

Master's Degree in Language Sciences

Final Thesis

The Impact of Non-Formal FL Learning at the Museum on Vocabulary Learning. A Virtual Experience

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	V
ABSTRACT	VI
INTRODUCTION	VII
1. LITERATURE REVIEW	
1.1 Non-Formal Learning at the Museum	1
1.1.1 Non-formal Learning. Definitions and Policies	1
1.1.2 Learning at the Museum: The Contextual Model	6
1.2 The Framework of Non-Formal FL Learning at the Museum	8
1.2.1 A Model for Language Learning beyond the Classroom	8
1.2.2 The Theoretical Framework for Cross-Curricular Art and Language Learning.	9
1.2.3 CLIL and Non-Formal Language Learning: Which Analogies?	12
1.3 Vocabulary Learning	17
1.3.1 What is a Word? Definitions and Categorizations	17
1.3.2 Knowing a Word	20
1.3.3 An Introduction to the Current Theories Underpinning Vocabulary Learning	23

1.3.4 Learning Vocabulary at the Museum

1.4 Two Applications of CALL. Distance and Virtual Learning	29
1.4.1 Defining CALL	29
1.4.2 Introducing Distance Learning. Advantages and Disadvantages	
1.4.3 An Introduction to Synchronous Distance Language Learning	34
1.4.4 Learning FL through Virtual Museums and Tours	

2. THE STUDY

2.1 Introduction
2.2 School Context and Participants41
2.3 Overview of the module43
2.3.1 Modality, Structure and Content43
2.3.2 Teaching Method45
2.4 Methodology of Research
2.4.1 Instruments
2.4.1.1 The Pre-test and the Post-test
2.4.1.2 The Questionnaire
2.4.2 Administration
2.4.3 Data Analysis Procedures54
2.5 Results
2.5.1 Test Results
2.5.2 Questionnaire Results. The Likert Scale
2.5.3 Questionnaire Results. The Open-ended Item60

2.6 Discussion
2.6.1 Vocabulary Learning
2.6.2 Students' Satisfaction
2.7 Conclusions
2.8 Limitations of the Study
2.9 Further Observations and Suggestions for Future Research
CONCLUSION
REFERENCES
LINKS

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To live in Venice or even to visit it means that you fall in love with the city itself. (Peggy Guggenheim)

ABSTRACT

The present study aims at exploring the impact of a module based on the combination of CLIL and non-formal FL learning, designed around a virtual museum tour, on students' EFL receptive and productive vocabulary knowledge. The actual artworks of the museum were the starting point to develop interactive activities which were key to promoting students' vocabulary learning in innovative ways concerning both the teaching methodology and the mode of delivery. Lexical knowledge is indeed a crucial part of mastering a FL. Yet, it is the aspect which causes the greatest problems and concerns for students. Previous research mostly based on qualitative methods has already established that museum FL learning can produce a positive impact on students' vocabulary learning. In this study statistical methods were employed to support these findings. In particular, data were collected through the administration of a pre-test before the module in order to establish the initial level of the students, and of a post-test aiming at examining their improvements. The results of the tests were also triangulated with those of a questionnaire in which the students reported their perceived outcomes after the activities. Results show that students actually improved their vocabulary knowledge after the module and perceived this improvement.

Furthermore, the main novelty of this study consists in the delivery of the lessons: they were held via synchronous computer-mediated communication (i.e., videoconferencing) and the visit was virtual, following important new trends in language teaching. In this context, this study confirms the established research suggesting that computer-mediated learning can be beneficial to the development of vocabulary knowledge thanks to its collaborative and interactive nature. Moreover, it lines up with several studies claiming the positive impact of VR technologies on permitting learners to take advantage of immersive environments (such as virtual tours) in which they can have access to both meaningful communication and multi-sensorial stimuli.

INTRODUCTION

This MA research project aims at investigating the impact of an art-based CLIL module on vocabulary learning. The module revolves around a museum visit and is consistent with the theoretical framework underpinning non-formal FL learning. Yet, the current study presents several aspects which differentiate it from the previous research on the field. First of all, the lessons were completely delivered online through synchronous videoconferencing and the visit took place virtually, taking advantage of 360° views of museum's spaces. Secondly, quantitative methods have been mixed with qualitative ones in order to address the following research questions about vocabulary learning:

- 1. Does virtual FL learning at the museum have a positive impact on students' vocabulary learning?
- 2. Do students perceive virtual FL learning at the museum as beneficial to their vocabulary knowledge?

Thus, a triangulation was carried out to support the established qualitative research claiming that FL learning at the museum has a positive impact on students' vocabulary knowledge. As you will be able to read in the second chapter of this dissertation which is dedicated to the presentation of the current study, this triangulation has been productive in leading us to the confirmation of the pre-determined hypotheses: 1) students improved in vocabulary knowledge after the treatment and that 2) they perceived this vocabulary improvement. In particular, in order to address the first research question and to confirm the first hypothesis, the results of a pre-test and a post-test were compared through. In order to answer the second research question, confirm the second hypothesis and, at the same time, provide data to augment the validity of the study's conclusions, a questionnaire was administered to the students.

Therefore, this research project seems to support and enlarge the scope of the previous studies on the field of FL learning at the museum. This type of learning is described in § 1.1 in which we illustrate the characteristics of non-formal museum learning in general, and in § 1.2 in which we ponder in more depth on the specific framework of FL learning at the museum and how its analogies with CLIL make the combination between the two methodologies possible. Both non-formal FL learning and CLIL are gaining increasing eminence thanks to policies promoting them and to the positive impact they appear to have on FL learning. In this regard, in § 1.3, we focus in more detail on the research which explicitly mentions the benefits of FL vocabulary learning/acquisition at the museum. Vocabulary learning seems to be particularly facilitated by the abovementioned methodology, since it enables students to live learning experiences in which they can take advantage of diverse stimuli and interact with other participants and with the displayed objects. Furthermore, FL learning at the museum possesses intrinsic characteristics which permit the implementation of certain teaching

approaches which are thought to have a positive impact on vocabulary learning (see § 1.3.4). In particular, in section 1.3, we specifically focussed on defining a word, on the knowledge needed to master receptive and productive FL vocabulary, and on the theoretical framework that constitutes the basis of vocabulary learning. In this respect, many scholars have recently recognized and emphasised the pivotal role of vocabulary in FL learning and have developed several operational theories mainly based on inductive methods.

This study could be also considered as an incentive towards the possible enlargement of the modes of delivery of FL learning at the museum lessons and visits. The application of synchronous computer-mediated communication and VR tools has been indeed a fundamental part of this learning experience. In § 1.4 we talk about these very technologies in several paragraphs dedicated to distance language learning, which was applied through synchronous videoconferencing in our lessons. We also ponder on the uses of VR tools permitting 360° views employed to carry out museum visits and provide students with a wide variety of stimuli. In the field of educational linguistics, apparently no studies in which these technologies have been employed in non-formal FL learning at the museum have been conducted before. For this reason, we thought that including a few items in the abovementioned questionnaire in order to detect the level of students' satisfaction with this innovative mode was particularly appropriate. In fact, in this way, we were able to attest that apart from bringing linguistic benefits, this new mode is also appreciated by FL learners.

1. LITERATURE REVIEW

1.1 Non-Formal Learning at the Museum

1.1.1 Non-Formal Learning. Definitions and Policies

In recent years, more attention has been drawn to the study of informal and non-formal learning, besides traditional formal learning. Accordingly, Benson and Reinders (2011), referring in particular to language learning, state that learning can potentially take place in an infinite variety of environments. In fact, teachers must always bear in mind that learning is not confined to the classroom: both in-school and out-of-school contexts can host learning experiences which can bring to massive positive effects on students' individual educational achievements.

In the attempt of defining in- and out-of-school learning, many researchers have kept them strictly separate, considering them two polar opposites; that is, firmly contrasting formal learning to informal learning. This view may be considered outdated, yet, a general overview of the differences between informal and formal learning can be useful to define them. This overview is provided in Table1 following Hofstein and Rosenfeld's model (1996). These scholars describe, systemize and summarise the main features of the two types of learning as follows:

Informal Learning	Formal Learning
Voluntary	Compulsory
Unstructured	Structured
Unsequenced	Sequenced
Non-assessed	Assessed
Unevaluated	Evaluated
Open-ended	Close-ended
Learner-led	Teacher-led
Learner-centred	Teacher-centred
Out-of-school context	Classroom context
Non-curriculum based	Curriculum-based
Many unintended	Fewer unintended
outcomes	outcomes
Less directly measurable	Empirically measured
outcomes	outcomes
Social intercourse	Solitary work

1	Non-directed or learner	Teacher directed	
C	directed		

TABLE 1. FEATURES OF FORMAL AND INFORMAL LEARNING (HOFSTEIN AND ROSENFELD 1996)

Colley, Hodkinson and Malcolm (2002) complement this model by emphasizing a few more items of interest. According to them, while formal learning is directly bound to education and educational premises, informal learning is not. Moreover, the latter's learning purpose is implicit and of secondary importance and its objectives are internally determined, instead of being established by an external authority such as the teacher. The context is another aspect which has been taken into consideration in their study: formal learning is claimed to be applicable on a range of contexts, while informal learning is context specific, meaning that it can only be employed in the same or similar contexts. Therefore, Hofstein and Rosenfeld's model and Colley, Hodkinson and Malcom's integrations help to delineate accurately the main differences between formal and non-formal learning. The former appears to be far more rigid and structured than the latter and, in general terms, more teacher-centred.

Many scholars, like Hofstein and Rosenfeld themselves, disagree on the idea of insurmountable sharp distinctions and opt for a more fluid view, suggesting a *continuum* which encompasses the two types of learning. They go beyond the over-simplistic concept of informal learning and prefer a hybrid definition, considering that learning traditions are "neither mutually exclusive nor exhaustive" (Callanan et al. 2011, 648; as cited by Bellini 2018). Among these scholars, Eshach (2007) proposes a more complete categorization which comprehends further differences based on motivation, learning/teaching approach, social context, evaluation and timeframe (see Tab. 2).

Formal	Non-Formal	Informal
Usually at school	At institution out	Everywhere
	of school	
May be repressive	Usually supportive	Supportive
Structured	Structured	Unstructured
Usually	Usually	Spontaneous
prearranged	prearranged	
Motivation is	Motivation may be	Motivation is
typically extrinsic	extrinsic but it is	mainly intrinsic
	typically more	
	intrinsic	
Compulsory	Usually voluntary	Voluntary
Teacher-led	May be guide or	Usually learner-
	teacher-led	led
Learning is	Learning is usually	Learning is not
evaluated	not evaluated	evaluated
Sequential	Typically non-	Non-sequential
	sequential	

TABLE 2. DIFFERENCES BETWEEN FORMAL, NON-FORMAL AND INFORMAL LEARNING (ESHACH 2007, 174)

As shown in Table 2, Eshach (2007) adds a new category, non-formal learning, to the framework presented previously in this section. Indeed, this author states that out-of-school learning is not only equal to informal learning, but can also coincide with non-formal learning. This distinction mostly depends on the level of structure, the presence of an external guidance and the kind of context. In his view, informal learning occurs in ordinary places where people usually spend their time carrying out most of their daily activities. On the contrary, non-formal learning takes place in more institutionalized environments, such as zoos, museums, aquariums, planetariums etc., and the visits are prepared and structured to some extent by a teacher or an educator. The purpose of these visits is the actual promotion of a bridge between in-school and out-of-school learning, thanks to places that can be considered the right halfway between the school context and other contexts in which learners can engage in meaningful learning activities during their day-to-day routine out-of-school.

