and image of the profession to be more important than the quality of initial teacher training. However, the study also points out that there are several factors that foster the development of teachers' professional skills:

- Simultaneous, progressive training. Most countries have adopted a concomitant model, where academic and professional training are intertwined.
- There is a close link between the mastery of academic knowledge and the didactic transfer of skills. Initial teacher training can be provided jointly by the education faculty and the faculty of academic disciplines.
- The development of teachers' professional skills includes a strong practical dimension based on learning to teach, accompanied by mentors and combined with reflection in the academic setting.

This study notes that results of research into teachers' professional development lead to one essential conclusion: teachers need both academic knowledge acquired as part of a traditional university curriculum and "action knowledge". This knowledge can only be acquired in a real working environment, through training by doing, which is part of the didactics of practice (European Commission, 2014). This master thesis claims that some of this "real" knowledge could be acquired using virtual and/or augmented reality tools and scenarios.

Moreover, the *Study on Policy Measures to Improve the Attractiveness of the Teaching Profession in Europe* points out that entering the teaching profession means changing one's professional identity rather than acquiring technical skills. Students undergoing training – whatever the quality and the duration of their initial training – must transform their identity to become teachers. During their internships, young teachers and future teachers experience a sometimes-painful confrontation between their expectations and the representations of the teaching profession, and the classroom reality with which they are confronted (Devos & Paquay, 2010). Taking on a new role as head of a class brings with it its share of

destabilization, testing, questioning, and soul-searching. This once again underlines the importance of high-quality initial teacher training, with a particular focus on practice and real-life situations. With this in mind, the study by the European Commission (2014) cites three dimensions of professional development that can only be achieved through education and training, and for which learning using virtual reality could also help:

The personal dimension: this covers "the process of developing a professional identity as a teacher" (European Commission, 2014). It requires the values (ethics) of the profession and taking into account the important role of emotions and self-esteem, two factors that are important to emphasize in the context of this master thesis.
The social dimension: this includes helping beginners become members of the teaching community on several levels, such as in their school, in their family and in their community.
The professional dimension: which should also be highlighted in the context of this master thesis. According to the European Commission's study, this means gaining greater confidence in the use of the teachers' core competencies, including pedagogical knowledge and skills.

2.1.5. Conclusion

This chapter highlights the importance of education, and by extension of teachers, in our society. However, the teaching profession is currently facing issues and challenges. Among the different issues that the education system is facing, Among the various problems facing the education system, this chapter focuses more specifically on the shortage of teachers. As mentioned at the beginning of the chapter, the first ones to be affected by this shortage are the pupils, and more particularly pupils from poorer backgrounds or pupils who experience more learning difficulties. If the shortage of teachers continues to increase, education may no longer be able to fully fulfil some of its various roles, such as contributing to social justice and personal development.

One of the causes of the teacher shortage lies in the quality of initial teacher training, which is considered to be inadequate. As a reminder, in Belgium, more than one in five new teachers leave the profession within the first five years of teaching. Future teachers and

young teachers find a gap between their initial training and the concrete, complex aspects of the teaching profession. In order to tackle this issue, several studies have suggested that internships and practical experience should be given greater importance, and that a new balance should be found between theoretical and practical teaching.

It is in this specific context that this chapter is relevant to this thesis. Indeed, the hypothesis underlying this thesis is that virtual reality software could be used to improve the practical teaching experience of future teachers and thus improve the quality of their initial training.

2.2. Chapter 2: Foreign Language Teaching Anxiety

As seen in the previous chapter, initial teacher training does not always prepare future teachers[3] well enough for the complexity and difficulties of their profession, especially when it comes to field practice. The first chapter has also shown the role of the teacher's sense of personal self-efficacy in their pedagogical effectiveness, and the effect played by emotional factors in the teacher's evaluation of their own ability to transmit knowledge to students. These two points are essential to understand the importance of the phenomenon studied in this chapter: Foreign Language Teaching Anxiety (FLTA). This phenomenon specically concerns non-native future foreign language teachers and is the subject of this thesis. However, this chapter will first focus on Foreign Language Anxiety (FLA), also known as language anxiety, which concerns learners in general, given that it can help shed light on certain implications of FLTA, and also to highlight the differences between these two types of anxiety.

2.2.1. Anxiety linked to learning a foreign language

Foreign language anxiety has been identified as a crucial affective factor in students' language learning, point out linguists Jackie Xiu-Yan and Junying Liang (2022). Students'

[3] The following terms refer to the same concept and will be used interchangeably throughout this master thesis: future teachers; pre-service teachers; student teachers.

foreign language skills are still being developed. Xiu-Yan and Liang (2022) explain that, when students have to communicate in the target language, they tend to feel anxious. Horwitz (1986) also note that "even if their command of the language is immature, their individual communication attempts will be evaluated according to uncertain or even unknown linguistic and sociocultural standards, second language communication entails risk-taking and is necessarily problematic" (Horwitz et al., 1986). Xiu-Yan and Liang (2022) argue that this type of anxiety has been documented in both foreign language and interpreting classes, and the negative effect of FLA on language learning has been noted by numerous studies. Henrik Spetz (2018) points out that the great interest in this area of research is based on the fact that the degree of anxiety in learning a foreign language seems to be considerably higher than in other subjects (Spetz, 2018).

2.2.1.1. Definition of FLA

Historically, language anxiety was first highlighted in 1986 by Horwitz et al. (Xiu-Yan & Liang, 2022). Horwitz et al. (1986) define this type of anxiety as "a distinct complex of self-perceptions, beliefs, feelings and behaviours related to classroom language learning, arising from the uniqueness of the language learning process" (Horwitz et al., 1986). According to this definition, language anxiety must be distinguished from anxiety as a habitual personal trait. It is linked to the fact that people who are not usually anxious can be struck by anxiety in the situation of a foreign language class (Xiu-Yan & Liang, 2022). Spetz (2018) argues that anxiety about language learning appears to be most prevalent in the oral domain, as oral language production is by nature a complex activity requiring different skills and strategies. According to Horwitz et al., (1986) foreign language anxiety is caused by three performance-related factors: communication apprehension, test anxiety, and dear of negative evaluation.

Following on from this, Horwitz and colleagues developed a tool to measure students' general anxiety about learning a foreign language (Horwitz et al., 1986). This tool is called the Foreign Language Classroom Anxiety Scale (FLCAS). Meanwhile, Spetz (2018) suggests an understanding of FLA based on Eysenck's definition of anxiety, for whom anxiety acts as a cognitive interference (Spetz, 2018). In a school context where anxiety can

arise, Spetz (2018) notes, there are two distinct cognitive processes: task-related cognition, for example, expressing oneself in the target language in class; and self-related cognition, when the student evaluates a situation in an overly negative way (Spetz, 2018). This interferes with the task through negative thoughts and judgments. One of the most important factors is the fear of being evaluated negatively, says Spetz (2018), citing Eysenck. In other words, claims Spetz (2018), anxiety prevents concentration on learning. It causes concentration to oscillate between the task and the anxiety the task provokes in the student, negatively influencing performance in the classroom (Spetz, 2018).

2.2.1.2. The causes of FLA

According to Sylwia Łuszczyńska (2018), the causes that may give rise to FLA in a school context appear to have been relatively little studied empirically (Łuszczyńska, 2018). These causes also appear to be complex and multidimensional. Nevertheless, according to Łuszczyńska (2018), various possible factors have been highlighted: Self-assessment of foreign language skills; Motivation; Proficiency level; Student beliefs; Teacher beliefs; Student-teacher interaction; Classroom procedures; Being judged in the classroom (in connection with the student-teacher interaction); Teacher preferences for certain students; Error correction; Native and foreign language aptitude; non-automatization of the foreign language (Łuszczyńska, 2018). As part of this master thesis, it seems that two causal factors particularly need to be highlighted, as they are likely to affect future teachers of foreign language or beginning language teachers: motivation and proficiency level.

Concerning motivation, Łuszczyńska (2018) states that anxiety levels are negatively correlated with various motivation indices. This suggests, explains Sylwia Łuszczyńska (2018), that anxious language learners also tend to be less motivated compared to their non-anxious counterparts. But the relationship between anxiety and motivation does not seem quite so simple. The author points out that there seems to be far too many language learners who do not fit into an “anxious – unmotivated”, “confident – motivated” pattern (Łuszczyńska, 2018). On the contrary, highly motivated learners seem to have higher levels of FLA. It is therefore possible, Łuszczyńska (2018) suggests, that highly motivated learners with a strong desire to learn a foreign language, who invest a lot of time, effort and

emotional energy into mastering that language to a high standard, may also be prone to feel anxiety, paradoxically more so than those who are less personally invested in learning. Then, the role of language proficiency level in the development of FLA has also been suggested, Sylwia Łuszczyńska (2018) points out. The results on this question also seem rather contradictory. Several studies seem to indicate that beginner learners have a higher level of FLA than those at more advanced levels of learning. Conversely, other studies show that anxiety about learning a second language and communicating cannot simply be attributed to insufficient mastery of the target language, i.e., to the level of proficiency (Łuszczyńska, 2018). Łuszczyńska (2018) notes that some researchers suggest that FLA may be a significant problem not only for language learners, but also for teachers of a language that is not their mother tongue, notwithstanding the fact that they are supposed to be highly proficient in the target language, which they are, as it will be developed later in this chapter.

2.2.1.3. The effects of FLA on learners

Based on what has been said above, it seems that FLA potentially has a major influence on learning a foreign language. Elaine Horwitz (2001) points out, for example, that studies using the Foreign Language Classroom Anxiety Scale (FLCAS) or other measures of second-language learning anxiety have found a moderate and consistent negative correlation between the FLCAS and measures of second-language success (usually end-of-studies, “final grades” in the text) (Horwitz, 2001). Thus, in the first study conducted by Horwitz et al. (1986) using the FLCAS, there was a moderate and significant negative correlation between foreign language anxiety and students’ expected grades in their first-semester language course, as well as their actual final grades (Horwitz, 2001). Students with higher levels of language anxiety expected to receive lower scores than their less anxious counterparts, and actually did receive such scores (Horwitz, 2001). Researchers McIntyre and Gardner (1994, cited in Spetz, 2018) also found significant negative correlations between a specific measure of language anxiety (French class anxiety) and performance on a vocabulary learning task. Students with high language anxiety had more difficulty retrieving vocabulary relevant to the situation, spoke more briefly than other students, and expressed fewer ideas when speaking (MacIntyre and Gardner, 1994, cited in Spetz, 2018).

More generally, anxiety about learning a foreign language is an important indicator of academic performance. It also has a detrimental effect on learners' confidence, self-esteem and level of participation (Trant, 2012).

2.2.2. Anxiety about teaching a foreign language

However, students are not the only ones to experience anxiety about learning foreign languages. Language teachers can also fall victim to it. Horwitz, who was already behind the first studies on foreign language anxiety as a specific anxiety, is according to Tum (2012) also one of the first researchers to suggest that non-native teachers and student teachers may experience such anxiety in the classroom (Foreign Language Teaching Anxiety). Although FLTA has therefore been identified for a relatively long time, it seems, according to several authors, to have attracted comparatively less attention from researchers than the identification of this anxiety and its effects on the learning process in foreign language learners (Tum, 2012). In earlier studies of this phenomenon, Merç (2015) claims that it was also rather difficult to determine the level of teacher anxiety, as the concept of anxiety related to learning a foreign language was generally equated with the concerns, problems and needs of the teachers themselves.

2.2.2.1. Definition and specific features of FLTA

To explain the FLTA phenomenon, which seems counter-intuitive, Horwitz, quoted by Tum (2012), asserts in 1996 that the process of learning a foreign language is never complete. Thus, non-native teachers are, in fact, always language learners, whatever their level of proficiency in the target language. In addition, according to Tum (2012):

[…] non-native language teachers have invested a great deal of time, effort and motivation in learning the target language and, as a result, may have set unrealistic standards for performance and mastery of the target language. Faced with such challenges it is understandable that non-native teachers and trainee teachers occasionally experience feelings of discomfort and inadequacy in the target language. When these feelings are frequent and repeated, they can easily develop into feelings of chronic anxiety about the foreign language (Tum, 2012).

This perspective was also taken up in 2018 by Mercer. She suggested that anxiety as a negative teacher emotion could be provoked in non-native foreign language teachers due to their poor language skills and/or low sense of self-efficacy (Mercer, 2018). For Aydin and Ustuk (2020), however, these viewpoints, despite their importance, do not sufficiently capture the complexity of FLTA. In a previous study from 2016, for example, Aydin already stated that "anxiety in the learning context may differ from anxiety in the teaching context" (Aydin, 2016). Along similar lines, Merç (2011), a professor in the department of foreign language education in Anadolu, noted in a 2011 study that FLTA has not been defined in the relevant literature and pointed to several factors, including classroom management, specific approaches to language teaching or power-related issues, such as supervisor-teacher relationship (Merç, 2011). For his part, Aydin (2016) has shown that the factors underlying FLTA are not necessarily linked to teachers' anxiety as speakers of a foreign language.

On the contrary, it appears that there are many other factors linked to teaching a foreign language in a classroom context. Drawing on this question, in 2016 Aydin defined FLTA as "an emotional and affective state that a teacher feels tension due to personal, perceptual, motivational and technical concerns before, during and after teaching activities" (Aydin, 2016). In short, state Aydin and Ustuk (2020), the controversy over FLTA remains, and it seems clear to them that the contextual factors underlying FLTA need to be studied in a differentiated way from those underlying FLA.

In 2010, Merç (2015) differentiates the anxiety of pre-service teachers from that of in-service teachers, taking into account the fact that, he believes, pre-service teachers are about to become teachers and may feel markedly different from "real" teachers (Merç, 2015). He also identified six main sources of anxiety in foreign language students: students and class profiles, classroom management, teaching procedures, being observed, mentors and miscellaneous (Merç, 2015). Yüksel (2014) found that pre-service English teachers felt anxious about teaching a particular language skill, such as grammar, listening or reading comprehension. According to Merç (2015), the results also showed that there was no difference in the level of anxiety associated with teaching a foreign language between male and female trainee teachers. Furthermore, it seems, again according to Merç (2015), that

during the internship[4] process, it is not only teachers-in-training who experience a certain degree of stress, but all stakeholders, including mentor teachers, supervisors, school administrators and students.

2.2.2.2. FLTA measurements scales

According to several authors (Kráľová, 2016 ; Baltacı, 2017 ; Liu & Wu, 2021 ; Gannoun & Deris, 2023), Horwitz (1996, 2007) designed the first Teacher Foreign Language Anxiety Scale (TFLAS) to measure the level of anxiety felt by non-native foreign language teachers. However, according to Selami Aydin and Ozgehan Ustuk (2020), authors of a new scale for measuring FLTA, few studies have been carried out in the current literature to measure anxiety linked to teaching a foreign language. They point out that measuring FLTA is potentially important for understanding anxiety, a major negative emotion for foreign language teachers (Aydin & Ustuk, 2020). As Aydin and Ustuk (2020) underline, this type of measurement should provide a clearer picture of the emotional work involved in teaching foreign languages, and its potential impact on teacher resignations. This last point seems worth emphasizing, given what was explained in the first chapter about the causes behind the current teacher shortage. Furthermore, according to these authors, research has shown that both learners and teachers are unaware of the disabling and hardly perceptible factors of anxiety (Aydin & Ustuk, 2020).

2.2.3. Importance of the FLTA phenomenon

How common is anxiety about teaching a foreign language? Is it common among pre-service teachers? Anxiety about teaching all subjects seems to be almost universal. According to Hülya Ipek (2006), a study of teaching anxiety among 239 psychology teachers revealed that most psychology teachers (87%) suffered from teaching anxiety. Ipek (2006) also states that another study of accounting teachers revealed that the majority of participants (78%) had experienced anxiety during their teaching career. More specifically

[4] The following terms refer to the same concept and will be used interchangeably throughout this master thesis: teaching practicum; internship; teacher training; practical teaching.

on FLTA, Tum's study (2012), shows that participants experienced varying levels of anxiety. Thus, while some pre-service teachers were found to have low anxiety, a considerable number of participants were found to be highly anxious about using English. Furthermore, Merç (2004) considers anxiety to be one of the most mentioned issues among pre-service English teachers.

2.2.3.1. How do language teachers perceive their teaching anxiety?

Since the identification of FLTA, various evaluations have been carried out on this form of anxiety, using measurement scales, diaries and/or interviews (Liu & Wu, 2021). Most of these studies focus, according to Liu and Wu (2021), on the anxiety of pre-service EFL teachers or primary and secondary school teachers. These studies, argue Liu and Wu (2020), reveal that English as a Foreign Language (EFL) teachers are generally anxious about teaching for a variety of reasons, including English language proficiency, the pupil-student relationship, lack of educational resources, workload and classroom management. For example, Yoon studied in 2012 the degree of anxiety experienced by 52 EFL teachers in training in Korea during the teaching internship (Liu & Wu, 2021). Analysis of the questionnaires showed that the sources of anxiety were mainly fear of English speech in the classroom and lack of confidence in the target language. This finding, Liu and Wu (2021) state was confirmed by Kunt and Tum in 2010 (Liu & Wu, 2021).

A 2009 study of foreign language (FL) listening anxiety by Bekleyen among Turkish students teaching English revealed that students generally had high levels of FLTA, and that levels of FLTA decreased as their listening grades increased (Bekleyen, 2009). This study also revealed that the sources of listening anxiety were a lack of emphasis on listening in earlier stages of education and a lack of listening skills (Bekleyen, 2009). Other studies on sources of anxiety among teachers have revealed that issues such as class time management, directives, unruly students, health problems, questioning the teacher's authority, the return of graded papers, etc. can be sources of anxiety for teachers (Ipek, 2006).

To delve deeper into this subject, Tum (2014), cited by Liu and Wu (2021) interviewed 12 pre-service EFL teachers and "found that their anxiety stemmed from worry about mistakes and fear of a negative evaluation" (Tum, 2014). His study also revealed that this anxiety prevented participants from using English and language-intensive teaching practices (Tum, 2014).

Kim and Kim's (2004) study of Korean EFL teachers at primary and intermediate levels found that the main source of teaching anxiety was insufficient English proficiency, followed by limited self-confidence, limited knowledge of linguistics and education, inadequate classroom preparation and comparison with native teachers, which results has been partially confirmed by subsequent research (Liu and Wu, 2021). Other main sources of anxiety for EFL training teachers are student profiles, teaching procedures, insufficient preparation, and classroom management, note Liu and Wu (2021) in their literature review. In 2019, Kralova and Tirpakova (2019) also found that non-native teachers' English anxiety increased with age (...).

2.2.3.2. Impact of FLTA on education

Teaching anxiety in all subjects is a relatively well-studied phenomenon. Hülya Ipek (2006) notes that, taking into account the effects of anxiety, researchers have sought to determine its overall impact on the various tasks carried out by a teacher during a lesson. Considering the relationship between anxiety and teaching, the research consensus, according to Ipek (2006), is that a high level of anxiety in a teacher negatively influences their effectiveness. More specifically, correlation studies have been carried out to determine the relationship between teaching anxiety and teacher effectiveness (Ipek, 2006). According to Ipek (2006), they show a negative correlation between anxiety and effectiveness. Therefore, when anxiety increases, teaching effectiveness decreases, and vice versa (Williams 1991, cited in Ipek 2006).