Consequently, in spite of all the applicable definitions, labelling formal, non-formal and informal learning is quite a difficult-and almost inappropriate-task which is the cause of many problems and much confusion. Since these types of learning can only be embedded into fluid categories, representing them not as rigidly divided but in a continuous line like in the table (3) designed by the author of this dissertation might be more adequate:



TABLE 3. FORMAL, NON-FORMAL, INFORMAL LEARNING IN AN INTERACTIVE CONTINUUM.

In this *continuum* the three types of learning do not have a stable position, but can influence each other and occur simultaneously, as suggested by Benson and Reinders (2011). In particular, concerning non-formal learning, these scholars highlight the possibility of easily integrating it in formal education, for example taking students to school-based field trips. In this way, students may be able to engage in practical activities linked to the external world and, at the same time, to the school curriculum. In short:

Non-formal learning does not exclude the classroom but rather CONNECTS with it. (Benson and Reinders 2017; 563)

In this perspective, European and Italian policies are trying to encourage the development of nonformal learning in line with the idea that the gap between in- and out-of-school learning needs bridging. For a start, one of the most important definitions given to non-formal learning in order to distinguish it from formal and informal learning has been formulated by the European Commission: Non- formal learning means learning which takes place through planned activities (in terms of learning objectives, learning time) where some form of learning support is present (e.g. student-teacher relationships); it may cover programmes to impart work skills, adult literacy and basic education for early school leavers; very common cases of non-formal learning include in-company training, through which companies update and improve the skills of their workers such as ICT [i.e. Information and Communication Technologies] skills, structured on-line learning (e.g. by making use of open educational resources¹), and courses organised by civil society organisations for their members, their target group or the general public. (European Commission 2012, 5)

These lines reflect and summarize non-formal learning's main characteristics, briefly commented previously in this paragraph. Furthermore, they provide more examples of contexts and ways of implementation. Integrating this definition and Eshach's model, Fazzi (2020) delineates non-formal learning activities/projects' main features:

1) They take place in settings beyond the classroom, such as summer camps, youth groups, clubs, churches, museums, theatres, online platforms, parks, etc.

2) They are structured in terms of learning objectives, time, and contents.

3) They involve some sort of learning support.

4) They involve intentional learning from the learner's perspective.

5) They are usually experience based, and focus on meaning rather than on form.

6) They are not usually awarded grades/qualifications, unless they are part of a formal module both inside and outside the classroom.

7) They are generally non-sequential, and/or have a short duration.

8) They usually involve a strong intrinsic motivational component. (Fazzi 2020, 23)

The eminence of the 2012 European Commission's definition is also due to the particular occasion in which it was brought to light. In fact, 2012 was a meaningful year for non-formal learning policies because the European Commission started the process of its validation which was to be entirely

¹ Open educational resources (OER) are 'digitised materials offered freely and openly for educators, students and selflearners to use and reuse for teaching, learning and research; it includes learning content, software tools to develop, use and distribute content, and implementation resources such as open licenses; OER also refers to accumulated digital assets that can be adjusted and which provide benefits without restricting the possibilities for others to enjoy them.' (European Commission 2012, 5)

completed by 2018. For the European Commission "validating" means officially confirming that an individual has achieved certain standardized and measurable learning outcomes. The confirmation can be granted only after the following four phases:

1. identification through dialogue of particular experiences of an individual;

2. documentation to make visible the individual's experiences;

3. formal assessment of these experiences; and

4. certification of the results of the assessment which may lead to a partial or full qualification. (European Commission 2012, 5)

These phases seem to be an input for studies on the field and, in the same paper, they are accompanied by a recommendation on the recognition of the whole range of knowledge and competences which a person can acquire in different kinds of situations. Furthermore, adopting official measures for the implementation of non-formal learning in the educational sector is a step towards the acknowledgement of the importance of creating the right factual practises.

This policy was preceded by the European Council Resolution on a renewed framework for European cooperation in the youth field (2010-2018) in 2009. In particular, the need to promote an incentive to complement formal education with non-formal and informal learning for young people and to find ways to connect these types of learning together is clearly stated in the section dedicated to education and training. Concerning the specific domain of language learning, clear acknowledgements about the important role which non-formal learning can play in the acquisition of language competences can be found in another paper written in 2014 by the Council of the European Union.

According to the evaluation of these policies by the European Commission (2017), non-formal learning has been an area of great interest and has been recognized and supported by the youth stakeholders who consider its validation a fundamental issue. In particular, the Expert Group Report on non-formal learning (2014) claims that this type of learning can lead to the development of "creative and innovative potential of young people in ways that are relevant to employability", hence bridging school to the real world.

With respect to Italy, Law 107/2015, also known as *La Buona Scuola* (i.e., *The Good School*), allows new financial resources to school organizations to initiate innovative programmes. The law was issued in 2015 and, since then, it has been providing great chances for the fulfilment of projects dedicated to the advancement of the Italian educational offer with the aim of making it more flexible and adequate to modern society. In fact, *La Buona Scuola* encourages the advancement of FL and digital learning. Moreover, making room for the enhancement of Italian tradition, such as Art and Music, is one of the law's main objectives, specified later in 2017. This brief summary of Law 107/2015 sheds light on the crucial role that it has played also on the promotion of non-formal learning. The latter is indeed characterized by a flexible nature and, at the same time, can perfectly create a connection between school and the external institutions, in particular those where Art is

usually preserved. Thus, it is actually vital that museums make themselves receptive to collaborate with schools.

A step towards this direction was taken by an Italian commission of the International Council of Museums (ICOM) in 2009. Moreover, taking a look at its code of ethics, we can really appreciate the openness demonstrated towards making available the entire museums' heritage to public organizations and institutions. The ICOM's Commission puts particular emphasis on the shared educational mission of school and museums, namely helping pupils become active citizens conscious of their historical and civic identity in a globalized world. This can only happen thanks to inter-disciplinary programmes which can hopefully connect both different school disciplines with each other and school with external institutions. In fact, their development is a core part of the policies presented so far in this paragraph.

1.1.2 Learning at the Museum: The Contextual Model

As we saw in the previous paragraph, non-formal learning can take place in a wide range of settings beyond the classroom. Among these settings we will particularly focus on specific cultural institutions: museums. The centrality of museums for non-formal learning has been observed in the previous paragraph and in the first lines of this section we will try to describe their main characteristics. The concept of "museum" cannot be easily classified since it comprehends a large variety of institutions which implement different types of activities. Furthermore, the idea of museum has consistently changed overtime: from a place in which cultural objects are kept and exhibited exclusively for a few experts (Fazzi 2020) to "a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment." (ICOM 2007). In this perspective, Desvallées and Mairesse (2009) remark the importance of using museums' collections not only to enhance the preservation of artefacts, but also public education.

After these premises concerning the multi-faceted role of museum in modern societies, we can now move on and focus on the models explaining non-formal learning at the museum. First of all, we will leave behind behaviourist models implying passive visitors and ponder on a more complex one. The model we will talk about is more dynamic and refers to visitors as active participants and learners who live an interactive experience in the museum (Clarke 2013). Thus, in particular, in this paragraph Falk and Dierking's *Contextual Model* (2000) will be described since it is usually taken as starting point for the account of non-formal learning processes occurring during a museum visit. Later, the term "model" was modified in favour of "framework", considering the complexity of learning and the resulting impossibility to make certain predictions about it (Falk and Storksdieck 2005). The key words of this framework have been included in the following excerpt by its authors:

Learning can be conceptualized as a contextually driven effort to make meaning in order to survive and prosper within the world; an effort that is best viewed as a continuous, never-ending dialogue between the individual and his or her physical and sociocultural environment. (Falk and Storksdieck 2005, 745)

In this quotation all the components of the *Contextual Model* have been presented: the personal context, the sociocultural context and the physical context. None of them is to be considered fixed and constant, but all of them can change over the lifetime of an individual and among individuals. The first component, the personal context, is linked to subjective motivations and expectations. In the case of museum visits, they are usually oriented to a brief and enjoyable cultural experience (Falk and Storksdieck 2005). This component also encompasses personal beliefs, past knowledge and the desire to control one's own learning. According to the model, all of these aspects influence the learning outcomes of a school-based visit.

The second component is the sociocultural context. Starting from the assumption that human beings have the permanent tendency to socialize, one cannot expect that this aspect does not concern museum learning. In fact, research has shown that visitors are really affected by the interactions and collaborations they establish with individuals from their own social group or even with other groups of visitors and with different types of educators present at the museum.

Finally, the third component, the physical context, can cause different reactions in the visitors. The authors mention architectural design, the space available, the lighting, the sounds and even the objects exhibited themselves, with their labels and their position in the museum. Indeed, these elements have a strong effect on the ways learners interact with the three-dimensional environment and, consequently, learn from it.

Falk and Dierking (2000) insert also the "subsequent reinforcing events and experiences outside the museum" in the physical context. Yet, more precisely, Orion and Hofstein (1994) report on another category which encompasses the activities taking place before or after the visit and connected to it. In particular, these scholars focus on the instructional aims of these activities and expound the need to plan them properly so that the specific learning goals can be achieved. Also DeWitt and Storksdieck (2008; as cited in Fazzi 2018) claim the need to raise awareness on the pivotal role teachers play as mediators during the museum visit and, in particular, on the fact that they should design pre- and post-visit activities in order to improve students' cognitive and affective outcomes.

1.2 The Framework of Non-Formal FL Learning at the Museum

As shown in § 1.1.1, European and Italian policies are calling for a change in education implying an increasing interrelationship between in- and out-of-school learning. With this in mind, the study of foreign language learning should move beyond the traditional classroom, investigating how students use a certain language in a wide variety of settings for their own enjoyment and enrichment. In particular, Wilson (2012) asserts that museums provide students with great opportunities to produce meaningful output by providing them with something relevant and strongly connected to the real world to talk about. Furthermore, in museums FL learners can even come across artefacts which contain linguistic references in the target language. In addition, Shoemaker (1998) states that the complexity of the rich visual environment of the museums requires FL students to make efforts in order to cope with the challenges of a meticulous study of Art, besides those of FL learning. She narrows her focus on Art, but, in more generic terms, we can affirm that non-formal language learning is a cross-disciplinary type of learning which can involve the study of different school subjects. For this reason, non-formal language learning is highly suitable to be successfully included in a large amount of CLIL programmes as will be discussed in § 1.2.3. However, before engaging in the discussion about the analogies between non-formal learning and Content and Language Integrated Learning, it is necessary to ponder on an overview of the main theoretical perspectives which allow a proper understanding of the dynamics of non-formal language learning (§ 1.2.1), focussing in particular on the contexts which are more related to this study, art museums (§ 1.2.2).

1.2.1 A Model for Language Learning beyond the Classroom

In § 1.1.1 the difficulties of rigidly classifying non-formal learning have been highlighted. The same difficulties can also be encountered in educational linguistics research in which a tangle of terms has been employed to define the type FL learning taken into consideration in this dissertation. Benson (2011, 9) chooses *language learning beyond the classroom*, considering this the more inclusive way to name it, but he also provides a long list of alternative terms found in other studies on the same field: 'out-of-class', 'out-of-school', 'after-school', 'extracurricular' and 'extramural'; 'non-formal' and 'informal'; 'self-instructed', 'non instructed' and 'naturalistic'; 'independent', 'self-directed' and 'autonomous' language learning. According to the author, all of these terms refer to a model which embrace four distinct dimensions: location, formality, pedagogy, and locus of control.

The first five terms of the abovementioned list refer to location and imply supplementary activities to classroom learning and teaching. Nevertheless, Benson (2011) remarks that although language learning beyond the classroom generally takes place out-of-school, there are many occasions in which it can be totally delivered inside schools or universities (e.g., through particular tutoring programmes, FL projects, debates, public speaking competitions, performances, school magazines, etc.).

The following dimension, formality, is taken into consideration when we decide to use either 'nonformal' or 'informal' in order to define this type of language learning. This dimension refers to the degree of independence from organized courses aimed at the achievement of formal qualifications. However, Benson states that:

Language learning beyond the classroom does not necessarily imply the absence of tests and qualifications (many students study for a qualification independently of educational institutions), or the absence of teaching, which is more or less implicit in any form of learning. (Benson 2011, 10)

Moreover, this statement is consistent with a notion that should always be kept in mind: the distinction between formal, non-formal and informal learning is not strict and fixed (see § 1.1.1).

Moving to pedagogy, 'self-instructed', 'non-instructed' and 'naturalistic' are used in contrast to instructed language learning. In this respect, the idea of a *continuum* emerges again since Benson (2011) talks about a pedagogical *continuum* between: 1) instructed learning involving formal processes such as sequencing of material, explicit explanation, and testing; and 2) naturalistic learning which is not structured, does not make use of specifically didactic-designed materials and does not imply an intention to learn.

The last dimension of this model is locus of control regarding 'independent', 'self-directed' and 'autonomous' language learning. In this case, the question is about whether the learner or the teacher (or, in more generic terms, the educator) makes the majority of decisions about learning and teaching. Benson (2011) claims that non-classroom settings often lead to more learners' autonomy in these decisions.

Settings are taken into consideration in addition to the four dimensions of Benson's model. In fact, in his opinion, settings do not simply correspond to physical locations, but imply at the same time diverse constraints, circumstances, affordances and, thus, potential for language learning and teaching. In this respect, what Benson (2011) calls *modes of practice* concerns the way in which location, formality, pedagogy and locus of control are actualized in specific settings. In fact, each setting can offer different possibilities and support a wide variety of modes of practice. For example, also in-school activities can be student-centred/directed, while out-of-school activities can be highly structured: it all depends on the way the affordances of a certain setting are used.

1.2.2 The Theoretical Framework for Cross-Curricular Art and Language Learning

In the previous paragraphs we have pondered on a general overview of non-formal learning and nonformal language learning's most important notions. In this paragraph we will narrow our focus on non-formal FL learning starting from the description of Abdhelhadi's model (2019). Since this model represents an exhaustive framework for cross-curricular Art and FL learning but does not specifically focus on museum contexts, some adaptations and integrations have been made.

The theories underpinning non-formal Art and language learning cannot be described without expressing their interconnection beforehand. In this respect, Abdelhadi and her fellow researchers

endeavour to incorporate these theories in a framework graphically exemplified in the following figure (1):



FIGURE 1. THEORETICAL FRAMEWORK FOR CROSS-CURRICULAR ART AND LANGUAGE LEARNING (ABDELHADI ET AL. 2019, 3)

Figure 1 effectively displays the framework in which cross-curricular Art and language learning can be placed. Its outer layer comprehends sociocultural theory/dialogism, critical literacy, multiliteracies and artefactual literacy; while the inner layer interrelates this kind of learning with intercultural and humanistic approaches to language learning.

Since museums are strongly related to culture, a theory known as *Critical literacy* should be taken into consideration. In fact, its supporters see language and culture as intertwined with each other and at the same time with ideologies. For this reason, Pennycock (1997; as cited in Abdelhadi et al. 2019) underlines the importance of providing students with the possibility to get involved in varied cultural experiences and find their own voices against a single hegemonic view of culture. Museums in which artistic or anthropological objects from different societies are exposed are very good examples of suitable places where this theory can be applied extremely easily. Nevertheless, any kind of museum can potentially trigger discussion and reflection on diversity and, thus, meet *Critical Literacy*'s main notions.

Another fundamental theory encompassed in this framework is the *Sociocultural theory*. In this perspective, Vygotsky in 1978 theorised that learning takes place within the "zone of proximal development" through rich stimuli and connections to the prior personal experience. Learners are part of a socially-mediated process in which they are involved together with-and thanks to-family members, teachers, other learners or any significant other. In fact, according to the sociocultural/dialogic approach, learners are considered active agents in need of a facilitator who sustains their learning and makes contextualization available to them. Art museums are perfect locations to promote this view of language learning, since they offer potentially infinite possibilities

of engaging into collaborative learning processes of explanatory talk or inter-thinking (Littleton and Mercer 2013; as cited in Abdelhadi 2019).

Likewise, learning a FL language at the museum can really stimulate students' senses thanks to the presence of diverse literacies, so that the theory of *Multiliteracies* is surely relevant too. First of all, its hallmarks are highly related to Gardner's *Theory of Multiple Intelligences* (1983). This author opposes mono-modal education in favour of the different kinds of intelligence linked to individual aptitudes towards learning (i.e., visual-spatial, linguistic-verbal, logical-mathematical, musical, bodily-kinesthetic, interpersonal, intrapersonal, naturalistic). As Ruanglertbutr (2016) suggests, artworks are primarily visual texts of different kinds which need to be deciphered and provide students with a wide range of stimuli. Thus, works of art can be used as aids to support FL learning by inviting students to interpret and translate the visual input into spoken or written language. This usually generates motivation and has a positive impact on students. In this respect, also Visual Thinking Strategies (VTS) method can be integrated in this framework. This student-centred method has been successfully used in museums, schools and other educational institutions in order to support visual literacy, communication, and collaboration skills (see VTS's official website). At the centre of VTS there is the use of Art as a mean to develop visitors' thinking, communication skills and *visual literacy*, which is:

[...] the ability to find meaning in imagery. It involves a set of skills ranging from simple identification (naming what one sees) to complex interpretation on contextual, metaphoric and philosophical levels. Many aspects of cognition are called upon, such as personal association, questioning, speculating, analysing, fact-finding, and categorizing. Objective understanding is the premise of much of this literacy, but subjective and affective aspects of knowing are equally important. (Yenawine 2016, 1; as cited in Fazzi 2019)

Apart from the visual point of view, museums stimulate students through diverse media such as written texts (e.g., gallery labels or explanatory panels), oral explanations by the educators, sounds, music and video contents (Eakle 2009). In this way, museums make both multi-sensorial and multi-literal experiences possible.

The last theory of the outer layer of the framework, the *Artefactual Theory*, is deeply connected to the previous one, since it is related to the presence of tangible objects. The fact that non-formal environments are ideal to foster experiential language learning through evocative objects is indubitable (Wilson 2012). These artefacts give the opportunity for an interactive engagement (Sederberg 2013) and, as claimed by Reynolds et al. (2010), object-based learning plays a central role in these contexts since every single artefact can facilitate the knowledge building by a one-to-one relationship with the visitor. These scholars highlight that interaction with contextual objects activates the senses and mental learning processes through the evocation of prior knowledge and memories.

Moving to the inner part of the diagram, *Interculturality* and *Humanism* can be found. Abdheladi et al. (2019) are particularly concerned about the first aspect and its relation with language. In fact, the authors, quoting Byram (1997, 71), advocate for an intercultural communicative approach which "does not depend on a concept of neutral communication of information across cultural barriers, but rather on a rich definition of communication as interaction, and on a philosophy of critical engagement with otherness and critical reflection on self". This perspective can be easily applied to

cross-curricular Art and non-formal FL learning at the museum. In these kinds of contexts, students are encouraged to freely express their different opinions about familiar or unfamiliar cultural aspects observed during museum tours.

In many parts of this section we have highlighted the centrality and agency of the learners in nonformal FL learning. These factors are at the basis of humanistic theories aimed at emphasising the importance of learners' emotions and perceptions and their role as active agents of their own learning. Furthermore, according to humanistic theories, an effective learning can only happen under certain circumstances: motivation should always be kept high and the affective filter low (Krashen 1983). Using the proper strategies, this can be certainly achieved in non-formal learning environments.

1.2.3 CLIL and Non-Formal Language Learning: Which Analogies?

In the model presented in § 1.2.2, the expression "cross-curricular" has been placed side by side to non-formal language learning at the museum. In fact, a relevant benefit of FL learning at the museum is that not only does it give the possibility to improve communicative competence through an authentic use of language (Rodenhauser and Preisfeld 2015), but also to learn about Art and culture in general. Thus, we can safely state that this type of learning is pretty suitable for CLIL (*Content and Language Integrated Learning*) programmes because it brings two areas of content together (see Coonan 2010). In fact, the final learning goal is improving both language competence and Art and culture knowledge thanks to activities based on authentic museum objects. In particular, according to CLIL methodology, the specific goals should be achieved by setting well balanced cross-disciplinary learning objectives to pursue simultaneously. In this respect, we can conclude that the main focus is both on the integration of FL learning and other school subjects and on the ways these subjects' boundaries can be crossed in meaningful contexts also out of school (Sederberg 2013; Sylvén and Sundqvist 2015; as cited in Fazzi and Lasagabaster 2020).

As attested by Lasagabaster and Sierra (2009) an increasing number of educational institutions are delivering courses in a foreign language (more often adopting CLIL in English). This is due to the rise of policies aiming at the promotion of multilingualism. In fact, thanks to these policies, CLIL has gained increasing space in the educational sector in Europe. In this regard, Fazzi and Lesagabaster (2020) present European Commission's 2017 report which gives evidence for the wide expansion of CLIL in the educational system of the majority of European countries, even though through different ways and degrees of implementation. In Italy, the boost of museum learning programmes aimed at enhancing visitors' foreign language learning can be closely related to the recognition and popularity of CLIL and its consequent inclusion in many school projects (Fazzi 2018). This boost is strictly connected to the issue of Laws 88 and 89 in 2010 (see MIUR's official website), even though the interest in this form of FL learning started to appear in Italy in the early 1990s (Coonan 2010). The abovementioned laws made the teaching of a subject in a FL language mandatory for all the last year high school classes. Furthermore, Fazzi (2018) asserts that the methodologies used by the majority of Italian museums to promote non-formal language learning are highly consistent with the pragmatic framework underpinning CLIL programmes. For this reason, it may be useful to employ this section of the dissertation to talk about this methodology.