Ameen, Guffey and Jackson (2002), notes that anxiety can have the following negative effects on teachers: unpleasant work and career situations, difficulty answering students' questions, resorting to avoidance behaviors or defensive measures in teaching, building up a classroom image in which the teacher is too rigid or too lenient, or cynical about students'

motivations and intentions. However, in the field of learning and teaching English, we have seen that studies have indeed focused on the learner rather than the teacher, and the effects of anxiety on the teacher seem to have been neglected, Ipek again points out (Ipek, 2006).

Liu and Wu (2021), for example, investigated some of the consequences of FLTA on teachers. Their study *Teaching Anxiety and Foreign Language Anxiety Among Chinese College English Teachers*, published in 2021, involved a sample of 151 English teachers (21 men and 130 women) working in various universities in China. In particular, it set out to determine the effects of anxiety not on teaching as such, but rather on the teachers themselves, via a questionnaire. According to Liu and Wu (2021), although some of those questioned said that anxiety could be a motivating factor and spur them on to do better, a greater number said that it was a debilitating factor, as studies of FLA in second language (SL)/foreign language (FL) learners have shown (Liu & Wu, 2021). For the people surveyed, anxiety led to a series of negative consequences, the worst of which were poor sleep, depression, less professional zeal, reduced motivation at work, nervousness, bad mood, inability to concentrate on anything, grey hair, procrastination, fragility in the face of illness and reduced confidence (Liu & Wu, 2021). According to Liu and Wu (2021), these results confirm other similar studies.

Other authors also mention the possible negative effects of foreign language teaching anxiety on the student learning process, but without further elaboration, and regret the lack of attention paid to this issue to date. This is the case not only for Aydin (2016), but also for Tum (2012), who points out that “when the potential negative consequences of such feelings on foreign language education and overall teacher well-being are considered, it is imperative that measures be taken to create a non-threatening environment within our teacher education” (Tum, 2012).

Once again, Horwitz is one of the few to have commented on this issue (Tum, 2012). For her, linguistic anxiety can have a number of undesirable effects on foreign language teaching (Horwitz, 1996, cited in Tum, 2012):

1. Teachers suffering from feelings of foreign language anxiety may tend to use English less and avoid language-intensive activities in the classroom. Yet the teacher and classroom activities are the two main sources of English input, particularly in EFL contexts. Consequently, teacher anxiety about a foreign language can potentially reduce students' exposure to English.

2. Students could possibly perceive their teacher's discomfort and anxiety about English, which could generate similar feelings in the students themselves.

3. Teachers are generally required to use English on a daily basis in front of the class. This reality could have a considerable impact on the job satisfaction levels of anxious foreign language teachers.

Since then, however, it would appear from the research carried out as part of this master thesis that few studies seem to have been devoted to the impact of FLTA on foreign language teaching. Despite this paucity, Hameed Gannoun and Farhana Diana Deris (2023) believe that the evidence gathered on the potential effects of anxiety is sufficient to affirm that FLTA is likely to affect the foreign language teaching and learning process in different ways (Gannoun & Deris, 2023):

- Horwitz (1996, cited in Gannoun & Deris, 2023) stated that FLTA could minimize the quantity and quality of information learners receive from teachers.
- Ting Tang (2007) indicated that insufficient language proficiency could have a negative impact on teachers' confidence in teaching, pedagogical decisions and classroom performance, as well as on students' linguistic communication skills. As a result, teachers experiencing anxiety may intentionally reduce their use of language in the classroom and avoid participating in language-focused activities that could highlight their EFL deficiencies.
- Horwitz (1996, cited in Gannoun & Deris, 2023) assumed, as seen above, that teacher anxiety could be involuntarily transferred to students. According to the process of contagion, learners' psychological conditions can be modified by their teacher's emotions, explain Gannoun and Deris (2023). Consequently, the psychology of EFL teachers can affect students individually and collectively,

meaning that the latter are not only passive observers of the former's behaviors, but also vice versa (Gannoun & Deris, 2023). Finally, conclude Gannoun and Deris (2023), regular experiences of FLTA among EFL teachers would inevitably diminish their enjoyment of their work and have a negative impact on their well-being, which is what the studies cited above seem to show. As a result, argue Gannoun and Deris (2023), high levels of FLTA can undermine the effectiveness of the foreign language learning (FLL) process. They therefore echo Horwitz's recommendation that, in view of all these repercussions, efforts should be made to help EFL teachers feel comfortable in their work before they begin their careers (Gannoun & Deris, 2023).

Maria Nilsson (2022), for her part, considers that there is a strong consensus on the negative effects of foreign language anxiety on various aspects of language learning, but also on teaching, by affecting language use and pedagogical approaches. When it comes to training primary language teachers, she says, it is in the interests of both student teachers and their future learners to tackle FLA, as striving to mitigate FLA will be a crucial aspect of their profession (Nilsson, 2022). Her study examined FLA in 193 non-native Swedish generalist teachers in initial training, using a questionnaire on oral interaction in the classroom. The results revealed that a third of the student teachers had recurrent problems with FLA (Nilsson, 2022). Furthermore, she points out that the measurement instrument had already been used with primary English learners in the same teaching region, making it possible to compare levels and triggers of FLA (Nilsson, 2022). The pre-service teachers reported more negative affect than the young learners, and also confirmed the same contextual triggers for FLA. In the light of the results, Nilsson (2022) therefore believes that explicit consideration of FLA during language teacher training is a way of better preparing all student teachers for their future professional practice in elementary school (Nilsson, 2022).

2.2.4. FLTA, the recommended solutions

Following the development of studies on FLTA and on teaching anxiety in general, various authors have also looked into advice and solutions to limit the phenomenon and its consequences.

To reduce anxiety about learning a foreign language, Horwitz (1996, cited in Tum 2012) suggested that future teachers practice with native speakers and also set realistic expectations of English proficiency and performance, while developing a plan to improve their English skills. Horwitz (1996, cited in Tum 2012) and Ipek (2016), has also suggested helping student teachers appreciate their own achievements in English and familiarizing them with relaxation and visualization techniques, such as imagining they are expressing themselves well when faced with difficulties in class, breathing deeply and doing progressive relaxation exercises to combat feelings of anxiety during lessons (Tum, 2012 ; Ipek, 2016). These two techniques, particularly visualization, seem to be particularly noteworthy, given the subject of this thesis, namely the use of virtual or augmented reality in the context of FLTA. In psychology, visualization is the deliberate use of a subject's mental images to bring about a desired change or better self-understanding. During a visualization session, the person is invited to visualize selected scenes or situations and to experience them with all the sensory modalities he or she is capable of. The mental images used include our memories, imagination and daydreams. As it is explained in the next chapter, virtual reality, like visualization, involves exposing an individual to a situation that appears as real as possible, the only difference being that the reality thus created comes from a source external to the person's mind and not from an internal source.

Gardner and Leak (1994), advocated anxiety training and awareness programs to equip individuals with strategies for coping with anxiety. They also stressed the importance of communication between colleagues, enabling teachers suffering from teaching anxiety to realize that they are not alone in experiencing this type of emotion. This advice has also been suggested by Tum (2014). In Tum's view, student teachers need to be aware that they are not the only ones to experience anxiety. Many student teachers are probably unaware that foreign language anxiety is an affective concept applicable to teachers (Tum, 2014). It would therefore be useful for teacher training programs to make student teachers aware of the reasons why non-native speakers of foreign languages are likely to experience such

feelings (Tum, 2014). In addition, student teachers should familiarize themselves with guidelines to help non-native foreign language teachers cope with feelings of anxiety related to foreign language teaching (Tum, 2014).

For their part, Ameen et al. (2002) asked participants to suggest techniques for managing teaching anxiety. The following suggestions were made by participants: training in teaching methods, classroom management, learning styles, organizing conferences, curriculum and exam development, and mentoring by experienced teachers. Based on the results of FLTA studies, researchers have also suggested other strategies for reducing anxiety in language learners (Ipek, 2006). For example, teachers have been advised to use relaxation exercises in class, or to opt for a gentle method of error correction.

Following his 2016 study, Aydin is one of those who has most extensively addressed the remedies for FLTA. He makes several practical recommendations for prevention; for example, he recommends including FLTA awareness in initial language training programs (Aydin, 2016). Teachers of English as a foreign language, says Aydin, should be informed about the causes and effects of FLTA, and about research in this field. Still based on the results obtained in his study, Aydin also believes that teachers should be carefully supervised by their trainers and experienced colleagues during initial and in-service training, since a lack of teaching experience is the most important cause of FLTA (Aydin, 2016). For Aydin (2016), this would make it possible to train effective and efficient teachers with low levels of anxiety during their educational practice. In addition, detailed instruction in time management, planning and preparation processes should help reduce intense anxiety prior to teaching activities (Aydin, 2016). Aydin (2016) also states that teachers need to be made aware that making mistakes is a natural part of the teaching process, and that it is possible to overcome this sense of error by identifying their perfectionist tendencies, reflecting on alternative ways of thinking, and adopting a useful and realistic way of looking at situations that force teachers to make mistakes (Aydin, 2016). According to Aydin (2016), since the perception of a low level of language competence is at the root of FLTA, teachers need to act not only as teachers, but also as learners. In other words, claims Aydin (2016), teachers of English as a foreign language should focus on the language knowledge

and content they teach before their classes, and be open to lifelong learning to build confidence in their language skills and reduce their anxiety levels (Aydin, 2016).

Aydin (2016) also points out that, since teachers suffer from anxiety, they should be made aware of certain strategies and techniques during their initial and in-service training. In particular, they should be informed that anxiety is a personality-related factor (Aydin, 2016). Techniques such as focusing on rewarding activities during lessons, developing strategies for positive self-assessment and self-observation, should, according to Aydin (2016), help teachers to overcome the difficulties of teaching anxiety. Lack of motivation, interest in participation and involvement of learners in activities being another source of FLTA, Aydin (2016) recommends that teachers analyze the reasons why such problems occur, and make sure that learners are made aware of the behavioral norms to be adopted and that learners adopt them (Aydin, 2016).

Aydin's research as a whole has focused on the use of technology in the learning and teaching of English as a foreign language. In view of the topic of this thesis, it seems that the following remarks should be emphasized. Aydin (2016) believes that training in language teaching methodology, learner characteristics, general learner errors, group organization and the use of technology should not only help teachers create a balance between learner level and teaching content, but also create teaching and learning that is not affected by teaching anxiety (Aydin, 2016). Given that technical aspects provoke FLTA during lessons, Aydin (2016) then suggests that curricula should also aim to teach technical issues. Aydin argues that teachers need basic information on how to use technology in the classroom (Aydin, 2016). When EFL teachers benefit from technical equipment at school, they not only have a more positive perception of the school climate, but also a lower level of teaching anxiety, concludes Aydin (Aydin, 2016).

2.2.5. Conclusion

This chapter first addresses the topic of Foreign Language Anxiety (FLA), given that it may help to shed light on some of the implications of Foreign Language Teaching Anxiety (FLTA). Since the FLA has aroused a great deal of interest in the research field, this chapter

then took a brief look at its causes and implications, given that they can help to distinguish what is different and what is not different between the two phenomena.

The concept of FLTA, which is particularly relevant to this master thesis, was then developed. It appears from the literature that this area of research has so far been the subject of fewer studies than FLA, despite its potential impact on language teachers' well-being, their pedagogical effectiveness or their willingness to stay or not in a teaching career. A review of the literature shows that the actual impact of FLTA is still poorly understood, as it has been little studied. For some authors, too, the contextual factors underlying FLTA need to be studied separately from those underlying FLA. It also appears that teachers and future teachers of foreign languages are not always aware of the disabling factors associated with this type of anxiety. Several studies have shown that anxiety linked to teaching a foreign language is a frequent or even very frequent phenomenon among trainee teachers. Various sources of FLTA have been presented in this chapter, chief among them: lack of confidence in mastering the target language, especially orally, lack of listening skills, inadequate classroom preparation and comparison with native teachers. Other anxiety factors were also noted, such as lack of educational resources, workload, and classroom management, to note but a few.

Finally, this chapter has also reviewed some tips and solutions suggested by various authors to overcome, at least in part, FLTA. Among the methods suggested, the use of visualization technology seemed particularly relevant to this master thesis, given that these methods share certain similarities with augmented reality techniques, notably the use of 'images' to bring a particular virtual situation to life for a person. Aydin's remarks on the importance of using technology in language courses as part of language teachers' curricula also piqued our interest. Given that virtual reality applications fall within the definition of technological tools, and that, moreover, this technique is beginning to be used in certain courses, particularly language courses, as it is explained in the next chapter.

2.3. Chapter 3: Virtual reality software as a tool to overcome foreign language teaching anxiety

This new chapter will first define virtual reality and the devices and media that make it possible. It will also situate virtual reality within a group of related technologies with similar objectives. Then this chapter will focus on the various uses of virtual reality, particularly in education, teacher training and foreign language learning. The advantages in these areas, as well as its limitations and potential drawbacks will be identified. Finally, this chapter will raise the question whether research can validate the use of virtual reality, or related technologies, against anxiety linked to teaching a foreign language.

2.3.1. Definition of virtual reality

Before discussing the use of virtual reality in education, and more specifically in the training of future teachers and in strategies aimed at limiting the phenomenon of anxiety linked to foreign language teaching, it seems important to define what virtual reality really is. As Britannica claims, the term virtual reality refers to a computer technology that simulates the physical presence of a user in an environment artificially generated by software. Virtual reality creates an environment with which the user can interact. It artificially reproduces a sensory experience, which can include sight, touch, hearing and smell.

Futura, a French-language online medium for the popularization of science, defines virtual reality as follows: “Virtual reality (VR) encompasses a series of technologies that immerse a person in a digitally created artificial world” (From Futura, n.d., personal translation). According to the website, this can be a reproduction of the real world or a totally imaginary universe. Also, according to the website of the French Ministry of the Economy, Finance and Industrial and Digital Sovereignty (Les Technologies Immersives | entreprises.gouv.fr, n.d.), virtual reality:

[…] allows users to be totally immersed in a virtual, interactive, calculated reality that is different from their own. It is essentially created using computer-generated images broadcast via virtual reality headsets or screens. The virtual environment can then be

imaginary or real, but at a time or on a site different from those of the user (Les Technologies Immersives | entreprises.gouv.fr, n.d., personal translation).

However, Kaplan-Rakowski and Gruber (2019) assert that there are two main types of virtual reality: low-immersion virtual reality (LiVR) and high-immersion virtual reality (HiVR). These authors have defined and classified virtual reality in order to suggest simplified definitions. They define LiVR as *"*a computer-generated three-dimensional virtual space experienced through standard audio-visual equipment, such as a desktop computer with a two-dimensional monitor*"* (Kaplan-Rakowski & Gruber, 2019). They go on to define HiVR as *"*a computer-generated 360° virtual space that can be perceived as spatially realistic, due to the high immersion afforded by a head-mounted device*"* (Kaplan-Rakowski & Gruber, 2019). The main difference between these two types of virtual reality is the level of immersion offered. Both LiVR and HiVR can be immersive. However, Kaplan-Rakowski and Gruber argue that the different intensities of immersion are largely related to the equipment used for the virtual reality experience. While LiVR users experience VR simply through a standard two-dimensional screen, HiVR users are fully immersed in a virtual space using a head-mounted device (Kaplan-Rakowski & Gruber, 2019). Thus, according to Kaplan-Rakowsi & Gruber (2019), HiVR allows users to physically disconnect from the real world.

2.3.1.1. Immersive technologies

More generally, virtual reality is part of what is known as immersive technologies (Les Technologies Immersives | entreprises.gouv.fr, n.d.). These technologies aim to immerse the user in a digital environment with which he or she can interact (Les Technologies Immersives | entreprises.gouv.fr, n.d.). Some also speak of Extended Reality or XR. According to the website of Internet service provider Ionos (Ionos, 2020), this term refers to all immersive technologies that extend our real world and combine it with virtual experiences. In addition to virtual reality, two other terms can be distinguished:

- Augmented reality: Augmented reality (or AR), as Artefacto's website (*Défintion: Qu'est-ce Que La Réalité Augmentée?* – Artefacto, 2023) puts it, is a technology for integrating 3D virtual elements (in real time) into a real environment. The principle is to combine the virtual and the real and give the illusion of perfect integration to the user.

Augmented reality users remain in the real world, while experiencing virtually created elements. According to the Ionos website (Ionos, 2020), one of the best-known examples of augmented reality is the Pokemon Go game. This mobile application enables digital characters that don't actually exist to be displayed on the screen of a smartphone, and therefore in the real world.

- Mixed reality: Mixed reality (MR) is the hybridization of the real and the virtual. It involves the integration into the real world of virtual objects that interact with the user and the real environment (Les Technologies Immersives | entreprises.gouv.fr, n.d.). In mixed reality, says Ionos website (Ionos, 2020), real physical objects influence digital elements.

All these immersive technologies rely on complementary technologies for data capture (localization, motion and physiological data capture, etc.), analysis and processing (computer vision, artificial intelligence, etc.) (Les Technologies Immersives | entreprises.gouv.fr, n.d.). Augmented reality technologies that allow virtual hats, glasses or accessories to appear, are accessible to all smartphone users, notes the Ionos website (Ionos, 2020). Virtual reality and mixed reality, on the other hand, require relatively more expensive equipment. These immersive technologies are therefore aimed primarily at companies, organizations, or specific groups of people (Ionos, 2020).

2.3.1.2. Virtual reality applications

The rise of virtual reality among the general public is essentially due to the arrival on the market, from 2015 onwards, of virtual reality headsets that are both sufficiently powerful and affordable, Futura points out (From Futura, n.d.). Since then, various manufacturers, including Samsung (Gear VR), HTC (HTC Vive), Sony (PlayStation VR) and Oculus (Oculus Rift), have marketed their own models of virtual reality headsets. Other, mainly Asian, manufacturers are now also offering lower-cost alternatives to this type of equipment, as reported on the website of new technology consultancy Adentis (Chevalier, 2022). Most of these devices are intended for recreational use, mainly for video games, whether on computer or game console, notes Futura (From Futura, n.d.).

But the applications of virtual reality go far beyond the purely recreational. Futura (From Futura, n.d.) reports that it can be used to train pilots and parachutists, both military and civilian. It is also used in the field of architecture, says Futura, for example to enable a virtual tour of a building before its construction, or in archaeology, to reconstruct ancient cities or buildings. It also enables virtual visits to museums and exhibitions (From Futura, n.d.). In the healthcare field, adds Futura, virtual reality is also used to simulate various surgical or medical procedures, to train future surgeons or dentists, and to treat anxiety disorders and various phobias (Levy & Rautureau & Jouvent, 2017), such as agoraphobia (fear of open spaces), arachnophobia (fear of spiders) or acrophobia (fear of heights) (From Futura, n.d.).