One of the most quoted definitions of CLIL is given by Coyle, Hood, and Marsh:

Content and language integrated learning is a dual-focussed educational approach in which an additional language is used for learning and teaching of both content and language. That is, in that teaching and learning processes, there is a focus not only on content, and not only on language. (Coyle, Hood and Marsh 2010, 1; as cited in Coyle 2015)

This definition clearly highlights the duality of CLIL, in which both language and content knowledge are crucial. For this reason, according to the definition provided by Serragiotto (2015), confirming and complementing Coyle, Hood and Marsh's one, CLIL is a didactic model requiring a strong connection between the foreign language and the other discipline's learning/teaching. Thus, as these scholars claim, CLIL's main purpose is successfully conveying the content of a specific course and, at the same time, strengthening FL competence. Serragiotto (2015, 138; our translation) also emphasises the social action of CLIL which is analogous to non-formal FL learning's one and consists in:

A. Improving the level of FL competence;

B. Effectively responding to the demands of culturalization;

C. Developing flexible educational models aimed at the promotion of the individual. (Serragiotto 2015, 138; our translation)

Although language in CLIL can be mistakenly seen as a mere mean of instruction, particularly focusing upon it appears to be necessary to scaffold the acquisition of the content (Fazzi 2018). More specifically, Coyle et al. (2010, 12; as cited in Korosidou and Deligianni 2017) maintain that CLIL is "not simply education *in* an additional language; it is education *through* an additional language". Regarding CLIL, Coyle provides four principles (known as the *4C Framework*) for effective classroom practice: 1) 'content', referring to subject matter, 2) 'communication', focusing on language learning and language use, 3) 'cognition', related to the development of learning and thinking processes and 4) 'culture', focusing on the development of intercultural understanding and global citizenship. Once again the importance of culture, alongside with the integration of content and language learning is clearly expressed.

In accordance with this perspective, keeping in mind that the objective is an effective and meaningful communication is essential. That is why, according to many scholars, it is fundamental to adopt a communicative approach in CLIL and engage students in motivational environments where they can find interlocutors and educators who really care about their development (Lasagabaster and Sierra 2009). Taking into consideration the theories illustrated in the previous paragraphs, museums appear to be quite suitable for this purpose.

Furthermore, in this view, another approach largely applicable to non-formal language learning at the museum and CLIL, cooperative learning, seems to come up to the expectations. In fact, this type of

learning concerns a shared knowledge built by students' collaboration under the indirect supervision of a teacher (Balboni 2008). Therefore, we can certainly refer to it also as "dialogic instruction" which is (co-) constructed collectively by the active participation of each learner of the group whose voice, origins, gender, experiences, values are taken into great consideration. Cooperative/dialogic learning requires participants to constantly engage in language use and negotiation (Beacco et al. 2010). For this reason, this type of learning can also be associated with the *Interaction Hypothesis*. The general assertion of this theory is that the negotiation (Ellis 1999). Putting into practice cooperative learning and successful interaction among students is not always easy and needs careful scaffolding. A simple way of actualizing cooperative learning is through task-based activities in which students can work and achieve certain learning objectives together. First of all, if we take into analysis Ellis' criteria for a task, we may be able to notice several similarities to the main principles underpinning both CLIL and non-formal FL learning:

1. The primary focus should be on 'meaning' (by which is meant that learners should be mainly concerned with processing the semantic and pragmatic meaning of utterances).

2. There should be some kind of 'gap' (i.e. a need to convey information, to express an opinion or to infer meaning).

3. Learners should largely have to rely on their own resources (linguistic and nonlinguistic) in order to complete the activity.

4. There is a clearly defined outcome other than the use of language (i.e. the language serves as the means for achieving the outcome, not as an end in its own right). (Ellis 2009, 223; as cited in Harper and Widodo 2020)

A feasible definition of *task* can be drawn from Ellis' criteria: it is an assignment which requires students to rely on their own resources and use language pragmatically in order to achieve the final learning goal that is other than language. In addition, Fazzi (2018) observes that a fruitful CLIL unit should contain tasks which enable students to practice different kinds of lower and higher thinking skills by proposing varied inputs. This author also presents a model composed of three stages, adapted from Willis' one (1996):

Pre-task: in this phase, the teacher explores the topic with the class, helps students to understand instructions and prepare, and activates students' topic related words and phrases.

Task-cycle: Task – students do the task in pairs or small groups while teacher monitors; Planning – students prepare to report to the whole class (oral and written) how they did the task, and/or what they decided/discovered; Report – some groups present their reports to the class, or exchange written reports and compare results.

Post-task: in this phase, the teacher focuses on the language students used in the other two stages. (Wills 1996, 38; as cited and adapted by Fazzi 2018)

Thanks to this sequence a clear design to support task-based teaching and learning is presented. The model follows a natural and logical chiastic order starting from a holistic approach to the task under the guidance of the teacher, moving to students' centrality in the cooperative implementation and presentation of the task, and concluding with a more present figure of the teacher who eventually intervenes more directly in the process FL learning. In CLIL-oriented museum workshops this structure has been used and integrated as follows (Fazzi forthcoming):

WELCOME STAGE

(ice-breaker)

TASK(s)

(pre-task, task-cycle, post task)

FINAL REMARKS

The *Welcome Stage* and the *Final Remarks* are essential to frame the activities of CLIL at the museum. More in particular, the *Welcome Stage* allows the students and the educator to get to know each other (if they have not done it yet), to motivate the students, and to introduce them to the goals of the visit. After this phase, the tasks are proposed: they consist of activities in which the learning of content and language is promoted, while at the same time students interact with the museum objects (Fazzi forthcoming). As Fazzi (2018) underlines, although the task model provides some guidelines, flexibility is crucial during the process of learning in this type of environments. In fact, we should not always expect the same type of structure and sequencing that we usually encounter in a lesson of a formal school course to occur. In fact, Bemberg and Tal (2006, 77; as cited in Fazzi forthcoming) assert that CLIL at the museum differs from CLIL at school since the latter "is composed of linear sequences that rely on prior knowledge and previously learned scientific concepts, [while] museum-based learning occurs in short time units and does not require continuity". At the end of the activities, some *Final Remarks* are useful to conclude the visit and motivate the students to engage in similar experiences.

Serragiotto (2014) remarks the absolute necessity of planning a CLIL module or lesson *ad hoc*, considering every peculiar aspect of the class and of the context. In particular, Fazzi (2020) notices that students' positive attitudes towards the museum CLIL activities are generally less significant when the latter are not really connected to the school curriculum and, consequently, to students' interests. Although CLIL possesses intrinsic characteristics which permit to employ it in a large variety of contexts, including non-formal learning ones, the integration of this methodology with museum-based pedagogies requires rigorous pondering and planning. First of all, we should take into consideration that museums have their own missions and goals which may be quite different for every museum and from those of other institutions with which they collaborate, such as schools. However,

Fazzi (forthcoming, 8) reports that museums' education directors and managers think that CLIL can successfully meet museums' mission "by supporting students' knowledge and communication of the local territory from an international perspective" and, simultaneously, by promoting cultural knowledge in innovative ways. At the same time, museum can be of aid to formal education by helping teachers to integrate this kind of CLIL programmes in the school curriculum and by inspiring them to modify the way of delivering in-school teaching/learning. For this reason, teachers should try to actively collaborate with museums and museums educators, making the realization of CLIL out of school an incredibly positive experience which can stimulate and enrich both themselves and the students who can get involved in activities that connect school with the external world.

1.3 Vocabulary Learning

1.3.1 What is a Word? Definitions and Categorizations.

As we will see in the following paragraphs of this dissertation, vocabulary is considered to be at the basis of language and, hence, of FL learning. However, before engaging in the discussion about the importance of the lexis, the framework of vocabulary learning theories (§ 1.3.3), and the state of the research on vocabulary learning at the museum (§ 1.3.4), it may be appropriate to take into account in the following lines the analysis of what is considered as the simplest unit of language in common parlance, a word. After this paragraph, we will illustrate the different aspects which are implied in gaining the knowledge of a word (§ 1.3.2).

Although defining words and their boundaries may seem quite easy, it is not so. In fact, the definition of *word* does not always plainly equate with the headword one can look up in a dictionary (Sundqvist 2009). For example, taking into consideration the numerical calculations' aspect, what do we count as a word? Nation (2001) suggests that one of the ways could be employing the concept of *token*: every single word form in a written or spoken text should be counted. If we decide not to count all the word forms, but to count a word only the first time we encounter it, we are considering words as *types*. In general, the *token* calculation is used when we want to count the number of words regardless of repetitions (e.g., if we encounter the form *eat* twice, we count it twice); while we use the *type* calculation if we want to account for the variety of the vocabulary of a text (e.g., if we encounter the form *eat* twice, we only count it once). Yet, the issue about defining a word is even more complex than the distinction between *type* and *token*.

Let us take the verb *to eat* as an example once again. Many researchers have wondered about whether to count *eat*, *eats*, *eating*, *ate*, *eaten* as the same word or not. In this regard, an answer may be provided by a brief explanation about the concepts of *lemma* and *lexeme*. The former includes the entire set of the possible realizations of a word depending on its inflections and/or reduced forms (e.g., *n't*). For instance, in English inflections consist of plural for nouns; third-person singular, past tense, gerund, past tense and past participle for verbs; and comparative and superlative for part of the adjectives (Bauer and Nation 1993). Thus, although we cannot strictly define *eat*, *eats*, *eating*, *ate*, *eaten* as the same word, we can safely say that they all belong to the same *lemma set*. Having the same form is not enough to be part of the same *lemma* as *walk* as a verb; Nation 2001). Many scholars consider the *lexeme* almost as equal to *lemma*, generally defining it as:

A unit of lexical meaning that underlies a set of words that are related through inflection. It is a basic abstract unit of meaning. (Crystal 1995, 118)

However, a difference can be derived from psycholinguistic studies. In fact, since the first publications of studies on this field, psycholinguists have tended to contrast the *lemma* with the *lexeme* which, more specifically, concerns word form's properties; that is, a word's phonological or orthographical realization (Garret 1975, 1980; Bock and Levelt 1994). According to psycholinguistic theories, when we produce language (in Figure 2 the production of the word *sheep* is taken as an example), we essentially follow this sequence:



FIGURE 2. PRODUCING A WORD (BOCK AND LEVELT 1994, 951).

In summary, right after the visual and the conceptual levels, the word form starts to appear in the lemma level, but only in the lexeme level it reaches its actual realization. Thus, firstly a specific word

is selected and adapted according to its function and its position in a sentence (grammatical encoding) in the *lemma* level, then it is phonologically and/or graphically elaborated (phonological encoding) in the *lexeme* level (Garret 1975, 1980). At this point, another figure (3) may be of use to summarize and consolidate the notions briefly explained so far:



FIGURE 3. SUMMARY OF THE PROCESSES CONCERNED IN THE DISTINCT LEVELS OF THE MENTAL LEXICON (WARREN 2013, 23).

It is important to notice that these models are "lexically driven" (Levelt 1989, 181): the syntax, the morphology and the phonology are determined by the word the speaker intends to use. In conclusion, integrating more generic views with psycholinguistic ones, we can say that a *lexeme* is one of the possible different practical realizations of a *lemma* and, being so, it is part of the *lemma set* as well.

Another fundamental factor to consider in this paragraph regards the categorization of words according to their frequency. Attempting to define them with the simplest terms possible, we can affirm that high-frequency words are the most used ones in everyday language. They include all the function words (e.g., *the*, *for*, *of*, *to*, etc.) and the most common content words, those which cover a very high percentage of the vocabulary in a written or spoken text and which can occur in all kinds of uses of language (Nation 2001). Strictly talking, many scholars believe that only the first 2000 words in the list of frequency *corpora* belong to the category of high-frequency words, even if the limit can occasionally be moved beyond the 2000 words line. In contrast, low-frequency words are generally far less used. Some of them are actually rare, on the contrary, others are quite common and just fall outside the boundary of the 2000 words list of the *corpora* where they can be found in the halfway area between the high-frequency words and the rarely-used words.

A good amount of the least frequent words can often be included in some specialised *corpus*. Nation (2001, 17) notes that specialised vocabularies "are made systematically restricting the range of topics

or language uses investigated". As the author reports, some of these vocabularies are created by doing frequency counts of specialised *corpora*, while others are made of words selected by the experts of some certain field. Specialised vocabularies usually contain many so-called *technical words*. These words are closely related to the subject area of specific types of texts and, thus, can differ from subject area to subject area. However, they can also be pretty frequent words which have specialised meanings in certain subjects.

The perspective of frequency can be of great aid to design language courses. For example, high-frequency words should always be included in generic foreign language courses, especially if designed for low proficiency students (Teng 2014), since a central purpose for language teachers and learners is the acquisition of a sufficiently large vocabulary to start engaging in communicative events (Lewis 1997a). On the other hand, technical words can be part of syllabi naturally containing more specialised vocabulary like, for example, those of ESP (*English for Specific Purposes*) courses, or, to some extent, those of CLIL courses as well.

Although the central point of this paragraph is to provide some definitions and categorizations concerning words, we should also briefly report on the presence of other kinds of lexical items. Less studied lexical items are indeed really relevant to reach native-like fluency when using another language (Pawley and Syder 1987). As Lewis (1997b) states, native speakers do not only possess a consolidated and interiorized grammatical and vocabulary knowledge. In fact, in addition, they have at their disposal a repertoire of multi-words that are thought and treated as independent units, at least under certain circumstances. In particular, the author refers to whole linguistic chunks of words which are recalled and used concomitantly. One type of these lexical items is called by Lewis *polywords*, which are idiomatic phrases such as *by the way, on the other hand*, etc. Other relevant words' sequences are *collocations* which usually imply highly frequent verb-noun pairs (e.g., *to make an effort*) and adjective-noun pairs (e.g., *short-term*). Therefore, when teachers choose to spend a certain amount of time focussing on vocabulary, they should try not to treat words merely as isolated units, but, instead, they should try to consider language in a more holistic way. Consequently, they should also emphasise the learning of how words combine and are actually used in written and spoken texts in authentic language so that students can achieve higher levels of FL proficiency and fluency.

1.3.2 Knowing a Word

In this paragraph we will take into consideration the different factors which are implied in knowing a word. First of all, regarding the depth of a word knowledge the traditional distinction is between receptive -also known as passive- vocabulary knowledge, which is usually associated with reading and listening; and productive -also known as active- vocabulary knowledge, which usually refers to writing and speaking. Yet, based on the results of several studies, Ellis (1999) concludes that the idea of a scale or a *continuum* between the receptive and productive dimensions rather than a neat dichotomy better reflects the nature of this distinction. Accordingly, Hedge (2000, 116-117; as cited in Sundqvist 2009) claims that "a scale running from recognition of a word at one end to automatic production at the other, through intermediate stages of making greater sense of the word and how it

might be used in different contexts" would be more adequate. According to this view, there are different degrees of word knowledge which move from receptive to productive mastery. In general, it has been recognized that initially FL learners need to be able to fully comprehend a word (see a theory related to this concept, the Comprehensible Input Hypothesis by Krashen 1985) and this usually takes place after a certain number of repetitions (not all the scholars agree on the precise number of repetitions needed to acquire a word). Only after this phase, they can finally endeavour to use that specific word in oral or written production (Lewis 1993). Thus, considering all the degrees of vocabulary knowledge as interconnected, Segler, Pain and Sorace (2002) assert that what actually occurs is a change rather than a growth of vocabulary knowledge. However, not all the scholars agree on the idea of a developmental scale from receptive to productive vocabulary knowledge. For instance, Ellis (1999) maintains that a learner is likely to produce a word without having developed the receptive knowledge beforehand. The author maintains that this can occur when a learner uses a word spontaneously, but s/he is not able to recognize it since s/he has not fully consolidated its phonological oral or written representation. However, all the researchers on this field apparently agree on the fact that the majority of FL students tends to have a larger receptive than productive lexicon (Pignot-Shahov 2012; Schmitt 2008; Teng 2014).

After focussing in quite general terms on word knowledge by analysing the difference between receptive and productive vocabulary knowledge, in the remaining part of this paragraph we will explore the topic in a deeper way by taking Nation's 2001 *Vocabulary Knowledge Framework,* as McGuire (2016) names it, as a starting point and developing it by the integration of a few notions from some studies by other scholars. In particular, Nation (2001, 37) set out from the psycholinguistic perspective previously described in § 1.3.1: "it is the choice of particular words which determines the grammar and the phonology of sentences". However, according to the author, once a word has been selected, also grammar and other related aspects come into play in what is required in order to achieve a specific word's knowledge. More specifically, following Nation's framework, three factors are involved in knowing a word: *form, meaning* and *use*.

The factor of *form* contains two subcategories: the spoken form and the written form. The former implies comprehending a word when it is heard and, at the other end of the receptive-productive knowledge scale, being able to pronounce it correctly. Producing the spoken form of a word means being able to pronounce and combine all the phonemes and to stress the word in the right syllable. For non-native speakers doing so is not always as easy as it seems and largely depends on the degree of phonological similarity of the L1, or of others languages the student is familiar with, to the target FL (Ellis 1999). The more pronounceable the words are the more likely is that they are easily learnt since they have a lighter learning burden for the learners (Nation and Webb 2011). According to Nation (2001), a strategy that can be employed in order to decrease the learning burden is to associate the word form with similar word forms of the L1 or FL.

Moving to the written form, one aspect which is to take into great consideration is spelling, that is, the way of representing phonological structures graphically. The irregularity of the English spelling system can be the cause of difficulties for both non-native and native speakers (Moseley 1994; as cited in Nation 2001). For this reason, it is crucial, especially for EFL teachers, to focus on teaching spelling to students with specific tasks designed for this purpose.

Other aspects that concern spoken and written word form have been mentioned by Ellis (1999). The first is the distinctiveness of the word form; that is, a word is more easily learnt when it is clearly distinguishable from other word forms the learner already knows. The second is the length of the word: the shortest the word, the fastest the learner will store it in his/her memory. With regards to the length of the words, Nation (2001) notes that knowing a word also means knowing every morphological part of it. Taking once again the verb *to eat* as an example, if a speaker produces the form *eating*, then this speaker has certainly acquired both the form of the stem *eat* and the form of the gerund suffix *-ing*. With the increasing of the learner's proficiency, s/he will know more and more prefix-stem-suffix combinations.

At the same time, every part of a word has a specific *meaning* and, thus, knowing a word implies also being aware of the meaning of the conjunction of its stem and its derivational and/or inflectional morphological parts, if applicable. So, apart from the knowledge of the form, a learner should obviously know also the word's meaning and the way to connect it with its form. However, Nation (2001) observes that a learner may be familiar with the form of a word without actually knowing its meaning. Also the opposite may occur: a learner is familiar with a concept (this is not so obvious, especially for words belonging to different cultures) but does not have the ability to pronounce or write the right form. Linking a word form with its meaning is easier when the meaning is predictable from its form [e.g., onomatopoeic forms], when the meaning perfectly corresponds to the meaning of a L1 word, and when the word's uses are related to an underlying concept (Nation 1990). The latter statement of this list is related to the notion of associations, the semantic relations between words which affect the way they are stored in the brain. Words can indeed be organised in networks which include synonyms, antonyms and other words connected to the same semantic field in different ways (Li et al. 2019). Consequently, in a broader view, completely mastering the knowledge of a word means also being familiar with its semantic field and the semantic relationships with other words.

However, Lewis (1993) prefers the terms *signification* and *value* of a word to *meaning* for this category. The former is the de-contextualised meaning of a word, such as it may be found in a normal dictionary. Nevertheless, as the author remarks, we should not think of a word as having a fixed meaning; on the contrary, the meaning is firmly related to the context in which the word is used. In this respect, in an utterance a context can refer either to the situation in which the utterance is produced or to the surrounding language used in the text in which the word is found (Ellis 1985). Thus, the value of a word (its contextualised meaning) can potentially change from context to context and differ from its signification.

The first subcategory of the dimension of *use*, the third factor of Nation's framework, can be in some way related to the meaning of a word as well. In fact, according to the part of speech a word belongs to, it possesses a different intrinsic meaning and a different function in a sentence. Furthermore, knowing the grammatical function of a word is strongly necessary in order to use it in the correct position, being aware of the patterns it can fit into. Along the same lines as Pawley, Syder (1987) and Lewis' (1997a, 1997b) theories briefly explained in § 1.3.1, Nation maintains that knowing a word implies knowing which words it usually occurs with, and, more precisely, the collocations (also called *phrasal vocabulary;* Schmitt 2008, 340) in which they can be inserted without sounding unnatural.

The last subcategory which Nation takes into consideration in word use is constraints. This subcategory refers to sociolinguistic factors, meaning that a word should suit the situation in which it is used. In a few words, every word should be selected according to the situational context in which it will be employed. Here are some examples which might clarify this factor: using colloquial words is not considered appropriate in a formal situation; in some subject area the use of specialized vocabulary is required, while in informal contexts using technical low-frequency words might even have comical effects. Consequently, being able to master creative use of newly-learnt words in diverse contexts is of great importance, even though it can initially cause some difficulties (Nation 2013).