2.3.2. Virtual and immersive reality applied to learning

Given the theme of this thesis, it seems essential to develop one of the uses of virtual reality more specifically, namely its application in a learning context. Researchers such as Robert Z. Zheng (2020), Khukalenko, Kaplan-Rakowski and An et al (2022), all agree that this technology is a huge success in this field. In the preface to the book Zheng edited (Zheng, 2020), he notes, for example, that virtual reality is increasingly present in classrooms. In his view, the next decade should be an era of immersive technology. According to Zheng (2020), technologies such as augmented reality, virtual reality and other immersive technologies are set to become mainstream technologies that influence every aspect of our lives and work. Zheng (2020) further points out that early research data has demonstrated the cognitive and affective benefits of immersive technologies. According to him, they offer unique opportunities for experiential learning. They facilitate multiple perspectives and promote knowledge transfer, he adds (Zheng, 2020). According to Zheng (2020), immersive technologies have the potential to radically change the educational landscape in the decades to come. He is joined in these views by Khukalenko, Kaplan-Rakowski and An et al. (2022), for whom virtual reality is of great interest in the educational field, given its potential to engage and motivate learners (Khukalenko, Kaplan-Rakowki & An et al., 2022). They argue that immersive technologies are gaining in popularity and success in the classroom. According to Khukalenko, Kaplan-Rakowski and An et al. (2022), the main reasons for their use in learning contexts are that they captivate and maintain the learner’s attention and offer positive pedagogical results. According

to these researchers, the scientific literature shows that these technologies also encourage student-centered active learning. They stimulate memorization, provide enjoyable learning experiences and also reduce anxiety (Khukalenko, Kaplan-Rakowki & An et al., 2022), as it will be highlighted later in this chapter. Based on these findings, Khukalenko, Kaplan-Rakowski & An et al., (2022) claim that it is hardly surprising that virtual reality has been called "the learning aid of the 21st century" (Khukalenko, Kaplan-Rakowki & An et al.,2022). In their study, Khukalenko, Kaplan-Rakowki and An et al. (2022) highlight five major advantages of virtual reality in the field of learning (Khukalenko, Kaplan-Rakowki & An et al.,2022):

- It offers experiential learning through visually rich simulations;
- It enables pedagogically-sound, student-centered learning, in which students engage with settings and scenarios independently or in socially-rich contexts;
- It enables experimentation with scenarios that may be too dangerous, costly, difficult or impossible to experience in real life (e.g. manipulating a solar system) ;
- Users experience a sense of presence and immersion;
- abstract concepts are easier to visualize.

However, as Robert Z. Zheng underlines (2020), despite their educational benefits and potential, research into the role of cognitive and affective processes in immersive technologies is underdeveloped. Fundamental questions about how immersive technologies facilitate learners' processing of learning remain unanswered, Zheng (2020) points out, for example. In addition, he says, there is a pressing need to identify the factors that influence performance and process in the use of these technologies (Zheng, 2020). According to Zheng (2020), there is also a need, to guide the research and practice of learning through the integration of immersive technologies. It is also necessary to provide the necessary support for the development of effective approaches and strategies for teaching based on these technologies (Zheng, 2020).

2.3.3. Virtual reality and immersive technologies for language learning

As it has just been mentioned, the use of immersive technologies, including virtual reality, is becoming increasingly popular in education. Foreign language learning is one of the educational fields where these technologies are used. Here too, several studies have been carried out in an attempt to highlight the potential of these technologies for language learning. These studies sometimes focus on different virtual reality techniques, sometimes on augmented reality techniques. Given the similarities between virtual and augmented reality, some studies have also chosen to examine the two technologies together (Huang, et al., 2021). For example, Regina Kaplan-Rakowski and Alice Gruber (2019) list some of the advantages of virtual reality in language learning. According to them (Kaplan-Rakowski & Gruber, 2019), certain features offered by low-immersion virtual reality (LiVR), such as the integration of real-life tasks and collaboration, can have a positive impact on learners' oral production, performance and communicative competence. Also, according to Kaplan-Rakowski and Gruber (2019), studies of high-immersion virtual reality (HiVR) in language learning indicate that it can help contextualize student learning. Both authors also cite a recent study suggesting that low-ability learners could benefit most from HiVR. They also report another study showing that exposure to 360° videos makes learners more willing to use the target language outside the classroom (Kaplan-Rakowski & Gruber, 2019).

More recently, Huang et al. (2021) carried out a systematic literature review on the use of virtual reality (VR) or augmented reality (AR) in foreign language learning (Huang et al., 2021). A total of 88 studies were selected and analyzed according to five criteria: how they integrated AR or VR tools into language learning; the main users of AR and VR technologies; the main research findings; why AR and VR tools are effective in promoting language learning and their implications (Huang et al., 2021). In the end, Huang et al. (2021) report that "immersing learners in virtual worlds has been found to be the main approach to language learning in AR and VR studies" (Huang et al., 2021). They further show that university students are the main users of AR/VR technologies (Huang et al., 2021). According to Huang et al. (2021) too, research shows that the benefits of AR and VR relate mainly to improved learning outcomes, enhanced motivation and positive perceptions towards the use of AR and VR (Huang et al., 2021). They also point out that AR and VR tools enhanced language learning by "providing an immersive learning experience, enhancing motivation, creating interaction and reducing learning anxiety" (Huang et al.,

2021). Among the implications these researchers noted in their review is the need to provide teacher training about immersive technologies, and to explore learner-related factors such as learner engagement and satisfaction (Huang et al., 2021).

Recently, Wenhe Min and Zhonggen Yu (2023) investigated the use of augmented reality tools in language learning contexts using the bibliometric tools VOS viewer and CitNetExplorer. Their study reveals that teachers and students have a positive attitude towards AR tools in language learning (Min & Yu, 2023). They find that games, 3D images and videos are the main means of transposing virtual elements into the real world. The most widely used tool in AR-assisted learning, they say, is HP Reveal (Min & Yu, 2023). In addition, their study also revealed that AR tools could enhance language learning by presenting an immersive learning context, increasing motivation, providing interaction and reducing anxiety (Min & Yu, 2023).

2.3.3.1. Immersive technologies, limitations and obstacles

Questions remain, however, about the use of immersive technologies for language learning, as noted by Wild, Hillman and, Adinofli of the Institute of Educational Technology (ARIDLL | Institute of Educational Technology, the Open University, n.d.). Their remarks focus primarily on augmented reality (AR) but are likely to apply to virtual reality too. Wild, Hillman and Adinofli point out that the use of AR is still pretty recent, and that there are few examples of good practice in the teaching community (ARIDLL | Institute of Educational Technology, the Open University, n.d.). According to them, teachers are generally unaware of AR-specific learning design mechanisms that would enable them to integrate the technology into the teaching process and curriculum (ARIDLL | Institute of Educational Technology, the Open University, n.d.) Wild, Hillman and Adinofli also believe that there are few AR applications for FLL and few content creation tools that enable non-technical users to create materials (ARIDLL | Institute of Educational Technology, the Open University, n.d.) .

A recent review of the research shows that AR applications for language learning do not usually take learning theories into account in their implementation (ARIDLL | Institute of

Educational Technology, the Open University, n.d.). These authors also point out that most of the authoring tools currently available are not free, and those that are offer very limited access to the resources and tools needed to create AR environments (ARIDLL | Institute of Educational Technology, the Open University, n.d.). This lack of authoring tools and AR hardware is particularly noticeable in the field of FLL. In addition, AR materials are not available in a large number of languages, including the least commonly taught, as Wild, Hillman and Adinofli point out (ARIDLL | Institute of Educational Technology, the Open University, n.d.).

In this respect, it seems important to mention the ARIDLL project (Augmented Reality Instructional Design for Language Learning). It aims to fill the gaps identified above by providing language teachers in initial and in-service training with support and materials to facilitate the use of this technology in their practice (ARIDLL | Institute of Educational Technology, the Open University, n.d.) . The project, which brings together a consortium of universities and schools (ARIDLL, 2023), aims in particular to develop these materials and evaluate them in different contexts, from schools to universities, focusing on different languages. It also aims to establish a cooperative partnership and professional community in the field of pedagogical design of augmented reality for language learning (ARIDDL, 2023).

Huang et al. (2021), for their part, point to certain other disadvantages of VR and AR applied to language learning (Huang et al., 2021). Firstly, they believe that students' attention can easily be diverted by the virtual content of these technologies. According to their research, while immersion in a virtual world overall enables students to learn foreign languages better, some may focus more on the virtual content than on the learning content. This can prevent these students from achieving their desired learning objectives (Huang et al., 2021). This also leads teachers to make extra efforts to bring students' attention back to learning tasks. In addition, they note that in some cases, students learn with their own devices (Huang et al., 2021). Teachers therefore have only limited control over their learning, making it more complicated to monitor individual students, and leading to difficulties in classroom management (Huang et al., 2021). Finally, in one of the studies analyzed by Huang et al. (2021), students reported that interaction with VR wasted too

much of their time. The authors conclude that this delay can lead to learning tasks not being completed on time. They also note that these technologies require teachers to prepare additional learning materials, which can represent an additional workload for them (Huang et al., 2021).

In 2023, Congchao Hua and Jia Wan, in a review of articles devoted to virtual reality-assisted language learning, also mention other drawbacks (Hua & Wan, 2023). Although there is no criticism of the lack of multimodal materials, these authors emphasize, some studies point to the unrealistic nature of some materials provided on VR platforms. This suggests, they argue, "that the focus of studies has shifted from the quantity to the quality of VR-assisted language learning materials" (Hua & Wan, 2023). In addition, and as already noted above, studies report, according to Hua and Wan (2023), that the application of VR can be distracting and decrease learners' attention and thinking levels. Moreover, according to some of the studies consulted by Hua and Wan (2023), this technology "had no advantages over other technologies such as augmented reality and LCD (Liquid Crystal Display), as learners were not more accurate but slower to answer questions when using VR" (Hua & Wan, 2023). According to Hua and Wan (2023), these observations are consistent with others. When using VR, language learners have to pay attention to information from multiple channels, thus reducing their learning efficiency (Hua & Wan, 2023). In their review, these two authors also report learners' mixed attitudes towards subtitles used in VR, with both positive and negative feelings. This divergence, they explain, is not surprising "given the variety of VR platforms and media, as well as individual differences between learners"(Hua & Wan, 2023). However, Hua and Wan (2023) argue in their review that research findings suggest more positive than negative effects of VR on language learning (Hua & Wan, 2023).

2.3.3.2. Advantages of virtual and augmented reality in FLA

As briefly mentioned above, scientific literature shows that virtual reality and immersive technologies have, among other things, positive effects on anxiety. This is true in the field of learning in general (Khukalenko & Kaplan-Rakowski, 2022), but also more specifically in that of foreign language learning (Huang et al., 2021). For Kaplan-Rakowski and Gruber

(2019), for example, the literature shows that HiVR can reduce cognitive load and increase students' interest in the target culture. These results from studies on cognitive load seem important to highlight. Cognitive load is a theory developed by John Sweller that explains people's failures or successes primarily in learning activities, but also in problem-solving activities (Hua & Wang, 2023). Several factors appear to have an influence on cognitive load, and therefore on the success or failure of a person in a learning situation. These include, to a greater or lesser extent, the person's expertise in the field in question, for example, in our case, being a future language teacher still in training (Dje & Tadjuidje, 2020). Added to this is the modus operandi (the way in which the task can be carried out) and the way in which it is presented (Dje & Tadjuidje, 2020). Finally, the third factor concerns the management of mental states that can interfere with task completion, such as stress, anxiety or fear (Dje & Tadjuidje, 2020).

I-Jung Chen and Chi-Cheng Chang (2009) explored this potential relationship between cognitive load, foreign language learning anxiety and task performance. They hypothesized that anxiety consumes working memory resources, leaving less capacity for cognitive activities and impairing efficiency. According to Chen and Chang's findings, students with higher foreign language anxiety also experienced greater cognitive load and performed less well on tests. Foreign language anxiety and cognitive load, they show, were negatively correlated with listening comprehension (Chen & Chang, 2009). In their study, these two authors therefore encourage teachers to identify anxiety-provoking situations and provide a supportive learning environment so that learners can devote all their working memory resources to learning tasks (Chen & Chang, 2009).

In a more recent study, Gruber and Kaplan-Rakowski (2020) also set out to show how virtual reality could enhance a non-native speaker's experience of public speaking (Gruber & Kaplan-Rakowski, 2020). Their study examined how the sense of presence and plausibility illusion of high-immersion virtual reality (HiVR) impacted students' oratory anxiety during a presentation in a foreign language. In this study, students were asked to give eight presentations in a classroom equipped with VR equipment and using a HiVR headset. A virtual audience of students resembling classmates had been created for the occasion (Gruber & Kaplan-Rakowski, 2020). Gruber and Kaplan-Rakowski (2020),

explain that these virtual students were programmed to display non-verbal behaviors such as gestures, mimics and body movements. Analysis of the individual semi-structured interviews subsequently conducted with the students showed, the authors explain, that they felt a sense of presence and illusion of plausibility with regard to the virtual audience and virtual space. Above all, the participants considered VR to be an effective tool for practicing public speaking and reducing the anxiety associated with it (Gruber & Kaplan-Rakowski, 2020).

The systematic literature review published in 2021 by Huang et al. (2021) is particularly interesting when it comes to the contribution of immersive technologies to foreign language learning and the anxiety that can ensue (Huang et al., 2021). These authors repeatedly note the positive contribution of virtual reality (VR) or augmented reality (AR) to language learning anxiety (FLA). Citing Xie et al. (2019), they note that student participants in the study emphasized that VR tools helped reduce anxiety, as they felt that the audience was focused on the landscape via Google viewers (Huang et al., 2021). With the audience's attention shifted, presenters were more relaxed. As a result, students could be more fluent in their presentations, note the authors of this literature review. As VR technologies have helped to create speaking opportunities and reduce speaking anxiety, most research has used VR to facilitate students' speaking skills, they further note (Huang et al., 2021).

Huang et al. (2021) also cite several other studies showing that the use of AR or VR helps reduce language learning anxiety (Huang et al., 2021). One of the explanations put forward by these authors is that these technologies are often integrated with games. Compared with traditional learning, these authors believe, games offer students a comfortable and less stressful learning environment (Huang et al., 2021). According to these authors too, augmented reality and virtual reality games create an authentic and comfortable language-learning environment, which, according to the studies they consulted, helps to reduce learning anxiety (Huang et al., 2021). They note, for example, that students have less mental effort to make, as augmented reality and virtual reality devices give them hints on how to complete tasks. In the case of VR technologies, they also point out, learners benefit from an avatar in the simulated environment, enabling them to hide their real identity (Huang et al., 2021). According to Huang et al. (2021) this possibility gives them a sense

of security, as it gives them the possibility of not being recognized by others when they make mistakes during the learning process (Huang et al., 2021). For these authors, studies clearly show that the use of VR tools helps to reduce foreign language learning anxiety and alleviate students' nervousness. Students, they point out, are more willing to express themselves and practice in learning activities, which is essential for improving their language skills (Huang et al., 2021). In short, they conclude, the features of AR and VR tools enable students to have more learning opportunities. They also enable them to reduce their anxiety in learning language skills, notably by not revealing their identity and by providing a comfortable environment (Huang et al., 2021).

2.3.4. The potential of virtual and augmented reality in FLTA

As a reminder, and as it was explained in Chapter 2, researchers do not always agree on what differentiates FLTA from FLA. For example, Horwitz (1996) takes it for granted that non-native teachers are always language learners, whatever their level of proficiency in the target language. Mercer, for his part, has suggested that anxiety, as a negative emotion, may be due in non-native foreign language teachers to their poor language skills and/or low sense of self-efficacy (Mercer, 2018). For Aydin and Ustuk, however, these views, while important, do not adequately capture the complexity of FLTA (Aydin & Ustuk, 2020). They argue that the contextual factors underlying foreign language teaching anxiety need to be studied in a differentiated way from those underlying FLA.

This raises the question of the usefulness of VR or AR in preventing FLTA, particularly among pre-service teachers. Despite the research carried out as part of this master thesis, it would appear that no study has yet been carried out to demonstrate this. The next chapter will therefore attempt to provide an initial answer to this question by presenting the results of the study carried out as part of this thesis. In the absence of specific studies on this question, however, it can already question whether some of the positive contributions demonstrated by VR and AR on FLA can also be extended to FLTA. It should also be noted that the use of immersive technologies for training future teachers has also been the subject of several studies, as well as concrete application projects, and that the results of these have been positive overall.

As a preamble, it is worth quoting Franco et al. (2021) on the subject of training future teachers in classroom conflict management. A parallel can be drawn between the situation they describe and that prevailing in the initial training of future language teachers concerning the FLTA. For these researchers, maintaining order in the classroom and responding appropriately to disruptive behavior is one of the greatest challenges facing beginning teachers (Franco et al., 2021). Despite the emphasis placed by teacher preparation programs (TTPs in the text) on classroom management skills, in-service training opportunities often do not, they say, accurately reflect everyday classroom practice (Franco et al., 2021). In addition, Franco et al., (2021) point out that, for ethical, practical and economic reasons, the acquisition of these complex skills is hampered by limited teacher training programs (Franco et al., 2021). The lack of practice that these limitations entail translates, these researchers point out, into reality shock during the first years of teaching (Franco et al., 2021). This reality shock can be itself a source of questioning and resignation among young teachers. Recently, Franco et al. (2021) continue, more attention has been paid to integrating more authentic learning experiences into teacher training programs (Franco et al., 2021). One of these experiences, they say, involves the implementation of simulations that confront pre-service teachers with a realistic incident, taking place in a concrete context. These simulations enable skills to be exercised without putting others at risk (Franco et al., 2021). Research on simulations related to classroom management skills seems promising, indicating positive effects on both skill acquisition and trainer self-efficacy, these researchers note (Franco et al., 2021). However, they explain, studies on the impact of simulations on the development of management skills show only a slight increase in mastery of these skills among trainee teachers (Franco et al., 2021). One possible explanation put forward by Franco et al. (2021) is that this relatively modest effect is linked to the "authenticity factor", i.e., they say, the way in which a realistic situation is reproduced in the simulation. To be successful, these researchers believe that simulations must provide an experience that feels real to the teacher-in-training, which, they specify, means creating a sense of 'presence', enabling the participant to suspend disbelief (Franco et al., 2021). This sense of presence can, according to Franco et al. (2021), be achieved through immersive virtual reality and the use of headsets dedicated to this technology (Franco et al., 2021). Although research into the use of VR in education is limited and still in its infancy,

they note, the data suggest that these simulations contribute to the practical training of pre-service teachers in the role of teacher (Franco et al., 2021).

Huang et al. (2021), for their part, have conducted a review of the literature over the last ten years on the use of VR for training teachers or future teachers (Huang et al., 2021). They conclude, based on surveys of three areas of VR-based teacher training programs (program implementation, expected outcomes, effectiveness), that VR has been universally beneficial (Huang et al., 2021). They note that the use of various VR systems simulated a wide range of education-related situations for both trainee and in-service teachers. They therefore emphasize that the use of VR can improve teacher training in all three areas (Huang et al., 2021).

Cárdenas et al. (2022) investigated the extent to which VR-based training could improve trainee teachers' communicative competence and their ability to manage conflict in the classroom (Cárdenas et al., 2022). In their conclusions, these researchers show that, overall, this type of training offers substantial tangible benefits. Firstly, they say, through the possibility of an immersive experience close to a real classroom environment, eliminating the risk and anxiety associated with conflict and classroom management (Cárdenas et al., 2022). This type of training, Cárdenas et al. (2022) explain, also encourages discussion, after-action reflection and collaborative solutions to what teachers often cite as "challenging cases to manage in the classroom" (Cárdenas et al., 2022). Finally, they also say, it strengthens trainee teachers' ability to identify critical incidents and act from a respectful perspective (mindful in the text), raising their awareness of topics such as self-efficacy and conflict management styles (Cárdenas et al., 2022).

On another note, there is also the practical experiment set up by Teresa Hernandez Gonzalez and the ESL Teaching Unit of the Department of Education at Concordia University, Canada (*Virtual Reality as support for future teachers* | KnowledgeOne.ca*)*. The project was based on the following premise, explains the Knowledge One website (*Virtual Reality as support for future teachers* | KnowledgeOne.ca):

As part of their training, future teachers (student-teachers) are sent to schools to put into practice what they are learning and work side-by-side with an experienced teacher... who will observe the student-teacher, evaluate their performance and provide feedback to help them hone their craft. The students are also evaluated by their university supervisors. Since this experience takes place in a real classroom, with real students, it can easily become daunting, socially awkward and very challenging (Virtual Reality as support for future teachers | KnowledgeOne.ca).

On the same page, it is also possible to read statements by Teresa Hernandez Gonzalez, the project's designer, who stresses that:

It is heartbreaking to see a student-teacher dealing with a situation for which they are not well equipped, emotionally or mentally. [...] Seeing them sink is not an easy feeling when you know they could swim if given the opportunity to learn, little by little, just with more attempts, in a safe environment" (Hernandez Gonzalez, 2022 from Virtual Reality as support for future teachers | KnowledgeOne.ca).

Dubbed "Let's Try It Again", the project aims, Knowledge One tells states, to prepare students once they are in the field, for their assessment interview with their mentor (classroom teacher or university supervisor), via a safe, personalized virtual reality environment (*Virtual Reality as support for future teachers | KnowledgeOne.ca*). This VR experience has been developed with the Unity game engine for deployment on the Quest 2 standalone VR headset. In summary, Knowledge One's website explains, the protocol works as follows: "the student first completes several self-reflection exercises before engaging in a conversation with a mentor, personified by a photo-realistic virtual avatar" (*Virtual Reality as support for future teachers* | KnowledgeOne.ca). The student is then offered different ways of responding throughout the discussion. "These choices range from the least appropriate to the most appropriate" (*Virtual Reality as support for future teachers* | KnowledgeOne.ca). Thanks to this trial-and-error approach, students can broaden and increase their communication repertoire, "since they receive immediate feedback on their choices", reports the Knowledge One website (*Virtual Reality as support for future teachers* | KnowledgeOne.ca). It should also be noted that students are asked to formulate their answers aloud throughout the exercise. "Their voices are recorded by the VR headset's microphone, so that self-analysis is possible after the experiment" (*Virtual Reality as support for future teachers* | KnowledgeOne.ca). This approach collects feedback from

students, enabling the project authors to develop and refine the exercise design for maximum effectiveness (*Virtual Reality as support for future teachers* | KnowledgeOne.ca). Knowledge One points out that the long-term aim of the project is to create an effective, user-tested learning tool that can be rolled out more widely to the student population, including those at other universities (*Virtual Reality as support for future teachers* | KnowledgeOne.ca). With regard to the benefits of VR compared with other media, it is also important to quote Teresa Hernandez Gonzalez, again cited by Knowledge One (*Virtual Reality as support for future teachers* | KnowledgeOne.ca):

The most crucial argument for using VR is related to the immersive nature. Accumulating experiences creates memories and the automatization of processes. Despite the education they get in their university programs, new teachers tend to teach the way they were taught themselves. This is because once they face the stressful situation of a real classroom, they don't reach for the knowledge acquired at the university, their brain reaches for the memories stored from previous experiences as a student, and they replicate that. Therefore, creating immersive experiences that can be stored as memories helps new teachers activate those memories when teaching in a real classroom (Hernandez Gonzalez, 2022, from Virtual Reality as support for future teachers | KnowledgeOne.ca).

In any case, the students' reaction to this tool seems positive. Teresa Hernandez Gonzalez adds: "They have told us that they remembered the VR experience when faced with a similar situation in their actual practice, which was our primary objective. As we keep creating more scenarios, we will be able to see what's most effective in preparing our teachers for the profession's challenges" (Hernandez Gonzalez, 2022 from *Virtual Reality as support for future teachers* | KnowledgeOne.ca).

Other similar projects have also been launched. Swimburne University in Australia, for example, offers its students the chance to gain additional teaching and classroom experience through a virtual reality classroom simulation, all online, without having to leave the safety of their own homes (*How VR technology is preparing pre-service teachers for the classroom* | swinburneonline.edu.au). The simulation enables student teachers to present a lesson to on-screen student avatars, animated by a mix of artificial intelligence and simulation specialists who react in real time argues the Swimbure University. According to a testimonial from a student who uses this tool, this technology makes it possible to test

lesson plans and teaching techniques without adversely affecting real-life students. Real-time responses are considered very useful, as they catch future teachers off guard, just as real students would (*How VR technology is preparing pre-service teachers for the classroom* | swinburneonline.edu.au). Again, according to this student, although she still travels to do teaching practice in schools, she finds it "exceptional" that the simulation allows her to practice and try things out. In her opinion, it helps to build confidence in the classroom, while helping to prepare for the school internship and afterwards, by recreating lessons to continually improve her teaching practice (*How VR technology is preparing pre-service teachers for the classroom* | swinburneonline.edu.au).

2.3.5. Conclusion

This chapter highlights the success of virtual and augmented reality in the classroom. The research data that has been gathered has also shown the benefits of these technologies in the field of teaching and, more specifically, foreign language learning. In short, the main reasons for their success in the learning context are that they captivate and hold the learner's attention and offer positive pedagogical results. The scientific literature also shows that these technologies improve motivation and offer immersive, enjoyable learning experiences, helping to reduce the anxiety associated with speaking in a foreign language. Alongside these advantages, the main criticisms and limitations of VR and AR were also reviewed. The main ones being that these technologies are likely to distract some learners, waste their time when learning or give extra work to the teachers who use them.

Finally, this chapter notes the absence of specific studies showing the advantages of VR or AR over the FLTA phenomenon. However, this chapter does attempt to show, with the help of the literature and several examples of concrete projects combining practical teacher training and immersive technologies, that these advantages are potentially plausible.

3. METHODOLOGY

This master thesis supports the hypothesis that virtual reality software can be a tool to help non-native pre-service teachers as a foreign language to reduce their Foreign Language Teaching Anxiety (FLTA). In order to test this hypothesis, a study involving three pre-service language teachers has been carried out. The aim of the study was to find out whether the anxiety levels of the three participants decreased over the course of mini teaching sessions using virtual reality software called Ovation VR.

The study was carried out into four main stages. First, qualitative data was collected using background questionnaires, diaries, and interviews with each participant. Next, the second stage of this study corresponds to the recording of the participants' mini teaching sessions using the virtual reality software, Ovation VR. In addition, each mini teaching session with the virtual reality software was then transcribed and saved in a plain text file to be analyzed quantitatively using Lancsbox, a discourse analysis software. The last stage of this study is the combination of a quantitative analysis supplemented by qualitative data collection. While the quantitative analysis, via Lancsbox, will enable to address the first research question of this thesis, which is: “To what extent can the use of virtual reality reduce the level of FLTA among non-native pre-service teachers?”, the quantitative data will, meanwhile, enable to simultaneously generate a more comprehensive understanding of the phenomenon and to tackle the second research question of this master thesis, which is: “To what extent can the use of virtual reality by pre-service non-native teachers serve as an alternative to traditional internships in a classroom context?”

3.1. The participants

The participants of this study are 3 (1 male and 2 female) student teachers. All participants were 5th year students at Catholic University of Louvain (UCLouvain), Faculty of philosophy, arts, and literature (FIAL), enrolled in a master’s degree in education. The participants were therefore enrolled on the “teaching Practicum course” as part of their degree requirements for the 2022-2023 academic year. It is important to add that at the time

of their participation in this study, all the participants had already completed their teaching practicum.

As part of their initial teacher training, the participants have taken the same theoretical and applied courses to meet the graduation requirements of the *agrégation*. Therefore, it is safe to assume that they share similar backgrounds before going into the Teaching Practicum and, consequently, before participating in this study as well. As a part of the *agrégation*, which represents the teaching training program in UCLouvain, all participants have taken general education courses such as "General Didactics", "Psychology of the Adolescents", “Observation of the School Institution and its Context", “Fundamentals of Neutrality" as well as an English teaching related course “English Teaching Methodology”. Moreover, they have also participated in an applied course called “English as a Foreign Language: Methodology”, where they were required to build their own teaching sequence. Finally, it is important to note that the participants decided to take part in this study on a voluntary basis and that they completed and signed a document stating that their data would be used solely for the purposes of this study and that they would remain anonymous and would only be referred to as “participant number X”. This document is available in the appendix of this work (see appendix A).

3.2. Qualitative data collection

As explained in the introducing section of the methodology, this study carries out data collection in a qualitative manner in three different stages. The first stage of the qualitative data collection consists of filling in a background questionnaire. Then, the second stage of the qualitative data collection involves writing diaries. Finally, the qualitative data collection ends with interviews. As an example, all the stages in the collection of qualitative data from participant 1 can be found in appendix C to this work.

3.2.1. Background questionnaire

The first stage of the qualitative data collection consists of a background questionnaire addressed to the participants. Studies by Aydin (2016) and Aydin and Ustuk (2020) have

demonstrated that background questionnaires can reveal interesting information about participant-specific elements that may potentially influence FLTA. The background questionnaire used in the study by Aydin (2016) and in the study by Aydin and Ustuk (2020) is essentially a “mini questionnaire” as it only asks two questions. The first piece of information participants are asked to complete is age and the second is gender (Aydin & Ustuk, 2020). However, as part of this master thesis, a more exhaustive questionnaire was drawn up. Indeed, as explained in the section above, it is safe to say that all three participants have the same background in teaching practicum and related courses. However, a more exhaustive questionnaire might potentially reveal the extent to which participants share the same background and the extent to which a difference in the background could influence positively and/or negatively the level of anxiety when teaching English as a foreign language.

The questionnaire developed for this study contains 12 questions. For each of these 12 questions, the participants were asked to answer as precisely as possible. It is important to note that this questionnaire was written in French and that the candidates answered in French as well. Although all the candidates had a high degree of proficiency in English, writing the questionnaire in French ensures that all the participants understand the questions as clearly as possible, which consequently makes it possible to obtain answers that are as accurate as possible and as close to reality as possible. The blank example of the questionnaire in French is available in the appendix, along with a translated version in English (see appendix B).

The first two questions of the questionnaire are directly taken from the study by Aydin (2016) and Aydin and Ustuk (2020) and provide information about the age and gender of the participants.

The third question refers to the participants’ academic background as undergraduates. Although all the participants in this study were enrolled in their 5th year of university, taking a master’s degree in didactics, they may not all have undergone exactly the same undergraduate degree before reaching the master's degree. It would therefore be interesting

to analyze the potential differences in the level of anxiety about teaching English as a foreign language according to the type of degree followed as an undergraduate.

The fourth question is along the same lines. All the participants are enrolled in a didactic master's program, which implies that they are taking the *agrégation*. As mentioned in chapter 1, on page 10, the *agrégation* represents 30 credits whereas a master's degree contains 120 credits. It is therefore possible that not all participants will complete the same other 90 credits and that their training, beyond the *agrégation*, will vary. Therefore, as with the third question, it would be interesting to analyze potential differences in the level of anxiety about teaching English as a foreign language according to the major taken by the participants in their master's degree.

The fifth question provides information on the participants' mother tongue. Although the participants are enrolled in a French-speaking university, it is likely that their mother tongue is a language other than French. If so, it would be interesting to analyse the influence that another mother tongue might have on the level of anxiety about teaching English as a foreign language.

The sixth question in the questionnaire revealed information about the participants' potential knowledge and mastery of languages other than English and their mother tongue. As English is a Germanic language, it may be that participants with a mastery of one or more other Germanic languages experience less anxiety when teaching English. Therefore, it will be of some interest to investigate in the analyses whether the mastery of one or more Germanic languages could possibly have a positive effect on anxiety related to the teaching of English as a foreign language.

Moreover, the seventh question also reveals information about the eventual participants' experience abroad. It is well known that living abroad, whether as part of an academic or non-academic experience, helps to improve one's level in the target language. So it would also be interesting to analyze and perhaps to attempt to draw conclusions about the potential impact of a language trip abroad on foreign language teaching anxiety.

The eighth question asked participants to explain how their teaching practicum went. To answer this question, participants are asked to explain how their first teaching experience, i.e., their practicum, went. This data will make it possible to confirm or refute the results of previous studies which argue that teaching practicums constitute a complicated and stressful period for future teachers.

Along similar lines, question nine asks participants to give their views on the quality of initial training for future teachers. The answers to these questions will make it possible to confirm or refute the results of previous studies which argue that the initial training of future teachers is too theoretical and not oriented enough towards practice.
In addition, in the tenth question, the participants were also asked about any teaching experience they might have. It would be possible that some of them have already taught before, and it would then be interesting to determine whether a teaching experience has an impact on the level of foreign language teacher anxiety.

Another key piece of information that this background questionnaire provides, on question eleven, concerns the level of anxiety. The participants were asked to self-report about their level of anxiety in everyday life, as well as their level of anxiety about teaching English as a foreign language in a classroom setting. This information will enable to determine whether the way in which participants assess their level of anxiety is accurate.
Finally, the last question of the background questionnaire reveals whether the participants are familiar with the use of virtual reality software. This represents one of the limitations of this study. It is important to bear in mind that the first use of virtual reality software, or any other new technology in general, can cause anxiety among participants. This last question in the questionnaire will allow us to qualify and better interpret the participants' results, given that it is likely that participants who have never used virtual reality software will be anxious when they first try virtual reality. It will therefore be interesting to compare any differences in the level of anxiety measured in participants who have never used virtual reality software compared with participants who are already familiar with one or more virtual reality software programs.

To conclude, it is important to note that these questions do not represent an exhaustive list and that it is possible that other fundamental questions may provide more information and explanations regarding virtual reality as a tool for combating anxiety linked to teaching English as a foreign language.

3.2.2. Diaries

The second stage of the qualitative data collection is the writing of diaries by the participants after each mini sequence taught using the virtual reality software. This stage of data collection is inspired by Aydin's research in 2016. This research led to the development of a questionnaire to measure foreign language teaching anxiety. Aydin's questionnaire represents one of the most successful FLTA questionnaires to date. In order to develop this questionnaire, diaries and interviews were combined (Aydin, 2016).

Considering Aydin's research (2016), the participants for this study were asked to write diaries directly after their four mini teaching sessions using the virtual reality software. These diaries were collected at the end of each teaching session. The participants were instructed to write down how they felt during the teaching of the mini sequence, both positive and negative elements of their experience. In order to limit the amount of unnecessary data for this research, Aydin (2016) had formulated two more specific questions that guided the participants in writing their diaries:

1. "What makes you anxious, nervous or uncomfortable about the next lesson you are going to teach?" (Aydin, 2016)

2. "What things made you anxious, nervous or uncomfortable while you were teaching?" (Aydin, 2016)

For the purposes of this study, the first question was reused in its entirety, but only for the first teaching session using the Ovation VR software. As for the second question, it was asked of the participants after each session. However, as mentioned above, participants were also asked to write anything positive or negative about their teaching experience with the

virtual reality software. Question two serves as a guidance in case the participants would not have any ideas for writing their diaries.

It is important to note that, for the same reasons as the background questionnaire, the two questions above were put to the participants in French. Thus, the answers were also written in French by the participants.

3.2.3. Interviews

This final stage of qualitative data collection is still inspired by the research of Aydin (2016). Thus, once the diaries have been collected and analyzed, the final stage of the qualitative data collection consists in conducting interviews with the participants.

Aydin (2016) justified the need for these interviews by saying that they had four main purposes. According to Aydin (2016), the first purpose of building semi-conducted interviews was to verify the data that had been written earlier in the diary reports by the participants. Moreover, Aydin (2016) justified also the importance of these interviews as they enable to clarify anything that seemed unclear in the diary reports. Then, Aydin (2016) states that interviewing the participants is also a way of making them focus essentially on the anxiety they feel about teaching the target language. Finally, Aydin (2016) concludes by mentioning that the interviews were also a way of adding relevant qualitative data to the study that the participants may have forgotten to communicate.

As in Aydin' study (2016), the participants were interviewed after each session of teaching with the virtual reality software. Exactly in the same way as Aydin (2016) did in his research, the participants were given their diaries before the interviews to remember what they had written. It is important to note that each interview is unique, and the prepared questions were asked directly in relation to the diaries of each participant.

Another key fact to mention is that some of the questions that were asked to the participants in the interviews were directly inspired from the twenty-seven items that Aydin and Ustuk (2020) (See figure 1 below) found in their study for the development of a Foreign

Language Teaching Anxiety Scale (FLTAS). The items of the FLTAS allow to precisely tackle issues related to foreign language teaching anxiety and then to add more relevant information to the diaries of the participants (Aydin and Ustuk, 2020). It is important to add that other more spontaneous questions, particularly concerning the use of the virtual reality software, were also asked during the interviews. For example, all the participants were asked the following questions during the last interview: "Do you think that internships could be partly substituted by teaching sessions via Ovation VR? What would be the advantages? What would be the disadvantages? What changes would you make to this software to improve it?"

Figure 1. The 27 items found by Aydin and Ustuk (2020) in the development of their Foreign Language Teaching Anxiety Scale

Factors	Item Numbers	Items	Mean	Std. Error	Std. Deviation
Self-perception of language proficiency	9	Making mistakes while I am speaking makes me feel embarrassed.	2.80	.13	1.27
	25	I feel tense when I have difficulties teaching grammar.	2.69	.12	1.23
	38	Unfamiliar topics in the textbook confuse me.	2.59	.13	1.33
	28	Unexpected questions from students put pressure on me.	2.58	.12	1.24
	10	Pronunciation mistakes while I am speaking make me nervous.	2.51	.13	1.30
	32	I feel embarrassed when some students speak English better than me.	2.47	.15	1.53
	18	I feel embarrassed because I am not good at English.	2.35	.13	1.34
	45	When I feel anxious in class, I have difficulty using English.	2.00	.12	1.23
	35	I am bothered when I have difficulty teaching the cultural content of English.	1.96	.10	1.01
	27	It makes me nervous to use English in classes.	1.94	.11	1.11
	36	I feel embarrassed when I think that I am not good at English.	1.64	.11	1.09
	8	I forget almost everything while I am teaching.	1.63	.08	.82
Teaching inexperience	4	I think my lack of teaching experience makes me nervous.	3.15	.12	1.20
	5	I fear making mistakes while I am teaching in the classroom.	3.15	.12	1.18
	1	I feel worried before entering the classroom.	2.70	.12	1.15
	2	I feel anxious when I teach in the classroom.	2.59	.11	1.06
	7	I feel tense when I am in the classroom.	2.54	.11	1.10
Lack of student interest	12	I feel discouraged when students lose interest in the activities.	3.26	.12	1.19
	30	I feel tense when students are not interested in the activities.	3.23	.12	1.18
	11	I feel stressed when students do not participate in the activities.	3.13	.13	1.33
	21	I feel upset because my students are bad at learning languages.	2.48	.12	1.21
Fear of negative evaluation	19	I feel panicked when my mentor-teacher observes me.	2.88	.15	1.48
	33	My mentors' observations make me nervous.	2.84	.14	1.45
	24	Students' negative comments about me make me nervous.	2.80	.13	1.33
Difficulties with time management	23	I feel tense when I am not prepared for class.	3.62	.12	1.24
	16	I am nervous when I finish the activities before the class ends.	2.53	.12	1.17
	15	I feel panicked when I cannot finish the class on time.	2.40	.11	1.13

Finally, it is important to mention that each interview was recorded and then transcribed so that it could be used as part of the analysis of this study. As with the background questionnaire and the diary writing, these interviews were also conducted in French.