The distinction between productive and receptive vocabulary knowledge and Nation's *Vocabulary Knowledge Framework* have been illustrated in this paragraph with the aim of explaining what knowing a word means. Schmitt (2008) effectively summarises all the aspects we have observed so far in a table $(4)^2$:

Form:	Spoken	R	What does the word sound like?
	-	Ρ	How is the word pronounced?
	Written	R	What does the word look like?
		Ρ	How is the word written and spelled?
	Word parts	R	What parts are recognizable in this word?
	-	Ρ	What word parts are needed to express this meaning?
Meaning:	Form and meaning	R	What meaning does this word form signal?
		Ρ	What word form can be used to express this meaning?
	Concept and referents	R	What is included in the concept?
		Ρ	What items can the concept refer to?
	Associations	R	What other words does this make us think of?
		Ρ	What other words could we use instead of this one?
Use:	Grammatical functions	R	In what patterns does the word occur?
		Ρ	In what patterns must we use this word?
	Collocations	R	What words or types of words occur with this one?
		Ρ	What words or types of words must we use with this one?
	Constraints on use (register, frequency)	R	Where, when and how often would we expect to meet this word?
		Ρ	Where, when and how often can we use this word?

TABLE 4. WHAT IS INVOLVED IN KNOWING A WORD (SCHMITT 2008, 339).

² In Table 4 *P* means *productive*, while *R* means *receptive* [word knowledge].

1.3.3 An Introduction to the Current Theories Underpinning Vocabulary Learning

A statement attributed to one of the most important theorists of educational linguistics, Stephen Krashen, says:

When you travel abroad, you bring a dictionary, not a grammar. (As cited in Balboni 2008, 44; our translation)

This sentence highlights the primary importance of knowing vocabulary in order to effectively communicate in another language. Lewis (1993, 1997a) builds his Lexical Approach on the assumption that lexis, not grammar is at the basis of language, although, when learning vocabulary, also the grammar of a word should be considered. The author gives extreme importance to Krashen's statements (1983; as cited in Lewis 1993, 23) about vocabulary which view it as basic to communication and to the language acquisition process since "we acquire morphology and syntax because we understand the meaning of utterances". In addition, according to the Processability Theory by Pienemann (1998), the lexical level, which for the author consists of single not grammatically marked words, is, cognitively and chronologically speaking, the first to be processed in the mind of FL learners. Therefore, a language teacher should start and progress from the simple units of the lexical level in order to guarantee an effective and sustainable language learning. Furthermore, educational linguistics researchers should particularly concentrate on this area of FL learning since it is thought to cause the greatest problems and concerns in language learners (Meara 1980; Nation 1990; Segler et al. 2002). Some studies also affirm that native speakers grade nonnatives' lexical errors as more significant than phonological and grammatical errors (Gass and Selinker 2001; as cited in Kleinman 2017; Politzer 1978; Johansson 1978; as cited in Roos 1994). Because of all of these reasons, vocabulary learning should receive particular attention in foreign language learning.

In order to do so, first of all, we should leave behind the outdated idea of vocabulary as a mere list of forms and meanings which is to be learnt through rote learning as Sonbul and Schmitt (2013) attest to happen in the most traditional approaches. In fact, current FL/SL learning trends tend to be closer to constructivist and social theories' views and, consequently, to the communicative approach. This approach situates learning within a highly communicative framework in which language students form their own meanings and grammar/lexical structures by means of communicative tasks. This means that teachers' role is mainly to support vocabulary learning and noticing of new useful word items (Nation 2013; see Schimitd 1990 for more discussions on *noticing*) by means of engaging learners in activities in which they can actively discover and use the FL target words (Ogawa 2014). In this way, FL learners can build their own knowledge by focussing on the target forms and meanings of the linguistic input, and, then, these forms can be solidified through production (output) with the teacher or fellow students (see Swain 1985). Sylven and Sundqvist (2012) firmly support the importance of interaction because, thanks to it, learners can also produce meaningful output which

brings to the achievement of higher mastery in the target language's vocabulary. Moreover, great attention has been drawn to the need of engaging students in contextualized interactions characterized by authentic input in order to guarantee the retention of vocabulary in the long-term memory (Balboni 2015; Roos 1994; Schmitt 2008). Learners need to be pushed to use new words in contextualized production through different kinds of collaborative tasks (Niu and Helms-Park 2014) and, in particular, cooperative activities are thought to be effective in getting learners to observe a word and explore its range of meanings (Nation 2001). Examples of productive techniques to implement these kinds of approaches in vocabulary learning are provided by Kleinman (2017, 8): "problem-based learning tasks in the target language, content and task-based instruction in which learners are taught a skill through the FL/SL, cooperative discovery activities, and lexical learning through authentic activities". In summary, different types of activities in which teachers support noticing of forms and meanings, encouraging the transition from input to intake, that is, the accommodation of new lexical items in the long-term memory, are needed in order to achieve a successful and long-lasting vocabulary learning (Lewis 1997a).

All of these techniques and the theories underpinning them are clearly based on inductive methods, but, as Tsai (2019) observes, vocabulary is still presented through deductive methods considering learners as empty vessels in many educational contexts. This happens when the teacher does not stimulate students' participation in the learning process, for example through productive and collaborative tasks. Instead, s/he place him/herself at the centre and concentrates on prescriptive lexical knowledge, teaching new vocabulary only in explicit ways. Probably biased by traditional deductive approaches, many students declare to prefer some forms of mechanical and simplistic vocabulary learning strategies such as repetition, rather than more complex ones, such as contextual guessing or deeper metacognitive ones (Gu and Johnson 1996; Lowson and Hogben 1996; as cited in Segler et al. 2002). Nevertheless, completely embracing deductive approaches and learning strategies can damage the effectiveness of vocabulary learning since, as Tsai (2019) maintains, inductive approaches eclipse deductive ones in helping students to reach higher and deeper levels of vocabulary knowledge which can persist for a longer period of time. Furthermore, the author claims that inductive methods have a better impact on students' ability to apply learning to authentic productive contexts. Therefore, although direct deductive methods are not to be totally rejected, especially at the first stages of FL learning, much more space should be given to indirect vocabulary learning than to direct traditional learning activities (Nation 1990). It is also important to keep in mind that learners should be encouraged to participate in lessons, but at lower levels their participation should follow a gradual development and initially mainly consist of listening, noticing and reflecting more than carrying out productive tasks (Lewis 1997a).

As we saw in § 1.2.3, CLIL is a method which is consistent with the theoretical assumptions presented in this paragraph, since in CLIL groups, students take active part to the lessons and dialogic interactions in highly contextualized environments are usually promoted. It has also been demonstrated that this leads CLIL students to outperform non-CLIL students in vocabulary knowledge (Sylven and Ohlander 2014). Overall, we can affirm that CLIL is beneficial to vocabulary acquisition in general (Canga Alonso 2015), and, more in particular, to specialised vocabulary (Balboni 2008; see more details about specialised vocabularies in § 1.3.1). Thanks to its intrinsic characteristics (see § 1.2) also non-formal language learning at the museum can have a strong positive impact on vocabulary learning (we will specifically ponder on some studies on this field in § 1.3.4, next paragraph).

1.3.4 Learning Vocabulary at the Museum

In the previous paragraph the current trends of FL/SL vocabulary learning have been delineated. To sum up, engaging students in communicative tasks in which they can notice words' forms and meanings and can produce meaningful language in authentic contextualized interactions appears to have the most positive impact on vocabulary learning. However, the figure of the teacher remains fundamental in order to guide students mainly through inductive methods and, to a minor extent, through direct teaching, especially at lower levels. Given these premises, as we previously observed also in § 1.2, we can certainly state that the theoretical framework of non-formal learning at the museum is consistent with the theories presented in § 1.3.3, and, thus, learning FL vocabulary at the museum can be highly beneficial to FL students. In particular, we should notice that museum learning offers an extremely rich authentic context which is thought to allow better vocabulary learning by means of making students actively infer new terms' meaning (Kleinman 2017). In fact, this kind of environment is strongly apt at activating the inferring of words' meaning, a strategy which requires a complex cognitive effort, through the rich stimuli it can provide.

The most obvious type of stimulus of art museums is the visual one which is recognised to be very effective for the memorization of new vocabulary by adding a visual dimension to the spoken/written one (Balboni 2008). In this way, besides the left-side brain which is usually mainly concerned in language learning and processing, also the right-side brain can be intensely stimulated since it is really sensitive to visual stimuli. Furthermore, according to Ellis and Beaton's theory of *imageability* (1993) drawn from the analysis and summarization of previous researches, a word will be learnt faster and persist in the memory for a longer period if it is *imageable*; that is, if it arouses a distinct mental image. Regarding the visual aspect of vocabulary learning, in McGuire's PhD dissertation (2016) also Visual Thinking Strategies (see § 1.2.1) have been particularly emphasised for their positive impact and used in cooperative tasks aimed at improving EFL vocabulary through the aid of Art. In McGuire's study VTS are thought to have the strength of enhancing vocabulary learning by activating the highest levels of cognition. Likewise, Abdheladi et al. (2019) concentrate on the use of Art in order to improve learners' FL proficiency, although these researchers' main objective was to promote the knowledge of Arabic culture as well. The authors of this research in which a cross-curricular artbased FL learning approach was applied on the basis of learner-centred pedagogies discovered that students felt they had added new words to their own Arabic vocabulary. These two studies demonstrate how Art can have great benefits on FL vocabulary learning, especially if the chosen approaches meet the learning/teaching principles we have pondered on so far. They also line up with the research proving that Art can enhance the construction of vocabulary knowledge by enabling higher thinking skills while practising FL language in general and meaning-making through visual input in particular (Allan 2008).

Although these studies supporting the advantages that Art can bring to FL vocabulary may support the advantages of learning vocabulary at art museums as well, it is necessary to underline that they do not specifically refer to museum FL learning. In this respect, several studies suggest that very good opportunities for vocabulary learning can derive from extramural learning (Sundqvist 2009). More in particular, other scholars explicitly provide specific information about vocabulary learning at the museum. First of all, we should remind that this kind of learning can be the source of pretty complex ways of stimulating the students' senses thanks to its multi-modal nature. In fact, it can cause what Balboni (2008, 64) calls the "activation of different memories" which can help diverse types of language learners to memorize FL vocabulary.

Starting from the analysis of the pre-visit stage, although it is not always present, a considerable amount of studies dedicated to FL learning at the museum conveys the idea that spending time on vocabulary is recommended before the visit (Cooker and Pemberton 2010; Fazzi 2018, 2019; Ruanglerbutr 2016; Sederberg 2013). This is due to the fact that a basic knowledge of vocabulary is essential for the students to be able to discuss and engage with the meanings of a certain artwork, maximizing the possibility of a fruitful participation during the museum visit (Ruanglerbutr 2016). Thus, a pre-visit meeting should be organised not only in order to motivate the students and inform them about the content of the visit, but also to revise and/or introduce the target vocabulary that should be familiar to the students so that they can enjoy the visit and learn from it to the maximum extent. The pre-visit stage should include well-designed activities which make learners notice both the generic vocabulary useful for a museum visit and the more specialised vocabulary concerning the artefacts of a specific museum (Cooker and Pemberton 2010). Thus, although not all the FL-learning-oriented museum visits have vocabulary learning among their main objectives, it is highly recommended for all the participating students to have at least a basic knowledge of the necessary vocabulary which will be strengthened and consolidated during the visit.