3.3. The use of virtual reality software

As explained previously in this work, this thesis supports the hypothesis that the use of virtual reality software could serve as a tool to reduce the level of anxiety related to the teaching of

foreign languages, and more specifically English in the context of this study, among future teachers. Although this thesis supports this hypothesis, it seems that no study has yet demonstrated it. This is why the first question this thesis aims to answer is the following:

1. To what extent can the use of virtual reality reduce the level of FLTA among future teachers?

Next, the results of the quantitative analyses obtained using Lancsbox will be supplemented by the information gathered through qualitative data collection, which will allow the second research question in this thesis to be addressed:

2. To what extent can the use of virtual reality by pre-service teachers serve as an alternative to traditional internships in a classroom context?

As explained in the first chapter of the theoretical part of this thesis, the report *Teacher Education in Europe*, published in 2008 by the European Trade Union Committee for Education, points out that initial teacher training still fails in many respects to prepare teachers adequately for the complexities of today's teaching career, despite the reforms introduced in various countries (ETUCE, 2008). The *Study on Policy Measures to Improve the Attractiveness of the Teaching Profession in Europe* includes a monograph analyzing the teaching situation in French-speaking Belgium and notes that the *agrégation* has been reformed to adapt it to the new demands of the teaching profession (European Commission, 2014). However, as this study points out, initial teacher training is still seen as too theoretical and subject oriented. The importance of internships is too low.

One of the main findings of the study was that many respondents felt that there was a gap between their initial training and the concrete complex aspects of the teaching profession. In view of this, some of the recommendations were, for example, the value of internship and practice and the need to strike a new balance between theoretical and practical teaching. This study notes that results of research into teachers' professional development lead to one essential conclusion: teachers need both academic knowledge acquired as part of a traditional university curriculum and "action knowledge". This knowledge can only be acquired in a real working

environment, through training by doing, which is part of the didactics of practice (European Commission, 2014).

However, during their internships, future teachers experience a sometimes-painful confrontation between their expectations and the representations of the teaching profession, and the classroom reality with which they are confronted (Devos & Paquay, 2010). Taking on a new role as head of a class brings with it its share of destabilization, testing, questioning, and soul-searching. Therefore, if the first question in this study is answered in the affirmative, it would be interesting to know to what extent the use of virtual reality software in the initial training of future teachers could offer a kind of smoother and better transition between the theoretical and practical teaching.

3.3.1. Ovation VR: Definition and features

The virtual reality software that was used to test out the hypothesis of this master thesis is the Ovation VR software. Ovation VR is a virtual reality software that has been developed to help people who need to build and strengthen their skills and confidence. Ovation VR provides real-time training through a virtual audience, with real people in 3D who can react, smile, applaud or even be distracted. However, it is important to mention that the virtual audience cannot ask proper questions related to the content of what is being said while using the software. Here under is non-exhaustive list of the kind of reaction that the virtual audience can have:

- Virtual audience being annoyed.
- Virtual audience being tired – sleeping.
- Virtual audience chatting.
- Virtual audience not paying attention and dreaming.
- Virtual audience being distracted by their phone.

However, it is important to mention that by the time the participants had already started to use the software, a new feature has been added. This feature allows to add user's own prompts

when using the software. In that way, it makes the users train to improvise and answer questions. This feature would probably have been very interesting to use as part as this study, as it would have enabled to verify how the participants would have reacted when being asked questions.

Ovation VR can be used in two different ways, either by using a virtual reality headset or by using a computer. For budget constraints, this study has been realized using only a computer. As previously explained in chapter three of this thesis' theoretical part, this type of virtual reality corresponds to what is called "low-immersive virtual reality". This represents a limitation of the study as the user's embodiment experience is reduced when using low-immersive reality (LiVR). However, although this study is done using LiVR, Ovation VR makes it possible for the participants to experience their mini teaching sequences in an immersive way. To give an illustration of the immersive capacity of the computer mode in Ovation VR, the settings offer quite a large choice of options. First of all, in the settings menu, participants are able to select the target language that is used to teach the mini sequences. Then, each participant is also able to create their avatar according to different criteria such as body type, height, skin color, clothing, hair and accessories. Then, once the configuration is completed, participants are invited to do a test session. This trial session allows participants to explore the software before starting to teach their mini sequences.

Another feature that this software offers is the choice of the venue. The participants can choose the location where they want to teach the mini sequence. The software offers twelve different locations such as a theater room, a lecture hall, an auditorium, etc. In the case of this study, the participants obviously had to choose a classroom as a location.

The software offers two modes: the training mode and the presentation world. The training mode provides feedback to the participants as they go through their teaching exercise, while the presentation mode only provides feedback when the participants view the recording of their sequence. In order to make this teaching exercise as similar as possible to real-life conditions, the participants chose the presentation mode for the teaching of the mini sequences. Ovation VR helps participants practice different things, such as where they look, how they speak and also body language. Unfortunately, some of these features are only possible when using high immersion virtual reality (HiVR) with a headset. However, by simply using the

computer, the participants can move their gaze around the simulated classroom by moving the mouse cursor. They can look left, right, up, down and can also turn around. Although this is not as natural and spontaneous as looking, it still gave the participants the opportunity to learn to move their gaze while teaching.

Overall, each participant used Ovation VR four times. These four sessions with the virtual reality software actually represent a mini teaching sequence, which is discussed in the next section of the methodology.

Each of the participants' sessions was recorded and then transcribed. The transcripts of these sessions serve as data used for a quantitative analysis using the software “Lancsbox”. This part of the study is explained later in the methodology at point 5, on page 63. As an example, the entire qualitative data collection, as well as the transcriptions of the recordings via Ovation VR of participant 1 are available in appendix C of this work.

3.4. Teaching lesson plan

In order for the teaching experience with the virtual reality software to be as reliable as possible, it seemed necessary that the teaching sequence provided to the participants should be as close as possible to the real conditions they would encounter during their teaching practicum and also later on in their careers. To achieve this, each participant taught a total of four teaching sessions using Ovation VR. In fact, as indicated in the SeGEC[5]'s 2nd and 3rd level modern languages program in general secondary education, the number of periods of foreign language classes for pupils in general secondary education is four per week.

To ensure the reliability of the results of this study, all the participants were given the same teaching sequence. This makes it possible to analyze and compare the results in a more objective way. In addition, still for the same reasons, it was agreed in advance with each participant that they would receive the teaching sequence one week before the start of the experiment. This shared decision was motivated by the aim of getting as close as possible to the real conditions

[5] SeGEC stands for Secrétariat général de l’Enseignement Catholique. Briefly, it is the reminisentative authority for Catholic schools in the Wallonia-Brussels federation.

of the teaching practicum. Indeed, the teaching practicum period is a stressful and demanding time for the students (Merç, 2004) and they generally do not have much time in advance to be properly prepared to teach their sequences (Merç, 2004).

It is also important to point out that the participants' sequence is in fact a 'mini sequence'. For each foreign language, pupils in general secondary schools in the Wallonia-Brussels Federation follow four periods of 50 minutes per week. However, for practical and time-related reasons, it was not possible to carry out four 50-minute teaching sessions using the Ovation VR software. This therefore constitutes one of the limitations of this work, as it is obviously more difficult to obtain sufficient data from fairly short teaching sessions. In addition, again due to time constraints, not all the participants were able to teach their mini sequence in one week, as it should be the case with a 4h/week English secondary school class, but some did so over a two-week period.

The attempt to mimic as closely as possible a typical teaching week in general secondary education also brings to light another limitation of this study, namely the level of English of the target pupils. It will therefore not be possible to analyse data such as the FLTA rate depending on the target language level of the pupils.

3.4.1. Mini-teaching sequence

As mentioned above, a single mini teaching sequence was given to all the participants of this study. It is important to mention that the teaching sequences must meet strict requirements laid down by the Wallonia-Brussels Federation parliament. Future teachers are well aware of this because as part of their initial teacher training, they take a course entitled “English as a Foreign Language – Methodology”, in which they learn how to design teaching sequences according to those requirements.

Furthermore, in order to ensure the reliability of the study’s results, the participants were not given a teaching sequence created solely for the purposes of this study, but a teaching sequence specially constructed to be used in the classroom with pupils. The topic of this sequence is *Health is not the absence of disease* and it is aimed at pupils in the 4th grade of

general secondary school whose second modern language is English. This teaching sequence was created in collaboration with Simon Molenaers in May 2022 as part of the *leçon publique*[6] in June 2022. The entire sequence and explanations of its methodological aspects are available in the appendix to this work (See appendix D).

3.4.2. Instructions for the participants

For each of the exercises in the teaching sequence, the written instructions are rather broad. The participants were asked to work out the instructions for themselves and were also told that they were free to add sub-instructions if they wanted to. In addition, given that the virtual audience of Ovation VR cannot react to the content of what is said during the teaching sessions with the software, the participants were asked to provide a lecture rather than a flipped classroom. Again, this represents one of the limitations of this study as it will not be possible to obtain real classroom situations with student-teacher interactions.

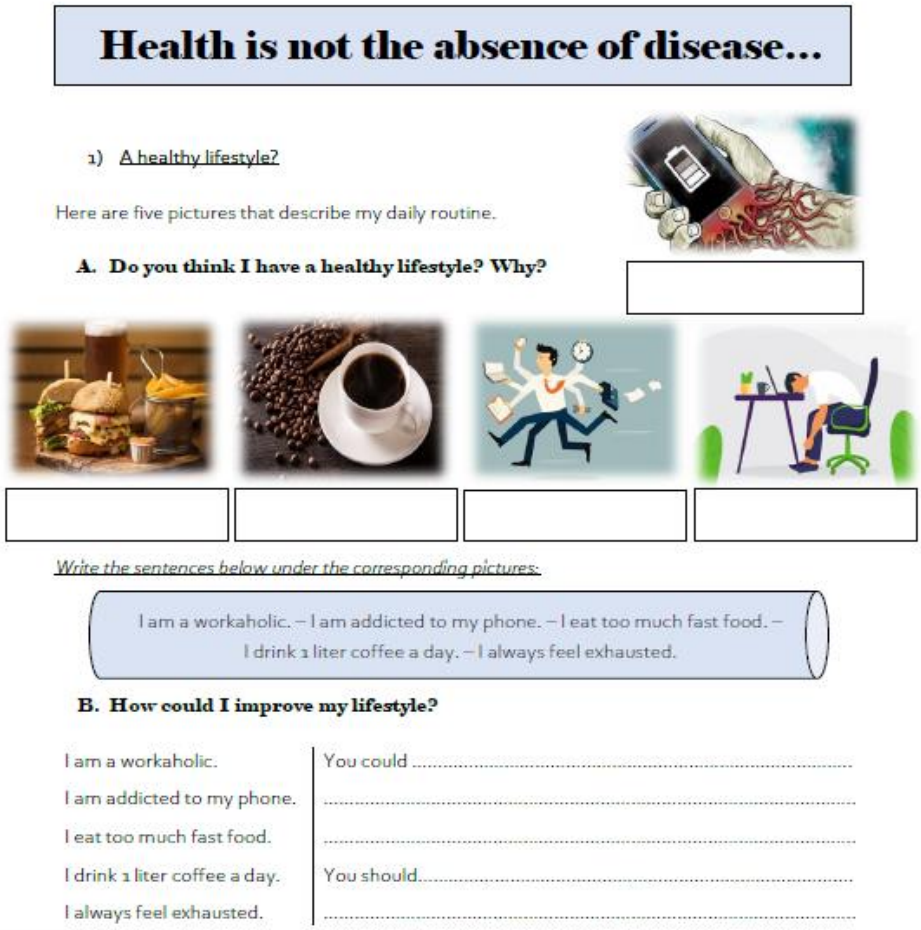
The different sections below highlight the four teaching sessions based on the given sequence:

3.4.2.1. First session

The first session with Ovation VR allows the participants to introduce themselves to the students (or to the virtual audience in the case of this study) and to introduce the topic of the sequence with a vocabulary exercise. Each participant was asked to give exercise 1.B as homework to the students (in this case the virtual audience).

Figure 2. Illustration of the first teaching session with Ovation VR

[6] The *leçon publique* is the final stage of teaching practicum at UCLouvain. Once they have completed their teaching practicum, future teachers are assessed by their university professors. As part of the *leçon publique*, students have to create a teaching sequence and teach it, in front of their university professors, to an upper secondary class.



3.4.2.2. Second session

The second session involves the participants explaining a grammar point. As Figure 3 shows, the instructions in this sequence are rather broad (or even non-existent in this case), which gives the participants a certain amount of freedom. This freedom seems necessary in the context of this study so that the participants do not simply read out ready-made instructions. This would prevent anxiety levels from being captured reliably.

At the end of this grammar point, the participants should also give the instructions for exercise 1.C (see appendix D) so that the students apply the grammar point that has just been taught.

Figure 3. Illustration of the second teaching session with Ovation VR.

Grammar spot

"Could" et "should" sont des auxiliaires de mode. Ils expriment un conseil, une suggestion.

→ Sujet + could /should (auxiliaire) + verbe à l'infinitif sans « to » + autres informations

Examples:

- You could participate in physical activities.
- You should drink more water.

Health is not the absence of disease...

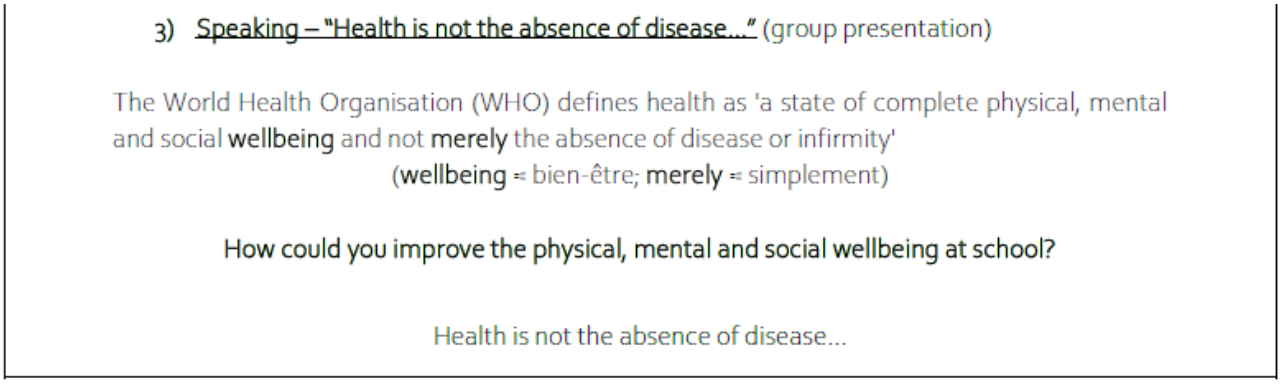
3.4.2.3. Third session

During the third session, the participants will give the students reading comprehension instructions. As mentioned above, the Ovation VR virtual audience will not be able to answer the questions from the text as real pupils would. This is why the participants are asked to give a lecture, in which they provide the answers themselves.

3.4.2.4. Fourth session

During their final session with the virtual reality software, the participants will end the mini sequence by having the pupils give a group presentation. For this final session, the participants are completely free to choose the instructions for the group presentation themselves.

Figure 4. Illustration of the last teaching session with Ovation VR



3.5. Data analysis

The last stage of this study is the combination of a quantitative analysis supplemented by qualitative data collection. The importance of acknowledging both qualitative and quantitative analysis lies in their complementary roles in generating a comprehensive understanding of various phenomena, which ensures greater reliability in the interpretation of the results.

The first stage of the data analysis is the quantitative analysis, which is carried out using the Lancsbox software. This first stage only analyzes the data collected during the recording of the participants' sessions with the Ovation VR software. Then, in order to ensure the best possible reliability in the interpretation of the results of the quantitative analysis, the qualitative data (background questionnaire, diaries, interviews) will be analyzed as well and will attempt to provide a more comprehensive understanding of the results.

3.5.1. Quantitative analysis with Lancsbox

The quantitative analysis was carried out using the Lancsbox software. Lancsbox allows the analysis of the transcripts of the teaching sessions with the Ovation VR software. In that way, it will be possible to determine whether the level of FLTA among the participants has decreased throughout this experiment.

LancsBox is a corpus analysis software that was developed at Lancaster University by Vaclav Brezina, Richard Easty and Pierre Weill-Tessier (Mastertsmlille, 2020). This software,

licensed under the BY-NC-ND Creative Commons public license, is free and may not be used for commercial purposes (Mastertsmlille, 2020). Lancsbox enables to use corpora and word lists either by loading them directly from a computer (which is the case for this study) or by downloading online resources via the software (Mastertsmlille, 2020). As stated by Mastertsmlille (2022), among the online resources available free of charge from the software under the "Download" tab, it is also possible to consult, for example, the British National Corpus, the American National Corpus, the Brown University Standard Corpus, the Australian Corpus of English and many others (Mastertsmlille, 2020).

LancsBox suggests six different analysis tools. However, not all of them were used as part of this study. Only those that were used will be introduced later in this section.

3.5.1.1. Search terms

As explained in the section above, Lancsbox is a program that analyses discourse in corpora. In order to be able to analyze discourse, it is necessary to determine what precisely will be analyzed in this particular discourse. As a reminder, the aim of this study is to investigate the impact of the use of virtual reality on future teachers of English as a foreign language. This master thesis supports the idea that the use of virtual reality could be a useful tool for future teachers in order to reduce FLTA.

To verify this thesis, it was necessary to determine which signs of verbal language could reflect marks of anxiety. Seven search words associated with anxiety have been selected for this study. It is important to mention that some of these seven search terms were selected on the basis of research, while others were selected with the help of Aydin and Ustuk's Foreign Language Teaching Anxiety Scale (FLTAS) (2020). For each of the search terms, a corresponding abbreviation was chosen. The seven search terms used for the Lancsbox quantitative analysis are listed below:

1. trembling voice/shaky voice (TrV)

According to calmclinic (“How Anxiety Can Affect Speech Patterns”, 2021) a free mental health resource site, anxiety can cause the voice to shake and sometimes lead to slur and stutters.

2. fast pace (FP)

Speaking very quickly can come out of nervousness and anxiety (Psychology Today, 2019). When people feel anxious about a situation, they may increase their rate of speech to get the communication process done, but to the cost of clarity and diction, which results in mumbling or garbled speech (Psychology Today, 2019).

3. Misused word (MisW)

This search term was selected on the basis of several items in the FLTAS by Aydin and Ustuk (2020):

- Item 28: “Unexpected questions from students put pressure on me.”
- Item 45: “When I feel anxious in class, I have difficulty using English.”
- Item 27: “It makes me nervous to use English in classes.”
- Item 8: “I forget almost everything while I’m teaching.”

All the items listed above might suggest that, when anxious, future teachers might misuse a word in English.