Apart from the central role of vocabulary in the pre-visit stage, several scholars have explicitly emphasised the positive impact of FL/SL museum learning on FL/SL vocabulary. Ruanglerbutr (2016) attests an improvement of ESL vocabulary according to the perceptions of teachers and students. The latter took part in a module constituted of three lessons consisting in a pre-visit, a visit in an Australian art museum pedagogically based mainly on VTS, and a post-visit. The results of a qualitative and quantitative survey administered by the author show that students and teachers generally feel that the vocabulary was amplified and creatively applied in written and spoken productive tasks. Also Cooker and Pemberton (2010) chose a survey as instrument to evaluate students' perceptions on the museum materials created for them for the pre-visit and while-visit at an archaeological museum in the Lincolnshire area of England. The aim of the study was drawing attention to the design of museum materials which could be self-accessed by adult immigrants who studied English as a Second Language. Drawing their conclusions from the results of the survey, the scholars claim that museum visits and adequate pre- and while-visit materials can bring to perceived improvement of SL vocabulary knowledge. On the same wavelength, Clarke (2016) dedicates much space of his doctoral dissertation on the language learning at the museum's power of including immigrants in society, besides helping them in language learning. In particular, Clarke (2016) carried out observations during several museum visits in Scotland. He asserts that learners' utterances became more and more lexically dense and contained a wider range of vocabulary thanks to the interactions inside the museums.

Sederberg (2013) carried out a research on a history-based German course at the University of Michigan in which she incorporated two visits at two distinct museums and a virtual visit. She

observed the repeated applications of new vocabulary and concepts in homework, essays and tests thanks to the museum-based interactive and experiential models that she used during the lessons. Another study in which the museum visit was part of a larger project is the one by Charalampidi et al. (2017). In this study the authors particularly refer to a science project based on CLIL methodology where Greek, the heritage language for the students aged 11-17, was the vehicular language. The lessons where held through a continuous integration of language and content and a visit at the Science Museum of London was included in order to enrich and complement the in-school activities. Interesting data about vocabulary learning were collected thanks to the administration of surveys after the museum visit and short vocabulary tests (only on some basic words). Overall, the results show that students appear to perceive vocabulary as the main area of language development and to improve their vocabulary knowledge thanks to the course. The authors also noticed that learners felt more at ease when they communicated what they had learnt in writing than orally.

In Italy, many museum projects which base their methodology on CLIL's one put vocabulary improvement among their central FL learning goals (see Fazzi 2019 for a list of CLIL based museums' programmes and their objectives). In these contexts, Fazzi (2019) conducted a large research for her doctoral dissertation carried out in Venetian science and art museums with the aim of delineating a framework which could bridge the gap between in-school and out-of-school CLIL; and of investigating the impact of this kind of projects on students' attitudes and perceived learning outcomes. The latter aim is the one which particularly made emerge the perceived relevance of vocabulary in this type of learning. In fact, the data collected through different instruments such as questionnaires, interviews, focus groups and researcher's observations support the pivotal role of vocabulary for these programmes. Firstly, the museum educators declare to particularly concentrate on it, paying special attention to the most important words by making sure that students can use, consolidate and retain them and, at the same time, keep up with the visits' general expected outcomes. Secondly, upper secondary school students claim that the visits were useful especially for the increase of their English vocabulary (also in Fazzi 2018) through museum activities which demanded interaction with their peers and with the museum objects and which they appreciated so much that they affirmed to prefer to formal in-school activities. Moreover, students wisely suggest that postvisit activities can be really beneficial to the consolidation of newly-learnt words. Thirdly, upper secondary school teachers report that, according to them, their students improved both in general and in specialised vocabulary knowledge.

In this paragraph, we have summarised the findings of the studies at our disposal which explicitly talk about learning vocabulary at the museum and its benefits. Nevertheless, these aspects could have been potentially mentioned in many more studies, since, thanks to its peculiar characteristics, non-formal FL learning at the museum offers an enormous range of possibilities which can bring to successful vocabulary learning outcomes.
1.4 Two Applications of CALL. Distance and Virtual Learning.

1.4.1 Defining CALL

Computer-Assisted Language Learning (CALL) is gaining more and more eminence in the modern educational scenario. Although this type of learning has changed over the years with the development of new theoretical perspectives and technological tools, a proper general definition, which is still valid today, is provided by Levy in one of his pioneering studies on this field:

CALL is the search for and study of applications of the computer in language teaching and learning. (Levy 1997, 1)

Some researchers have thought of different ways of calling CALL depending on the methodological approach they refer to or the specific study they were carrying out. Some of them have also considered other nomenclatures because, in their opinion, they were more adequate to the contemporary technologies. As Levy and Hubbard (2005) assert, these contrasting views have extensively spread with the advent of the Internet and the consequent new opportunities it offers to create particular kinds of networks of communication. However, CALL remains the most common term and is employed inclusively to encompass the wide area of research concerned with the application of technology in language learning and teaching. Furthermore, the use of the acronym CALL will be used in this dissertation rather than CALI (*Computer-Assisted Language Instruction*) since the latter appears to imply a more teacher-centred approach.

Warschauer and Healey (1998) identify several phases of CALL, which are not to be considered completely separated or chronologically concluded. These scholars also divide them according to the general methodological approach these phases refer to. Integrating this classification with a later one by Warschauer (2000) the following distinct stages emerge:

- Behaviouristic/Structural CALL: it was conceived in the 1950s and it was implemented between the 1960s and 1970/1980s; it still exists but it is generally dismissed by modern pedagogies.
- Communicative CALL: it first appeared in the 1980s and it is still in use in many contexts.
- Integrative CALL (embracing Multimedia and the Internet): it started in the 1990s, but it has gained more momentum since the 2000s.

The authors of this historical categorization date the first forms of CALL to the beginning of the development of technological devices, which were used as aids to implement the language learning

theories of a precise period. In summary, in Behaviouristic/Structural CALL, these devises allowed students to practice FL language through the execution of pattern drills exercises and mechanical responses to artificial stimuli. Evidently, Behaviouristic/Structural CALL resembles CALI since the role of students is quite passive.

The emergence of the second phase, Communicative CALL, coincided with the arrival of the personal computer, which was the triggering event for the spreading of technology available to a broader slice of population and, at the same time, for new enhanced applications in language learning. Computers started to be employed in order to allow students to be more active and get access to diverse contexts in which they could produce meaningful FL communication. The critics that Communicative CALL aroused concerned the lack of a clear formal organization and the provision of too much freedom to the students to take part in activities which were largely enjoyable, though aimed at language learning only marginally.

According to the authors, the third phase is pretty apt to address these criticisms by giving more direction and coherence to foreign language learning goals. Furthermore, as Anderson, Chung and Macleroy (2019) claim, Integrative CALL extends the possibilities of education beyond the classroom and, at the same time, it blurs the lines between school and the outside world. Many students, indeed, can now avail themselves of multiple occasions to take part in activities and tasks implying an intrinsically motivating use of the target language ranging from "general search-engine information-seeking, through digital gaming, watching of films and YouTube pop videos, international communication via social media or participation in online forums, to the use of language study apps" (Lamb and Arisandy 2020, 86). In this regard, as Henry (2013; as cited in Lamb and Arisandy 2020) states, many scholars have recently drawn their attention on the authenticity gap between what language learners do with their own independent use of the FL out-of-school and in the classroom, making evident that the latter appears to be far more boring. For this reason, in in-school contexts it is essential to create the right mixture of more formally and more informally oriented lessons so that students can feel more motivated towards FL learning.

The great boost of Integrative CALL originated from the rapid development of numerous kinds of Computer-Mediated Communication (CMC, see § 1.4.2 and § 1.4.3 for more details) and of multimedia technology. In particular, multimedia technology provides rich and diverse stimuli trough digital images, texts, sounds and video animation, initially mainly provided by the use of CD-ROMs and DVDs, and, more recently, of the Internet. Therefore, incorporating multimedia in language learning/teaching is highly recommended, especially if the FL lessons are delivered online (Smidt and Hegelheimer 2004). Multimedia have also brought to the evolution of the idea of text, which nowadays can be transmitted in a wide variety of ways and through different digital tools and platforms such as podcasting, blogging, video sharing and so on (Anderson et al. 2019). That is the reason why in the 21st century the concept of literacy comprehends a more complex set of skills inclusive of new forms of writing, speaking, reading and listening which are required to succeed in the highest levels of education and workforce (Hsu et al. 2017). The advancements mentioned so far propelled new opportunities both for out-of-school FL learning and for more formal FL learning leading to the most recent realizations of CALL in distance language learning (see § 1.4.2 and §1.4.3), virtual language learning (see § 1.4.4), and many others.

However, if teachers are not well-prepared, they will not be able to make the most of the opportunities offered by the technologies available to them and to the students. In particular, attesting the lack of an adequate training for language teachers, Compton (2009) suggests to integrate CALL in language teaching education so that teachers can acquire not only the necessary technological skills, but also pedagogical skills such as those aimed at facilitating creativity, community building and socialization

through modern media. Hampell and Stickler (2005) organise these skills in a pyramid (see Figure 5). These scholars specifically refer to ICTs and, consequently, to online language learning, but this figure can also be a good graphical representation of the overview of the competences needed in the implementation of CALL in general. At the basis of the pyramid there are the generic technological knowledge and the knowledge of the particular software or digital medium which the teacher decides to employ. Given these competences, the teacher should also be able to apply the abovementioned pedagogical skills and to adapt them to his/her own style and to the specific context.



FIGURE 5. SKILLS PYRAMID (HAMPELL AND STICKLER 2005, 317).

1.4.2 Introducing Distance Learning. Advantages and Disadvantages.

Correspondence courses are thought to be some early form of distance learning, although delivered without the support of any kind of modern technology which clearly led to far higher levels of teaching/learning in this field (Wheeler 2012). In particular, Computer-Mediated-Communication (e.g., social media, chats, emails, video conferencing, etc.) has been recognised as a strongly beneficial aid for language learning, especially if used by teachers to carry out interactive communicative tasks (Fuente 2003). The actuation of CMC has been made possible and has enormously improved lately thanks to the advancement of Information and Communication Technologies (ICTs) which are part of the most relevant technologies supporting CALL. However, the use of these technologies generally needs to be adapted to FL/SL learning since they are usually designed for native speakers (Levy and Hubbard 2005) and for non-educational contexts. The aim of

this adaptation is to facilitate the interaction of the learners with the teacher, the peers and the course materials through the mediation of a computer in order to reach certain learning objectives (see Figure 6 for a graphical exemplification of the CALL model of interaction). In fact, in distance learning environments, all the verbal exchanges are mediated by a computer (or similar devices) and, so, the latter is the only medium to communicate, as well as to interact with the learning materials. Therefore, only through the technological mediation of the computer students can achieve the final learning goals.



FIGURE 6. A CONCEPTUALIZATION OF CALL PERSPECTIVE (LEVY AND HUBBARD 2005, 146).