4. Not speaking the target language (NTL)

This search term was also selected on the basis of several items in the FLTAS by Aydin and Ustuk (2020):

- Item 9: “Making mistakes while I am speaking makes me feel embarrassed.”
- Item 10: “Pronunciation mistakes while I am speaking makes me feel nervous.”
- Item 18: “I feel embarrassed because I am not good at English.”
- Item 8: “I forget almost everything while I’m teaching.”

These items may suggest that the participants (future English teachers) do not use English during the sessions because they are either afraid of making mistakes (errors in content and/or

grammar) or because anxiety leads them to have a low estimation of their level of the target language.

5. pauses/silence/hesitation (P)

This search term was also selected on the basis of several items in the FLTAS by Aydin and Ustuk (2020):

- Item 9: “Making mistakes while I am speaking makes me feel embarrassed.”
- Item 39: “Unfamiliar topics in the textbook confuse me.”
- Item 28: “Unexpected questions from students put pressure on me.”
- Item 18: “I feel embarrassed because I am not good at English.”
- Item 45: “When I feel anxious in class, I have difficulty using English.”
- Item 35: “I am bothered when I have difficulty teaching the cultural content of English.”
- Item 4: ‘I think my lack of teaching experience makes me nervous.”

All the above items can be the source of hesitation, silence or pauses while a (future) foreign language teacher is teaching. So, when analyzing with the Lancsbox software, it will be interesting to find out whether these phenomena tend to decrease as the sessions with virtual reality progress.

6. pronunciation mistakes (PrM)

This search term was selected both on the basis of anxiety research, as well as on the basis of Aydin and Ustuk's FLTAS (2020):

- Item 27: “It makes me nervous to use English in classes.”
- Item 8: “I forget almost everything while I am teaching.”
- Item 4: “I think my lack of teaching experience makes me nervous.”

As the article *Could slurred Speech be Caused by Anxiety?* (2021) on the Healthline website claims, anxiety can increase tension in the jaw muscles, making it harder for the mouth and tongue to produce words clearly and concisely. As a result, pronunciation errors may be made as a result of anxiety. Moreover, as the participants are future teachers and still learning English, they may make pronunciation errors due to a lack of experience/knowledge.

7. grammar mistake (GR)

This search term was selected on the basis of the FLTAS of Aydin and Ustuk (2020):

- Item 45: "When I feel anxious in class, I have difficulty using English."

According to this FLTAS item (Aydin & Ustuk, 2020), when a teacher is anxious, they have more difficulty using English in class and could therefore make grammatical errors more easily. It will therefore be interesting to see whether participants make progressively fewer grammatical errors as their sessions with Ovation VR progress.

When transcribing each session with Ovation VR, the corresponding abbreviations were added in brackets whenever the participants used one of the search terms mentioned above. In this way, each transcript of the sessions with the virtual reality software also contains the identification of any signs of anxiety used by the participants. Below is an example of the annotated transcription of participant 1's first session with Ovation VR:

Hello everyone, I am going to be your teacher for the next four session (GR) (TrV). (P) The topic that we are going to cover together is called "Health (PrM) is not the absence of disease (FP)". (P)Then, (P) in order to introduce this topic, you are going to do a vocabulary exercise (TrV). (P) On this exercise you have five pictures that you have to mix (MisW) (P) with the corresponding sentences below (P). Once you are finished with this first exercise, you'll find below another exercise that you'll have to do for the next session, as a (GR) homework. (See appendix C).

The transcripts completed by the identification of the search terms will then be used in corpus format (see next section) to be analyzed with the Lancsbox software. Thus, by downloading the mini corpora into the software and searching for the selected search terms, it will be possible to analyze how often these terms appear, and to check whether there has been any improvement over the course of the four sessions using Ovation VR. In addition, it will also be possible to determine whether certain aspects of teaching may be the cause of more or less stress/anxiety in future teachers.

To conclude, it is important to mention that these search terms do not represent an exhaustive list of language signs that could be indicative of anxiety when teaching a foreign language. Furthermore, as I am not a native English speaker, it is important to mention that some pronunciation and/or grammar errors may not have been identified when transcribing the recorded sessions.

3.5.1.2. Building a corpus

Lancsbox is a software program that enables speech to be analyzed in corpora. It is possible to upload one's own corpora directly from a computer into the Lancsbox software or to use corpora already made available by the software. For the purposes of this study, it was necessary to create corpora. The content of these corpora is the transcript of the teaching sessions with the Ovation VR software as well as the abbreviations of the search terms identified. In order to facilitate reading, transcripts which include the abbreviations of the search terms identified will only be referred to as "transcripts". In total, three mini corpora were created, as there is one mini corpus for each participant.

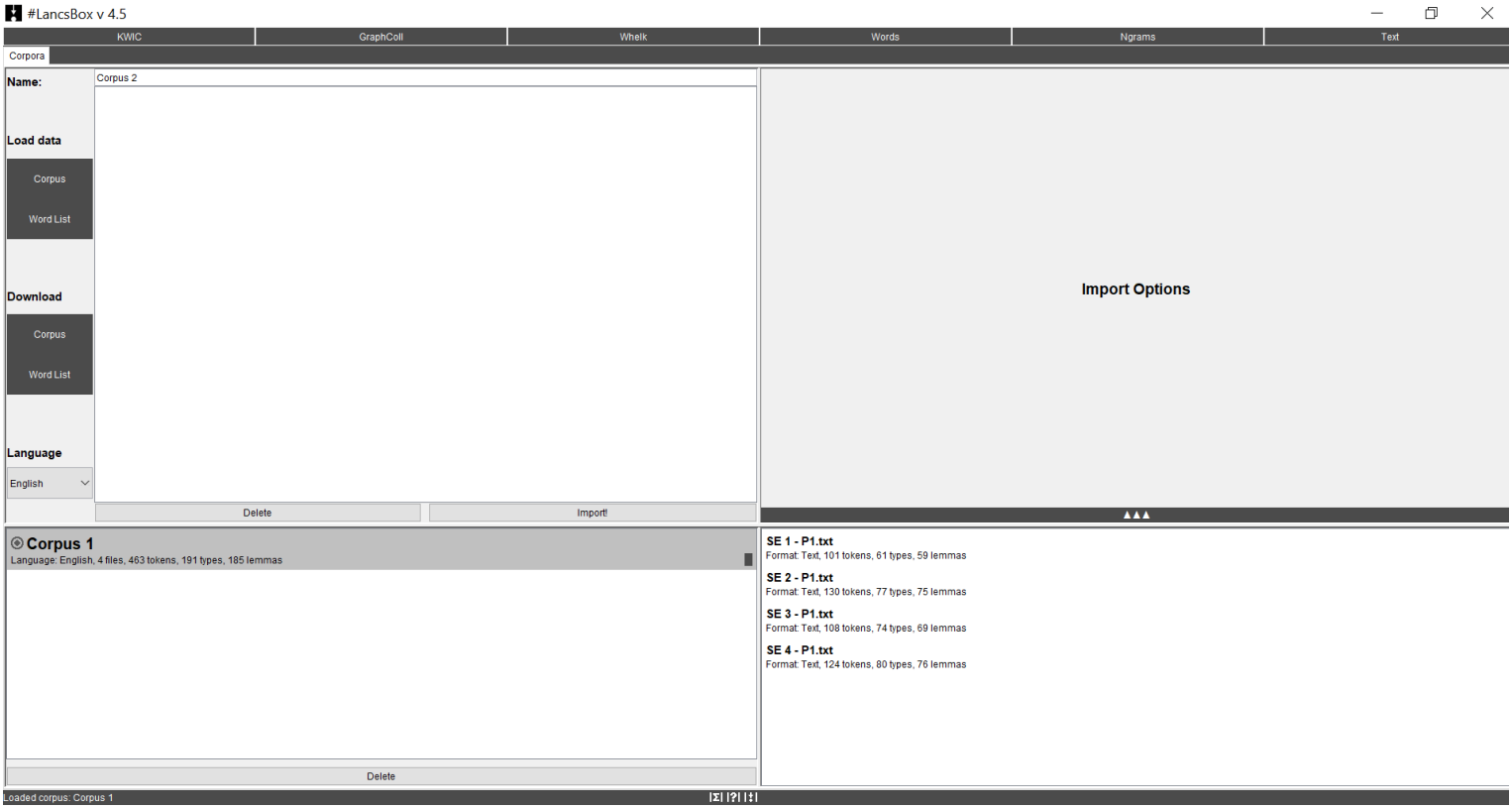
In order to create these mini corpora, it was necessary to follow a series of issues to consider when constructing a corpus, as introduced by Tony McEnery and Vaclav Brezina (2018). Firstly, each mini teaching session’s transcriptions were written into a text editor and then saved individually in a plain text file. (Brezina & McEnery, 2018). Each file was named and saved as follows:

“SE + number of the session - P + number of the participant “

For example, the transcript’s file of the first session with Ovation VR of participant 1 is named as follows: "SE1 - P1”. Once the four transcripts for each participant have been saved using this procedure, each of these files can be downloaded into Lancsbox in order to create the corpora.

Next, in order to create a corpus for each participant, the four files for that participant must be downloaded individually. Figure 5 below shows an example of the creation of participant 1's corpus in the Lancsbox software:

Figure 5. Illustration of the creation of participant 1’s corpus in Lancsbox



Finally, each corpus must be named. Within the framework of this study, corpus 1 refers to participant 1, and so on through to participant 3.

3.5.1.3. Lancsbox tools used

Lancsbox offers seven discourse analysis tools. However, only two of these tools were used for the purposes of this study. The seven search terms mentioned above in the methodology were each analysed individually using these two tools:

3.5.1.3.1. WHELK: analyzing frequencies in text

Whelk is used to find out the distribution of a search term across the individual parts of the corpus. It includes all of the KWIC functions with the addition of a statistical table on the number of tokens, the frequency and the relative frequency of a term (Mastertsmlille, 2020). The statistical table is updated instantly with each new search (Mastertsmlille, 2020).

A token is defined as the smallest unit that makes up a corpus (Cukr, 2020). It can be a word, a punctuation mark, a number, an abbreviation or another symbol that is not a space (Cukr, 2020). As for the (absolute) frequency of a term, this simply corresponds to the number of occurrences of this term in the corpus files (Mastertsmlille, 2020), whereas the relative frequency of a term, argues Mastertsmlille (2020) is equal to its absolute frequency divided by the total number of tokens present in the corpus file where it is found. Relative frequency is a measure of the importance of a term and as not all files have the same number of tokens, Lancsbox calculates a relative frequency normalised to 10,000 tokens for each file in the corpus to obtain comparable values (Mastertsmlille, 2020).

3.5.1.3.2. KWIC: analysing concordance lines

KWIC stands for Key Word in Context. This tool allows to search for words, phrases or grammatical structures in the corpora. KWIC displays all occurrences of a term, a lexical category, or a sentence in context (Mastertsmlille, 2020). The number of occurrences and the frequency are automatically calculated (Mastertsmlille, 2020).

The analyses carried out with Lancsbox were first conducted individually for each participant. Each participant's corpus was first analysed using the WHELK tool and then the analysis was completed using the KWIC tool. Finally, the results of each participant will be compared with each other to reach a conclusion.

3.5.2. Qualitative analysis

The data collected using the background questionnaire, the diaries written by the participants and the interviews will be used alongside the data obtained using the Lancsbox software. Indeed, some of the results generated by Lancsbox could be further interpreted in the light of data collected qualitatively. As explained in the second section of the methodology, some participants may already be familiar with the use of virtual reality software, whereas this may be completely new to other participants, which may have an impact on the level of anxiety. It is therefore in this sense that qualitative data collection could help to provide more reliable results.

3.6. Summary of the limitations of this study

This study is limited to a Belgian education context. The pre-service teachers involved in this study are all enrolled in UCLouvain; therefore, the findings of this study are limited to the initial teacher training and practicum of UCLouvain. Moreover, this study in only carried out among three participants, which cannot be fully representative of every pre-service teacher enrolled in UCLouvain. The data collected from the three participants of this study do not represent a sufficient quantity of evidence to allow conclusions to be generalized.

Another limitation of this study is due to budgetary constraints which consequently implied that this study could not be carried out in highly immersive virtual reality, but only using low immersive virtual reality. This is a limitation of the study, as the user's embodied experience is reduced when using low immersive virtual reality (LiVR).

Moreover, for practical and time-related reasons, it was only possible to carry out mini teaching sessions using the Ovation VR software. This therefore also constitutes one of the limitations of this study, as the mini teaching sessions do not represent sufficient data in order to be able to draw conclusions.

Finally, it is important to emphasize that the data collection's methods (whether qualitative or quantitative) are not exhaustive. The background questionnaire, for example, or the search terms selected for the analysis with Lancsbox are not exhaustive.

In conclusion, it is difficult to generalize the findings of this study for all student teachers in teacher education programs in Belgium and in other countries. However, the presentation and discussion of the findings as well as the pedagogical implications for teacher education programs can be beneficial for other teacher education programs, too.

4.1. First participant

1. Trembling voice (TrV)

The WHELK tool allows to notice that participant 1 had only two occurrences of Trembling Voice (TrV) during the four teaching sessions with Ovation VR. The WHELK tool also shows that the two occurrences of (TrV) both took place during the first teaching session.

Then, KWIC tool provides additional information because it can highlight that the first occurrence of (TrV) appears just after a grammatical error. Thus, it might be assumed that the participant realized that there had been a grammatical error, which made her nervous and caused her voice to tremble. As explained in the methodology of this work, when a person is stressed, there can be tension in the muscles of the jaw, which can make it difficult to speak.

Secondly, the KWIC tool shows that the second (TrV) occurrence does not appear at a key moment in the session. However, participant 1 wrote in her diary before her first session that she had never used virtual reality software and that it stressed her a little. It is therefore possible that the second occurrence of (TrV) was due to a moment of stress linked to the use of the software.

2. Fast Pace (FP)

The WHELK tool shows that participant 1 had only two occurrences of Fast Pace (FP) during her four teaching sessions with Ovation VR. The WHELK tool also indicates that the two (FP) occurrences took place during the first and second teaching sessions.

The KWIC tool provides additional information as it can show that these two (FP) occurrences both appeared after a pronunciation error. As pronunciation errors are one of the

items on Aydin and Ustuk's FLTAS (2020), it is likely that these two pronunciation errors caused the participant anxiety, which could then have provoked this fast pace.

3. Misused Word (MisW)

The WHELK tool shows that participant 1 misused a word twice during her four teaching sessions with Ovation VR. The WHELK tool also shows that the two occurrences of (MisW) took place during the first and last teaching sessions.

The KWIC tool allows to contextualize these two errors: it can be assumed that the participant had to explain to the virtual audience that they had to match sentences with images. The participant used the verb "to mix" to mean "to match". This confusion could be a sign of anxiety. If we refer to the FLTASC of Aydin and Ustuk (2020), it shows that one of the FLTAS' items is "forgetting things when giving a lesson in English". So, this error might therefore be explained in this way.

As for the error in the last session, the KWIC tool shows that the participant used the verb "to permit", whereas she should have used the verb "to allow" or "to enable". In fact, unlike the other verbs mentioned above, "to permit" adds a rather official connotation and was not appropriate in this specific context. This error could be explained by the fact that her mother tongue is French (data provided in the background questionnaire). Thus, she may have made a transfer with the verb "permettre" in French, which does not have the same connotation as "to permit" in English.

4. Not speaking the target language (NTL)

The WHELK tool shows that the search term (NTL) appears only once during the four teaching sessions with Ovation VR. The WHELK tool also indicates that this single occurrence took place during the third teaching session.

The KWIC tool provides additional information as it can show that the participant spoke in French after making a mistake when giving instructions. As shown by item 9 of Aydin and

Ustuk's FLTAS (2020), making a mistake while speaking can provoke anxiety in future foreign language teachers, which could explain why she turned to her mother tongue.

5. Pause/ silence/ hesitation (P)

The WHELK tool shows that the search term (P) is the most frequent sign of anxiety for participant 1, appearing a total of fifteen times: four occurrences in sessions one, two and three and three occurrences in the last session.

The KWIC tool shows that pauses/silences/hesitations appear, in most cases, at the beginning of a new sentence. Furthermore, as KWIC shows, in more than half the cases, this search term appeared close to another search indicator showing a sign of anxiety.

When writing in her diary after the third session, the participant said that what she found really positive about Ovation VR was that she could listen to herself again after each session, which enabled her to identify her strengths and areas for improvement. She went on to say that when she listened to the third session again, she realized that she often had hesitations and often said " Emhhhh... ". She then finished by saying that she would try to pay more attention to it.

It would appear that this seemed to work, as during the next session she went from using the seach term (P) four times to using it three times. In addition, during the third interview, she was asked to give her opinion on the usefulness of the Ovation VR software for practicing giving lessons and she said that she thought it was a good way of practicing, although she added that she would need to have an audience with whom it is possible to interact.

6. Pronunciation (PrM)

The WHELK tool shows that the participant made five pronunciation mistakes. These five errors occurred once in the first session with Ovation VR and then four times in the second session.

The KWIC tool shows that there were not in fact four different errors during the second session, but that the same error occurred four times. The participant mispronounced the word "verb". In addition, it seems important to mention that the qualitative data collection tells that the participant has never had any language experience abroad and that she doesn't have many opportunities to practice English. She also explained that the *agrégation* courses were very theoretical and that there was not much opportunity to practice English and practice teaching. In addition, she complained about the organization of the teaching practicum, which required her to be absent from some of the theoretical classes over the year, which created even more stress.

In her diary entry, the participant commented after the second session: " However, I was a little less at ease with the subject of the lesson. I had already found it difficult to explain grammar points during my training courses" (See Appendix C).

Then, during the interview, she explained that it made her anxious to make pronunciation mistakes because she was afraid that the students would make fun of her. Given that in the case of using Ovation VR it is not possible for students to make fun of her, it could simply be that this participant is having difficulty pronouncing this word.

In this case, the use of VR as a teaching tool could be beneficial because the recordings could point out her weaknesses without having to endure the possible mockery of the students in the event of a pronunciation error.

7. Grammar (GR)

The WHELK tool shows that the participant made three grammatical errors. Two grammar errors occurred during the first session and the 3rd grammar error occurred during the 2nd session.

The KWIC tool shows that the first grammatical error appeared at the same time as another search term, which is (TrV). In the section on the search term (TrV), the hypothesis was put forward that the grammatical error could have caused the voice to tremble. This hypothesis

could also be reversed. It could be because the voice was trembling that this grammatical error occurred. The KWIC tool allows to see that this is not a major grammatical error, but rather the omission of an “s” at the end of a plural word. So, a trembling voice could have been the cause.

Similarly, the grammatical error made during the second session occurred at the same time as a pronunciation error. Since the participant had mentioned her fear of making pronunciation errors, it might be safe to assume that the grammar error was caused by the pronunciation error.

In conclusion, most occurrences of the search terms symptomatic of anxiety appeared during the first or second session. This suggests that as the sessions progressed, the participant 1 felt less anxious. Moreover, it might also be argued that the use of a virtual reality software could provide a smooth transition between theory and practice in teacher initial training: indeed, the participant mentioned several times during the qualitative data collection that she did not feel anxious about the experience because she found it reassuring that it was virtual reality. Unlike her internships, during which she was stressed.

However, she admitted that she wished Ovation VR had been able to offer a virtual audience who could actually interact with the content of what was being said and who could ask questions in the same way as real pupils would do. Nonetheless, she ended by saying that even if she did not think it could completely substitute for classroom training, virtual reality could still offer future teachers a way of practicing without having to travel, which can be restrictive, as is the case during the teaching practicum.

4.2. Second participant

1. Trembling voice (TrV)

The WHELK tool shows that there was no occurrence of tremulous voice for participant 2 across the four recording sessions using the Ovation VR software.

It is therefore important to mention that participant 2 already has four years of teaching experience. He explained in the background questionnaire that he had first completed a bachelor's degree to become a teacher of Germanic languages (English - German) in lower secondary school. When he graduated, he taught in lower secondary for four years. This could partly explain some of the results of this participant's analysis. Two years ago, however, he decided to go back to university and start a master's degree in didactic translation so that he could teach in upper secondary education.

2. Fast Pace (FP)

The WHELK tool shows that the search term fast pace (FP) appeared eleven times during the four teaching sessions with VR Ovation. It appeared four times in the first session, twice in the second session, three times in the third session and twice in the last session.

The KWIC tool shows that on eight of the eleven occasions, (FP) was identified after a question. When interviewed after the third session, the participant explained that he found it rather disturbing not to get any interaction from the virtual audience. He explained that he was asking questions as he would normally have done in a classroom with pupils, but that as he wasn't getting any answers from the virtual audience, he had to move straight on to the rest of the sequence. This could perhaps explain the (FP) occurrences. It should be noted, however, that these occurrences decreased as the sessions with Ovation VR progressed.

3. Misused word (MisW)

The WHELK tool shows that there is no occurrence of a misused word on the part of participant 2. This result could therefore echo what Horwitz (1996) stated. According to Horwitz (1996), non-native future language teachers are likely to set unrealistic expectations in terms of English proficiency and performance, which makes them anxious because they fear they will never be good enough. Furthermore, the background questionnaire supports this idea as the participant explains that English is the language in which he feels least comfortable because it is the language, he has less opportunity to speak.

However, it should be noted that up to now, participants 1 and 2 have shown that errors of fluency are fairly rare. So, it might be suggested that VR software could be a tool for raising future teachers' awareness of their level, to reassure them and make them feel more at ease.

4. Not speaking the target language (NTL)

Once again, the WHELK tool reveals that there was no occurrence of NTL for participant 2. Thus, as explained in the diaries and interviews, the participant indicated that he was not anxious by taking part in this study. This can be explained by the fact that he already had teaching experience.

However, in the background questionnaire, participant 2 explained that his recent internships had been quite stressful and that he had forgotten what it was like to be judged by an internship supervisor. So, even if a participant who already has teaching experience claims that internships are stressful, this might be interesting to use VR software as a “pre-internship experience”, as it could help future teachers to feel better prepared and experience less anxiety.

5. Pause/ silence/ hesitation (P

The WHELK tool shows that the search term (P) appears ten times for participant 2. It appears three times in the first session, four times in the second, once in the third and twice in the last session.

As with participant 1, the KWIC tool shows that pauses/silences/hesitations appear, in the majority of cases, at the beginning of a new sentence. It could therefore be hypothesized that future teachers experience a moment of anxiety when they start to say something new.

Participant 2 said that he had never been aware of this and that he didn't know whether it was simply a language tic or actually a sign of anxiety that occurred precisely. Either way, the pauses/hesitations/silences can break the rhythm of the speech, which is not very pleasant

for the students either. Thus, once again, it could be hypothesized that VR could be used to work on this point in order to improve it.

6. Pronunciation (PrM)

The WHELK tool shows that participant 2 made two pronunciation mistakes. These two mistakes occurred in the second session. In addition, the KWIC tool shows that participant 2 actually made the same pronunciation error twice. The word he mispronounced was "auxiliary".

After the second session, participant 2 was asked if the mispronunciations were causing him stress. He answered yes, because he is always afraid that there might be a student with a very good mastery of the target language who would do better than him and that he might notice the mistake and think that his level is not good enough. Once again, this goes back to what Horwitz was saying, that future teachers tend to have a low opinion of their level of mastery of the target language.

In his diary entry, participant 2 said that he was not used to teach grammar points in the target language, but rather that he was used to teaching them in French (his mother tongue), in order to make sure that all the pupils understood the new grammar point. This could therefore explain why the word “auxiliary” was mispronounced.

7. Grammar (GR)

As with the search terms (MisW) and (NTL), there were no occurrences of the search term (GR) in participant 2.

In conclusion, in view of the results of the analysis of participant 2, the hypothesis could be put forward that "practice makes perfect". Indeed, as participant 2 already had four years' teaching experience, the frequency of occurrence of search terms related to anxiety was lower. This hypothesis could then support the hypothesis of this thesis, according to which the use of virtual reality software by future language teachers could reduce FLTA. VR would enable

future language teachers to practice as often as they wished, to point out their strengths and weaknesses and to work on them so that they would feel more comfortable and have more favorable experiences during classroom practice.

Along the same lines as participant 1, participant 2 said that he found it disappointing that Ovation VR could not provide a virtual audience that actually interacted with the content of what was being said and could ask questions, as students would actually do. He concluded by saying that, in his opinion, the experience with ovation VR is not sufficiently immersive, although it does allow students to practice and test a lesson.

4.3. Third participant

1. Trembling voice (TrV)

The WHELK tool shows that there were eight occurrences of trembling voice for participant 3 across the four recording sessions using the Ovation VR software. The WHELK tool also shows that the (TrV)occurred during the first and second session.

In the interview that followed the first session, participant 3 revealed that she is naturally quite anxious and that one of the signs that most betrays her anxiety is her trembling voice, even when she's not feeling particularly anxious.

However, using the WHELK tool, it can be observed that there is no longer any occurrence of (TrV). This could suggest that, as the experiment progressed, her anxiety level decreased.

2. Fast Pace (FP)

The WHELK tool shows that the search term fast pace (FP) appeared ten times during the four teaching sessions with VR Ovation. It appeared twice in the first session, four in the second session, and then twice again in the third and fourth session. Given that there

was an increase in (FP) in the second session, participant 3 was interviewed accordingly after the second session. She explained that she was rather uncomfortable with the teaching of a grammar point.

This seems to be a fairly general observation for the three participants in this study. It would therefore be interesting to see to what extent VR software can help to address grammar teaching specifically.

3. Misused word (MisW)

The WHELK tool shows that there is no occurrence of a misused word on the part of participant 2. Such as for participant 2, this result could echo what Horwitz (1996) stated. According to Horwitz (1996), non-native future language teachers are likely to set unrealistic expectations in terms of English proficiency and performance, which makes them anxious because they fear they will never be good enough, when in fact they make very few language mistakes.

4. Not speaking the target language (NTL)

The WHELK tool reveals that there was more than 10 occurrences of (NTL) in the second teaching session with Ovation VR. Participant 3 then explained in the second interview that she learnt during her teacher practicum that grammar points had to be taught in the pupils' mother tongue. As there were no specific instructions for the participants, she decided to do what she had learned during her training courses. This also ties in with what participant 2 explained on this subject. These occurrences should not be taken into account in the context of anxiety.

It is important to point out that participant 3's mother tongue is Spanish. Participant 3 arrived in Belgium eight years ago. Since then, she has a flawless mastery of French and has studied at French-speaking universities in Belgium.

5. Pause/ silence/ hesitation (P)

The WHELK tool shows that the search term (P) appears 12 times for participant 3. It appears eight times in the first session and four times in the second session.

The KWIC tool shows that in the second session the search term (P) always appears in collocation with the search term (FP). The qualitative data therefore provides a better understanding of these results. As explained in the section on the research term (FP), participant 3 feels rather uncomfortable with the teaching of a grammar point. not teaching a grammar point. Furthermore, it is important to remember that this participant taught the grammar point in French and that French is not her mother tongue either.

With regards to the occurences of (P) in the first session, it should be kept in mind that none of the participants in this study had used virtual reality software before and that this can be a little disturbing at first.

6. Pronunciation (PrM)

The WHELK tool shows that there were no occurrences of the search term (PrM) in participant 2's teaching sessions with Ovation VR.

In her diary, participant 3 explains that the advantage of VR is that it can focus on just one or other aspect of teaching. For example, she explained that during her internships, she tended to make more mistakes (both grammar and pronunciation mistakes) because her speech rate was faster due to the interaction with the students. She was also more stressed during her internships. She adds that she also sees Ovation VR as a way of practicing English because she doesn't have much opportunity to do so either as part of her initial teacher training or in her private life.

7. Grammar (GR)

As with the search terms (MisW) and (PrM), there were no occurrences of the search term (GR) in participant 3.

In conclusion, after analyzing the teaching sessions of the three participants in this study, it is possible to draw some mini conclusions. Firstly, it seems that future teachers have more difficulty when teaching grammar points.

Secondly, it also seems that the virtual reality software may have caused a little anxiety in the first and sometimes even the second session, but that the participants adapted fairly quickly.

Finally, participant 3, like the other two participants, explained in her last interview that she found ovation VR to be a good way of practicing teaching but that she also regretted that the software was not more immersive in order to make the experience even more real.

5. CONCLUSION

5.1. Summary of the main findings

From the data collected and analysed as part of this study, it would appear that the hypothesis put forward in this thesis has been validated. As a reminder, this thesis supported the hypothesis that virtual reality software could be used as a tool to overcome FLTA among non-native pre-service foreign language teachers. This hypothesis could be tested through the results of the analysis with Lancsbox, which showed that for the three participants in this study, the majority of occurrences of search terms associated with a sign of anxiety appeared in the first two sessions and seemed to decrease, or even disappear, during the 3rd and 4th sessions. This could therefore provide evidence for the hypothesis put forward in this thesis.

In addition, it seems that the combination of quantitative and qualitative analysis can provide some answers to the first research question in this thesis. As a reminder, the first research question sought to determine the extent to which virtual reality software could be a tool for tackling FLTA. Two main answers emerged from this study. Firstly, recording teaching sessions using virtual reality software enables future teachers to become aware of their strengths and weaknesses. As far as strengths are concerned, Horwitz (1996) found that future teachers tend to have unrealistic expectations about their expected level of mastery of the target language, which leads them to have a low opinion of their level and knowledge of the target language. However, the results of this study showed that future foreign language teachers actually make very few mistakes. So, the use of virtual reality could act as a way of making future teachers more aware of their strengths, and therefore more confident. On the other hand, recording sessions with VR software allows future teachers to find out their weaknesses and identify what they really need to work on to improve. So, depending on their weaknesses, they could, for example, practice giving clearer instructions, managing a class or teaching a specific grammar point. Another advantage of virtual reality software is that future teachers can practice whenever they like. So, when they find themselves in a classroom situation, future teachers will be able to

remember everything they have learnt thanks to the virtual reality software, so they will be better prepared and less anxious.

Then, the analysis of the qualitative data from this study made it possible to raise the second research question of this thesis, which was, to what extent can the use of VR software serve as an alternative to a traditional teaching internship in a classroom context.

It seems that the most unanimous answer from this study is that teaching via VR software gives participants the right to make mistakes, which is not the case with their traditional teaching practicum. The participants agreed that they did not feel particularly stressed taking part in this study, unlike their teaching practicum, where they had felt a great deal of stress. In order to provide less stressful internship experiences and better initial training for future teachers, it seems from the results of this study that VR software could be used as a means of bridging the gap between theoretical courses and internships.

However, all the participants also agreed that it would be even more valuable to have VR software that would allow for more complete immersion and that would truly mimic the scenario of a real classroom, with students interacting and asking questions about what is being said. On the other hand, this study does not reveal how many VR sessions are needed before the benefits are really noticeable. This avenue remains to be explored. Finally, it is important to remember that this study does not have enough data to be able to draw conclusions that could be generalized.

5.2. General discussion

It seems clear that future studies on this topic need to be carried out. One of the first avenues to explore could be to carry out a similar study but with VR software that would allow the virtual audience to react in order to make the experience more immersive. It would be interesting to create VR software in which multiple lesson sequences could be downloaded, shared and used by future teachers. For each lesson sequence, several classroom scenarios

would be available. This would be a way for future teachers to practice and experience several potential classroom scenarios.

Finally, it would also be interesting to carry out a study in which a group of future teachers would benefit from teaching sessions with virtual reality software before carrying out their internships in a classroom context. In parallel with this group, it would be interesting to follow another group who would not benefit from sessions with VR software, but who would rather go directly to do their practicums in a classroom context. The aim of such a study would be to determine what the differences would be between these two groups. This study could even go further and continue to follow the participants in the two groups during their first years in the profession and measure their FLTA and determine to what extent a difference would separate these two groups.

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APPENDIX A

NOM :

Prénom :

Consentement de participation

Je vous propose de participer à un recueil de données écrites et audio dans le cadre de mon mémoire en vue de l'obtention du titre de master en langues et lettres modernes, orientation germanique, à finalité didactique à l'Université catholique de Louvain. Ce travail s'appuie sur un recueil de données écrites ainsi que sur des enregistrements effectués auprès de futurs enseignants d'anglais.

Ce recueil de données écrites ainsi que les enregistrements sont faits dans des buts de recherche scientifique. Ces données ainsi que les résultats peuvent être publiés dans des revues scientifiques ou dans des ouvrages commercialises. Ils pourront également être réutilisés dans le cadre de recherches ultérieures par d'autres chercheurs. Dans tous les cas (publication, réutilisation des données, etc.), les informations vous concernant seront exploitées de manière anonyme. De la même manière, vos propos seront anonymises.

Si vous acceptez de participer à cette étude dans les conditions énoncées ci-dessus, veuillez signer ce document.

Fait à le

Nom, prénom :

Adresse email :

Contact :

Marion Dillen

marion.dillen@student.uclouvain.be

Nom du Promoteur :

Ferran Suner Munoz - Universite Catholique de Louvain

APPENDIX B

Nom :

Prénom :

Questionnaire général

1) Quel est ton âge ?
2) Quel est ton sexe ?
3) Quelle formation as-tu suivie pour ton bachelier et dans quelle université ?
4) Quelle formation as-tu suivie pour ton master et dans quelle université ?
5) Quelle est ta langue maternelle ?
6) Quelles sont les langues que tu parles (hors langue maternelle) ? Avec quelle(s) langue(s) as-tu le plus de facilité ? Classe les dans l'ordre.
7) As-tu vécu à l'étranger ? Erasmus/année sabbatique/autre. Si oui, communique des informations relatives à la durée, le programme suivi, le lieu, etc.
8) As-tu déjà de l'expérience (autre que les stages) dans l'enseignement ?
9) Comment se sont passés tes stages ?
10) Que penses-tu de la formation initiale des profs ?
11) Es-tu quelqu'un d'anxieux de nature ?
12) Es-tu familier avec l'utilisation de logiciel de réalité virtuelle ?

Last name :

First name :

Background questionnaire

1) How old are you?

2) What is your gender?

3) What did you study for your bachelor's degree and in which university?

4) What did you study for your master's degree and in which university?

5) What is your mother tongue?

6) What languages do you speak (apart from your mother tongue)? Rank them in order from most fluent to least fluent.

7) Have you ever lived abroad? Erasmus/gap year/other. If so, give details of the duration, programme followed, location, etc.

8) Do you already have teaching experience (other than internships)?

9)How did your teaching practicum went?

10) What do you think about the teacher initial training program?

11) Are you naturally anxious?

12) Are you familiar with the use of virtual reality software?

APPENDIX C

Nom et prénom : Participant 1

Questionnaire général

1) Quel est ton âge ? 24 ans
2) Quel est ton sexe ? Femme
3) Quelle formation as-tu suivie pour ton bachelier et dans quelle université ?

J'ai suivi un bachelier en traduction et interprétariat en anglais et néerlandais à L'EII, UMons.

4) Quelle formation as-tu suivie pour ton master et dans quelle université ?

Pour mon master, je suis une formation en langues et lettres germaniques à finalité didactique en anglais et néerlandais. Etant donné que je viens d'une formation en traduction et non en langues et lettres, j'ai dû suivre 30 crédits supplémentaires dans le cadre de mon master.

5) Quelle est ta langue maternelle ?

Ma langue maternelle est le français.

6) Quelles sont les langues que tu parles (hors langue maternelle) ? Avec quelle(s) langue(s) as-tu le plus de facilité ? Classe les dans l'ordre.

Les langues que je parle en dehors de ma langue maternelle sont uniquement les langues étudiées dans le cadre de mes études, à savoir le néerlandais et l'anglais. Je me sens plus à l'aise en anglais qu'en néerlandais.

1= anglais

2= néerlandais

7) As-tu vécu à l'étranger ? Erasmus/année sabbatique/autre. Si oui, communique des informations relatives à la durée, le programme suivi, le lieu, etc.

Non, je ne suis jamais allé vivre à l'étranger. Les seuls moments où j'ai l'occasion de parler anglais et/ou néerlandais c'est lorsque je pars en vacances ou en city-trip dans un endroit où le français n'est pas la langue parlée. Cependant, dans le cadre de ma dernière année de bachelier, j'ai effectué un stage d'un mois au shape à Mons. Pendant ce stage, j'étais quotidiennement en contact avec des Américains avec lesquels j'ai pu pratiquer l'anglais.

8) Comment tes stages se sont-ils passés ?

Mon stage de néerlandais s'est assez bien passé, j'avais une très bonne entente avec ma maitre de stage et elle était très bienveillante avec moi et m'a donné beaucoup de conseils. Par contre, mon stage d'anglais s'est moins bien passé. L'entente entre ma maitre de stage et moi-même n'était pas bonne. J'ai même vécu des situations pendant lesquelles des élèves se moquaient de moi à cause de fautes de prononciation. Ce stage a été une grosse source de stress pour moi et de remise en question par rapport au métier d'enseignant.

9) Que penses-tu de la formation initiale des futurs enseignants ?

Je trouve que la formation doit être améliorée. On a beaucoup de cours théoriques, qui, même s'ils sont intéressants, ne sont pas toujours utiles ou pertinent dans la pratique du métier. On devrait avoir plus de mises en situation avant les stages. Les stages sont un critère déterminant de notre réussite, or nous sommes jugés sur quelque chose qu'on fait pour la toute première fois dans notre vie… De plus, je pense que l'organisation des stages est également à revoir. Nous n'avons pas de période fixe pendant laquelle tous les élèves réalisent leurs stages, ce qui implique que nos cours théoriques continuent en parallèle et que nous sommes donc amenés à rater des cours. Certains profs se montrent assez compréhensif mais ce n'est pas le cas de tous les profs…

10) As-tu déjà de l'expérience (autre que les stages) dans l'enseignement ?

Non, je n'ai aucune autre expérience que mes stages dans l'enseignement.

11) Es-tu quelqu'un d'anxieux de nature ?

Non, je ne me définis pas comme quelqu'un d'anxieux de nature mais évidemment j'ai tendance à stresser quand je fais des nouvelles choses pour la première fois.

12) Es-tu familier avec l'utilisation de logiciel de réalité virtuelle ?

Non, je n'ai jamais utilisé de logiciel de réalité virtuelle.

Participant 1

Première session avec Ovation VR

Date : 08/05/2023

DIARIES

1. Qu'est-ce qui te rend anxieux, nerveux ou mal à l'aise à l'idée de la prochaine leçon que tu vas enseigner ?

   Je ne me sens pas particulièrement stressée par rapport à la prochaine leçon que je vais enseigner. Je trouve que le fait que cela soit de la réalité virtuelle est assez rassurant et me permet d'être moins stressée que lors de mes stages. Cependant, je dois quand même dire que la chose qui me stresse quand même est l'utilisation du logiciel de réalité virtuelle car je n'en ai jamais utilisé.

Consigne : Ecris ce que tu as ressenti pendant cette session d'enseignement avec Ovation VR, que ce soit positif et/ou négatif. Tu peux t'aider de la question ci-dessous pour formuler ta réponse.

2. Qu'est-ce qui t'a rendu anxieux, nerveux ou mal à l'aise pendant que tu enseignais ?

Cette première expérience avec la réalité virtuelle s'est relativement bien passée. Comme je le pensais, c'est beaucoup moins stressant d'enseigner devant une audience virtuelle plutôt que devant une classe. Même si j'étais quand même un peu anxieuse et je n'ai pas pu totalement profiter de cette première session car j'étais parfois un peu perdue avec le logiciel Ovation VR. En plus, même si c'est moins stressant de ne pas avoir de vrais élèves en face de moi, c'est quand même bizarre de ne pas avoir de réelles interactions avec l'audience virtuelle.

TRANSCRIPTIONS

Hello everyone, I am going to be your teacher for the next four session (GR) (TrV). (P) The topic that we are going to cover together is called “Health (PrM) is not the absence of disease (FP)”. (P)Then, (P) in order to introduce this topic, you are going to do a vocabulary exercise (TrV). (P) On this exercise you have five pictures that you have to mix (MisW) (P) with the corresponding sentences below (P). Once you are finished with this first exercise, you’ll find below another exercise that you’ll have to do for the next session, as a (GR) homework.

INTERVIEW

Q : Est-ce que tu es généralement stressée avant de rentrer en classe ? Si oui, est-ce aussi le cas en commençant la session avec le logiciel de réalité virtuelle ?

R : oui, pendant mes stages, j’étais toujours stressée avant de rentrer en classe et de commencer à donner cours. C’est stressant de faire quelque chose pour la première fois et de savoir qu’on est jugés dessus et que notre réussite en dépend. L’utilisation de la réalité virtuelle rend l’expérience moins stressante et permet, je trouve, de se concentrer uniquement sur un aspect de l’enseignement à la fois. Par exemple, pendant la première session, j’ai essayé de me concentrer uniquement sur la manière dont je donnais les consignes, car j’avais la chance de ne pas être stressée par des éventuelles questions des élèves.

Q : Est-ce que tu te sens stressé quand les élèves ne participent pas aux activités ? Comment l’as-tu ressenti dans cette première session avec Ovation VR ?

R : Oui, c’était aussi une de mes craintes pendant les stages. J’avais peur que les élèves ne soient pas intéressés ou n’aient pas envie de participer. J’avais aussi un peu cette crainte pendant cette première session avec le logiciel. J’ai trouvé ça bizarre de ne pas avoir d’interactions avec les « élèves ». Même si, comme je viens de le dire pour la première question, ça permet de se concentrer sur un seul aspect de l’enseignement à la fois.

Q : Est-ce que tu penses que quand tu es anxieuse en classe, tu as tendance à faire des erreurs en Anglais ?

R : J’aurai tendance à dire que oui mais je pense que je ne m’en rends pas vraiment compte. En tout cas, pendant mes stages, j’étais souvent trop stressée et occupée pour me concentrer sur mes éventuelles erreurs.

Deuxième session avec Ovation VR

Date : 09/05/2023

DIARIES

Consigne : Ecris ce que tu as ressenti pendant cette session d’enseignement avec Ovation VR, que ce soit positif et/ou négatif. Tu peux t’aider de la question ci-dessous pour formuler ta réponse

1. Qu'est-ce qui t’a rendu anxieux, nerveux ou mal à l'aise pendant que tu enseignais ?

Cette deuxième session d’enseignement avec Ovation VR s’est encore mieux passée que la première. Le logiciel de VR est assez intuitif et on apprend assez vite à se déplacer dans la classe, ce que je n’avais pas fait pendant la première séance. Par contre, j’étais un peu moins à l’aise avec le sujet de la leçon. Déjà pendant mes stages, je trouvais que c’était difficile d’expliquer les points de grammaire. Ce qui m’a manqué par contre c’est de ne pas pouvoir écrire les règles grammaticales sur un tableau. Je trouve que c’est plus facile d’expliquer de la grammaire en écrivant les règles, plutôt qu’en les expliquant simplement oralement. De plus, j’étais toujours assez perturbée par le fait de ne pas avoir d’interaction

avec l'audience virtuelle. Sur le moment même c'est rassurant de savoir qu'on n'aura pas de questions auxquelles on n'est pas préparé mais je trouve que ça ne reflète pas vraiment la réalité non plus.

TRANSCRIPTIONS

Hello everyone, I hope that you are all doing great. (P) As you might have seen in the homework that I gave you yesterday (P), we're going to do some grammar today. The grammar point that we are going to cover is "modal verbs (PRM)" (FP) and more particularly two modal verbs (PRM): "could" and "should". There are modal verbs (PRM) that express suggestion and/or advice. As for every modal verbs (GR) (PRM), we use those verbs in the infinitive form without the "to". (P)You have two examples at the bottom of your page:

-You could participate in physical activities.

-You should drink more water.

(P) Alright (p), so, now that I have explained you how to use these verbs, you can do the exercise C on the next page.

INTERVIEW

Q : Est-ce que les erreurs de prononciation de rendent anxieuse ?

A : Oui, car j'ai peur que les élèves se moquent de moi ou qu'ils pensent que je ne maitrise pas suffisamment l'anglais.

Q : Est-ce que tu te sens stressée quand tu enseignes un point de grammaire ? Si oui, penses-tu que la RV peut t'aider à t'améliorer sur ce point ?

R : ça ne me stresse pas tellement mais je trouve ça difficile d'expliquer quelque chose qui semble naturel pour moi à des apprenants. Je suis obligée de revoir les règles de grammaire à l'avance, sinon je ne serai pas capable de l'enseigner. De ce fait, j'ai peur que les élèves me posent des questions auxquelles je n'ai pas les éléments suffisants de réponses pour qu'ils comprennent. Je pense que si Ovation VR pouvait faire intervenir l'audience virtuelle, ça pourrait m'aider à apprendre comment mieux gérés les questions des élèves que je ne maitrise pas.

Troisième session avec Ovation VR

Date : 12/05/2023

DIARIES

Consigne : Ecris ce que tu as ressenti pendant cette session d'enseignement avec Ovation VR, que ce soit positif et/ou négatif. Tu peux t'aider de la question ci-dessous pour formuler ta réponse

1. Qu'est-ce qui t'a rendu anxieux, nerveux ou mal à l'aise pendant que tu enseignais ?

Ce que je trouve réellement positif avec Ovation VR, c'est qu'on peut se réécouter après chaque séance, ce qui permet de voir nos points forts et nos points à améliorer. En réécoutant cette séance, je me suis rendu compte que j'avais souvent des hésitations et disait souvent « Euhhhhh… », ce qui est assez ennuyant, je vais essaye d'y faire plus attention.

TRANSCRIPTIONS

Good morning, guys! I hope that everyone is doing fine. Today, you are going to read a text that is called "the healthy mayor". (p) Ah, mince, je n'aurai pas dû lire le titre (rires) (NTL). (P)

Okay, (P) so, first you are only going to read the title of the text and (p) then, you have to guess what it could be about. Then you'll read the text and answer the two questions below that are: "Why was Bloomberg called 'the healthy mayor'? Explain in other words." And then, the second question: Some people thought Bloomberg was wrong. Do you agree or disagree with this statement? Why?"

INTERVIEWS

Q : Est-ce qu'en règle générale, tu te sentais anxieuse quand ton/ta maitre de stage t'observais ? Est-ce la même chose avec Ovation VR ?

R : ça dépendait des situations et du maitre de stage. Mon premier maitre de stage (pour mon stage d'anglais) n'était pas vraiment bienveillant et patient. J'avais l'impression qu'il s'attendait à ce que tout soit fait à la perfection dès la première fois donc j'étais très anxieuse car je savais à l'avance que je recevrai un feedback négatif de sa part même si j'essayais de bien faire. Par contre, pour mon stage de néerlandais, j'avais un maitre de stage plus gentil et compréhensif et sa présence en classe me rassurait. De plus, pendant les stages, j'essayais de me concentrer uniquement sur l'aspect didactique et moins sur l'aspect pédagogique et de la gestion de la classe, donc je savais que je pouvais compter sur le maitre de stage dès que les élèves commençaient à être plus dissipés.

Q : Est-ce que tu penses qu'Ovation VR peut être un bon moyen de s'entrainer à donner cours ?

R : Oui, je pense que ça peut être utile mais d'après moi, il faudrait vraiment qu'on puisse avoir une audience virtuelle avec laquelle réagir. En attendant, ovation VR permet de s'entrainer à donner cours, donner des consignes, pratiquer la langue cible dans le cadre de l'enseignement. De plus, même si je trouve qu'enseigner face à une audience virtuelle qui réagit certes mais qui ne pose pas de questions, permets quand même de se préparer à un scénario similaire dans la réalité. Il y a parfois des classes dans lesquelles les élèves sont très passifs et n'interviennent pas.

Quatrième session avec Ovation VR

Date : 16/05/2023

DIARIES

Consigne : Ecris ce que tu as ressenti pendant cette session d'enseignement avec Ovation VR, que ce soit positif et/ou négatif. Tu peux t'aider de la question ci-dessous pour formuler ta réponse

1. Qu'est-ce qui t'a rendu anxieux, nerveux ou mal à l'aise pendant que tu enseignais ?

Je ne me suis pas sentie stressée pendant cette séance. En ce qui concerne l'utilisation du logiciel, je ne me sens plus stressée non plus. Je trouve que le logiciel est assez intuitif et qu'on prend assez vite l'habitude de l'utiliser.

TRANSCRIPTION

Good afternoon, everyone! Today is the last time that we are going to see each other. For our last session together, I would like you to do a group presentation on the topic of our sequence. This will permit (MisW) you to use the new vocabulary seen as part of this sequence.

The question that you'll have to answer for your group presentation is the following: How could you improve the physical, mental and social wellbeing at school?

(P) You guys can work in groups of (P) 3 to 4 people, and I'll give you about (P) 15 minutes to prepare your presentations. At the end of the 15 minutes, some of you will come in front of the classroom to give their presentation.

INTERVIEWS

Q : Est-ce que tu penses que les stages pourraient en partie être remplacés par des sessions d'enseignement via ovation VR ? Quels seraient les avantages ? Quels seraient les inconvénients ?

R : Je ne sais pas si ça pourrait complètement remplacer les stages car je pense qu'on a quand même besoin de vivre les conditions réelles d'enseignement dans notre formation. Cependant, je pense que ça pourrait être un bon outil pour s'entrainer avant les stages et nous mettre en confiance. De plus, ça pourrait être une façon de s'entrainer qui n'implique pas des déplacements contraignants, contrairement aux stages.

Q : Quels sont les changements que tu apporterais à ce logiciel pour l'améliorer ?

R : Selon moi il faudrait absolument trouver un moyen pour que l'expérience ait l'air encore plus réelle, avec une audience virtuelle qui réagit au contenu de ce qui est dit, qui pose des questions.

APPENDIX D

Health is not the absence of disease…

1) A healthy lifestyle?

Here are five pictures that describe my daily routine.

A. Do you think I have a healthy lifestyle? Why?

Write the sentences below under the corresponding pictures:

I am a workaholic. – I am addicted to my phone. – I eat too much fast food. – I drink 1 liter coffee a day. – I always feel exhausted.

B. How could I improve my lifestyle?

I am a workaholic.	You could .....
I am addicted to my phone.	.....
I eat too much fast food.	.....
I drink 1 liter coffee a day.	You should.....
I always feel exhausted.	.....

Grammar spot

"Could" et "should" sont des auxiliaires de mode. Ils expriment un conseil, une suggestion.

→ Sujet + could /should (auxiliaire) + verbe à l'infinitif sans « to » + autres informations

Examples:

- You could participate in physical activities.
- You should drink more water.

Health is not the absence of disease…

C. What else could be done to lead a healthy lifestyle?

2) Reading – "The healthy mayor" (Navigate – Elementary A2 – Unit 7 – page 66)

A. Read the title only! – What do you think the mayor did?

.....

.....

In 2002 New York City chose a new mayor, Michael Bloomberg. Bloomberg wanted the people of New York to be healthy. In his opinion, they did the wrong things: they ate the wrong food, they smoked, they drove everywhere and they did little or no exercise.

So Bloomberg tried to change their habits. Before he was mayor, restaurant menus only gave the price of the food. But after 2007 restaurants wrote the number of calories contained in their food on the menu. He banned smoking in public places. He also tried to reduce the size of sweet drinks, like Coca Cola (but the Supreme Court stopped him).

Bloomberg had other messages for New Yorkers too: do more exercise, leave your car at home, walk or ride a bicycle and take the stairs when you can. He told them he always took the stars, not the lift. Some people thought Bloomberg was wrong. People's health is their business. But is it?

B. Why was Bloomberg called "the healthy mayor"? (Explain in other words!)

.....

.....

.....

C. "Some people thought Bloomberg was wrong." Do you agree or disagree with this statement? Why?

.....

.....

3) Speaking – "Health is not the absence of disease..." (group presentation)

The World Health Organisation (WHO) defines health as 'a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity'

(wellbeing = bien-être; merely = simplement)

How could you improve the physical, mental and social wellbeing at school?

Health is not the absence of disease...

"Health is not the absence of disease."

Exercise 1 – A healthy lifestyle?

Methodological aspects:

In the first exercise, students look at five pictures and have to describe them using the sentences below. Afterwards, there is a class discussion in which they can express themselves on this lifestyle: Is that a healthy lifestyle or not? Do they recognise themselves in some of these pictures? if so, why? ... This first part of the exercise allows us to introduce the topic of this lesson and gives the pupils the opportunity to speak.

In the second part of the exercise, the pupils have to write 5 tips to lead a healthier lifestyle. We then discuss together the different pieces of advice that they provide. In order to do this exercise properly, they will have to use the modal auxiliary verbs "could" and "should". We will then give a short grammatical explanation (or a grammatical reminder) about this so that they can use these verbs correctly. This will also be useful for their presentation at the end of the lesson. This second part allows the students to learn new vocabulary related to a healthy lifestyle and also to use two modal verbs.

The last part of this exercise is a brainstorming in which the pupils can share other ideas if they wish, other ways to lead a healthy life. This exercise, again, allows them to express themselves and learn new vocabulary.

1) A healthy lifestyle?

Here are five pictures that describe my daily routine.

A. Do you think I have a healthy lifestyle? Why?

I am addicted to my phone.

I eat too much fast food.

I drink 1 liter coffee a day.

I am a workaholic.

I always feel exhausted.

Write the sentences below under the corresponding pictures:

I am a workaholic. – I am addicted to my phone. – I eat too much fast food. – I drink 1 liter coffee a day. – I always feel exhausted.

Health is not the absence of disease...

B. How could I improve my lifestyle?

I am a workaholic.	You could try to take some time off in order to relax/chill.
I am addicted to my phone.	You could put your phone away while you're at home.
I eat too much fast food.	Time to change that! You should eat fruit and veggies.
I drink 1 liter coffee a day.	You should definitely reduce coffee and drink water instead.
I always feel exhausted.	You could go to bed earlier and wake up earlier as well.

Grammar spot

"Could" et "should" sont des auxiliaires de mode. Ils expriment un conseil, une suggestion.

→ Sujet + could /should (auxiliaire) + verbe à l'infinitif sans « to » + autres informations

Examples:

- You could participate in physical activities.
- You should drink more water.

C. What else could be done to lead a healthy lifestyle?

Exercise 2 – Reading "the healthy mayor"

Methodological aspects:

This part focuses on a reading comprehension. After introducing some key ideas and some new vocabulary about the topic "lifestyle", the pupils are asked to read a short text about the mayor of New York trying to install healthier habits among the population. This exercise is split into two phases:

- Phase 1 – Pre-reading comprehension

The pupils only read the title and try to guess what the text is about. It is also a way to teach them how important it is to read and then understand the title in order to form an idea about the topic tackled by the text. We draw the key ideas together.

- Phase 2 – Reading comprehension

In this case the pupils simply read the text, confirm or infirm the ideas drawn in phase 1 and then answer the questions that we correct together. Questions B. and C. are meant to trigger the pupils' thinking about the topic "health" and what it implies. This exercise also serves another purpose: the introduction of the main topic of the lesson, e.g. "Health is not the absence of disease." In the end the learners already know a bit of vocabulary about "health" and they have just read a short text full of examples to deal with that topic.

Health is not the absence of disease…

2) Reading – "The healthy mayor" (Navigate – Elementary A2 – Unit 7 – page 66)

D. Read the title only! – What do you think the mayor did?

Ideas: He became the strongest/fittest mayor of the US. / He put all the American population on diet because we all know that they're too fat. / He banned fast food. / etc.

In 2002 New York City chose a new mayor, Michael Bloomberg. Bloomberg wanted the people of New York to be healthy. In his opinion, they did the wrong things: they ate the wrong food, they smoked, they drove everywhere and they did little or no exercise.

So Bloomberg tried to change their habits. Before he was mayor, restaurant menus only gave the price of the food. But after 2007 restaurants wrote the number of calories contained in their food on the menu. He banned smoking in public places. He also tried to reduce the size of sweet drinks, like Coca Cola (but the Supreme Court stopped him).

Bloomberg had other messages for New Yorkers too: do more exercise, leave your car at home, walk or ride a bicycle and take the stairs when you can. He told them he always took the stars, not the lift. Some people thought Bloomberg was wrong. People's health is their business. But is it?

E. Why was Bloomberg called "the healthy mayor"? (Explain in other words!)

He is particularly famous because he asked the restaurant owners to write on their menu how many calories were contained in their food. People couldn't smoke in public places anymore. He really tried to change the New Yorkers' unhealthy habits (more exercise, walk more often, etc.)

F. "Some people thought Bloomberg was wrong." Do you agree or disagree with this statement? Why?

Answers depending on the pupils' opinions.

Exercise 3 – Group presentation

Methodological aspects:

Since the topic in itself is not easy for learners with an A2 level in English, we have designed exercise 3 as a group presentation. The pupils usually feel more confident to work with their peers to execute a task in a foreign language. Presenting in front of their classmates is always intimidating. As a group they might feel less insecure while being surrounded by their friends. Besides one member of the group may feel more at ease at speaking English than the others and could be in charge of explaining more complex ideas or concepts. Finally working in a team on a regular basis will prepare them to face the world outside school where group management skills are crucial

Steps of the exercise:

- The pupils form groups of 3 to 4 students.
- They roughly have 5 minutes to prepare a short presentation about the topic "How could you improve the physical, mental and social wellbeing at school?"

Health is not the absence of disease…

- They have to include <u>at least 3 relevant arguments</u> to support their ideas.

After each group the other pupils can obviously react to the presentation and share their opinion.

- ⇨ Do they agree? Why?
- ⇨ Do they disagree? Why?

3) <u>Speaking – "Health is not the absence of disease..."</u> (group presentation)

The World Health Organisation (WHO) defines health as 'a state of complete physical, mental and social **wellbeing** and not **merely** the absence of disease or infirmity'

(**wellbeing** = bien-être; **merely** = simplement)

How could you improve the physical, mental and social wellbeing at school?

Health is not the absence of disease...

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