In the early 2000s, Palmer et al. (2001) attested the evidence of great opportunities for distance learning thanks to the combination of different technologies with multimedia teaching skills. In addition, they advocated for the development of specifically designed networks allowing users the access to high quality international video communication costing as much as telephone services. Nowadays, after almost 20 years, we can safely state that this demand has been responded by the emergence of a good amount of tools permitting an effective CMC which gives way to innovative education practises in FL teaching both in inter-class and intra-class projects. Thus, distance learning is not a new concept, even though it has consistently gained popularity only thanks to the late evolutions of technology and of the worldwide web (Keles and Ozel 2016). In general, it can be shortly defined as "a learning process supported by technology which allows teachers and students to be in different places at the same time" (Caporali and Trajokovik 2012, 27). Consequently, we can also say that distance learning enables students to connect in a flexible way with educational resources separate in terms of space and/or time.

3

 $^{^{3}}$ The dashed arrows represent non-mediated interactions in blended environments, which consist of the kind of teaching/learning taking place both trough face-to-face lessons and computer-mediated lessons.

After taking into consideration a general definition of distance learning, we should keep in mind that it can actually take place through various applications ranging from individual access to group access, and can be organized by institutions at different degrees of commitment and collaboration with other institutions. In this regard, the different levels of distance learning have been summarized by Compton (2009) who bases the following figure (7) on Moore and Kingsley's categorization of online courses (1996) according to the depth of involvement of the hosting institutions with this type of learning:

Level	Definition
Distance learning programme	'Activities carried out in a conventional college, university, school system, or training department whose primary responsibilities include traditional classroom instruction' (p. 2–3)
Distance learning unit	'A special and separate unit within a conventional college, university, or school system that is dedicated to distance learning activities' (p. 3)
Distance learning institution	'The sole purpose of the institution is distance education [and] all activities are exclusively devoted to distance education' (p. 3)
Distance learning consortia	'Two or more distance learning institutions or units who share in either the design or delivery of program, or both' (p. 4)

FIGURE 7. LEVELS OF DISTANCE LEARNING (COMPTON 2009, 91).

Thus, today distance learning is largely employed in diverse ways both for private individual lessons and for group courses held by several institutions which usually deliver distance courses/programmes or just exploit numerous advantages they can bring to them. The latter have been summarized and listed quite exhaustively by Keles and Ozel (2016, 3). Below we present their list with some integration by Palmer (2001), Nguyen (2008), Caporali and Trajokovik (2012), Fanti (2020) and by the author of this dissertation:

• Students have the convenience of course materials being delivered to his/her home, office or any place of preference.

- Students may gain useful, transferable skills, such as planning and research.
- Students and teachers can have access to innovative ways of learning and teaching.
- Students can make and get their feedback easily.

• Students from any geographical area can gain exposure to, and interact with, different cultures and languages.

- There is no waste of time and money in transport.
- Distance learning can access students without face-to-face learning opportunities.

- Distance learning provides just-in-time learning⁴.
- Distance learning is associated with technology more than face-to-face learning.
- Distance learning can reach a wider audience.
- Distance learning can promote high levels of students' autonomy.
- Distance learning can facilitate greater learner-instructor interaction.
- Distance learning can facilitate greater interaction among peers.
- Distance learning can diminish students' anxiety and augment students' motivation.
- Distance learning can provide less distraction from the surrounding environment.
- Distance learning can equalize access to education.
- Distance learning makes information and lecture notes or recordings open to everyone.
- Distance learning minimizes the costs of stationery.
- Distance learning is eco-friendly.
- Distance learning can be complementary to traditional classroom learning and enhance it.
- Distance learning increases the effectiveness of education through the use of items such as

sound and image.

This list briefly highlights the main characteristics which have led distance learning to the success it has today. Nevertheless, some scholars observed also the downsides of this type of learning. In fact, although they recognize its benefits, some of them claim that distance learning and, in particular, all the courses completely held in this mode, will always be inferior to face-to-face learning (Palmer 2001; Fanti 2020). Sun (2014) suggests that the lack of physical interaction between students and teachers and between peers can create a sense of isolation and difficulties in working with others. In this respect, Riva (2002, 151; as cited in Nguyen 2008) adds that students may struggle "to identify correctly the kind of interpersonal situations they find themselves in". Other issues may emerge from the use of technology: the students may not be able to access the necessary devices; they could not have sufficient technological skills or technical problems could come from the malfunctioning of the devices and/or the Internet (Keles and Ozel 2016). Furthermore, as we saw in § 1.4.1, teachers need to be technologically and pedagogically trained, open to teach in a flexible way and to prepare materials *ad hoc*.

1.4.3 An Introduction to Synchronous Distance Language Learning

⁴ Just-in-time learning is characterized by an approach which promotes the possibility of accessing it when and how the students prefer according to their needs.

The advantages and disadvantages illustrated in the previous paragraph can refer both to asynchronous and synchronous distance learning. However, for the sake of this study we will focus more on the second type of learning which is usually delivered via web chat, teleconferencing, or videoconferencing, and, thus, it concerns text communication, audio-visual communication or both. Being synchronous, it requires all the students to participate in the sessions simultaneously, so it is less flexible in terms of time schedule. At the same time, synchronous distance learning usually triggers more interaction between peers and between students and teachers, and preserves part of the spontaneity of face-to-face communication (Nguyen 2008). Indeed, it may be also considered as the most appropriate choice for large groups of learners in which single students have generally less chance of participation.

Due to the advantages presented in § 1.4.2, distance learning and, more specifically, synchronous distance learning has recently found more and more space in language learning and is becoming the norm in many FL learning environments (Bosmans and Hurt 2016). In particular, Terhune (2016) asserts that real-time face-to-face computer-mediated communication is increasing in importance and getting attention in the delivery of individual and group language courses which make use of software such as Skype and FaceTime. In fact, since the beginning of Integrative CALL, research has supported the need to integrate with some regularity real-time CMC activities both in offline and in online programmes as requested by the students as well (Groom 2003; as cited in Sun 2014). According to Thorne and Payne (2005), since the 1990s synchronous CMC (SCMC), which at the beginning mainly regarded online chats, has been considered a powerful tool to help students in their FL learning paths. Its eminence is augmenting so much that younger generations are growing up while constantly interacting through this type of communication which is now available from any type of portable device with Internet capabilities. Therefore, students, being highly used to -and quite keen on- these devices, could even feel more comfortable communicating in SCMC environments also in the target foreign language, apart from in their native language. This is one of the reasons why teachers should try to adapt their lessons to the current social situation and incorporate SCMC in FL teaching/ learning.

Fuente (2003, 50-51) quotes several studies demonstrating the positive impact of synchronous distance language learning on "(a) reading and writing outcomes; (b) conversational communication skills; (c) morpho-syntactic development; (d) sociolinguistic competence; (e) quality and quantity of production of learner output; (f) amount and equality of participation; (g) motivation and reduction of communication anxieties."

In particular, the author claims that SCMC also promotes collaborative language learning and equally distributed participation facilitating the acquirement of productive FL competence. In this respect, Hampel and Stickler (2005) in their study on videoconferencing report that it brings to more language productions, more speech turns, more collaboration and reduction of anxiety, even though a bigger effort is required to FL teachers in the management of the online interactions since they assume also the role of moderators besides their usual one. Regarding foreign language production, Thorne and Payne (2005) emphasise the opportunity for students to get involved in tele-collaborative written and spoken language negotiation with their peers and better speakers of the target language. Furthermore, the applications of technology in synchronous distance language learning can bring to light or amplify the chances of actually speaking with native or expert speakers of a certain FL language located in distant places (Akiyama and Cunningham 2018; Chen and Yang 2014; Terhune 2016; Wu et al.

2013). In this way, students can also notice language-related aspects which are usually neglected in traditional formal teaching (Toyoda and Harrison 2002). In particular, learners can practice and enhance the four basic communicative skills, and reach higher levels of FL proficiency and fluency thanks to the possibility of receiving input from native speakers and engaging in meaningful language production. Precisely because of the abundant advantages they bring to FL learning, tandem projects have been one of the most popular arrangements in the implementation of SCMC in FL lessons (Akiyama and Cunningham 2018). Akiyama and Cunningham (2018) report that very often the main focus of these arrangements is not only on improving language competence, which sometimes is even a marginal goal, but in getting to know the culture of the native speakers. However, this orientation towards culture is not to be considered as an obstacle to language learning, but exploited as a great motivational booster for students (Sauro 2013).

SCMC projects can also be part of complex collaborative projects in which distinct FL classes can cooperate remotely on the same task and employ new technologies as a mean of communication. This type of projects also comprehends those in which the target language is used as a *Lingua Franca*. As Helm, Guth and Farrah (2012; as cited in Akiyama and Cunningham 2018) highlight, these language projects tend to be more content-learning-centred and/or designed to encourage a critical dialogue about a certain topic rather than to favour mere language improvement.

According to Chen and Yang (2014), thanks to SCMC, students feel even more motivated to learn because they feel to be involved in authentic language learning. Indeed, in synchronous distance language learning, students can be pushed to use language with the same purposes as those related to language use out of school thanks to the engagement in specific real-life communicative tasks. Another aspect which is claimed to increase motivation is the novelty of the use of SCMC in school classes (Nguyen 2008). Moreover, Morollón-Martí et al. (2016) add that SCMC can strongly improve general FL pragmatic awareness. In this respect, Palmer (2001) states that videoconferencing is really useful to make students notice also the ways in which non-verbal messages should be conveyed in a certain language and culture. At the same time, teachers can have more control on the reactions of the students and provide immediate feedback. On the contrary, in written SCMC participants clearly lack aural and visual paralinguistic cues. On the other hand, according to Fitze (2006) they seem to produce more turns since there is no need of temporally sequential contributions and more lexically dense sentences avoiding repetitions typical of orality. In summary, synchronous distance language learning can potentially have very good benefits for the development of the target FL and can often be richer in authenticity while providing important opportunities to actively participate and interact in innovative learning environments.

1.4.4 Learning FL through Virtual Museums and Tours

The use of new kinds of technology permitting virtual experiences has offered new opportunities for the teaching/learning of foreign languages. Before the development of multimedia, the main computer-assisted pseudo-virtual experiences occurring in FL teaching and learning were simulations in which computers could provide contextualized oral or written stimuli and learners would respond verbally and/or react accordingly (Jones 1986). With the advancements in several kinds of technologies, especially 3-D ones, numerous language projects have been carried out with "the advantage of the immersive qualities of the virtual worlds, of the rich variety of the setting and of access to native speakers of target languages" (De Jong Derrington 2013, 135). However, the studies

on this type of FL learning seem to be quite scarce and have concentrated especially on university students (Reisoglu 2017; as cited in Lan 2020).

New technologies allow learners to get access to Virtual Realities (VR) which can be totally invented or actually exist in the real world (Lan 2020). In fact, VR can be found in many diverse specific games, simulations or socially based practical implementations which require different degrees of immersion and participation. However, we should keep in mind that it is an umbrella term which refers to "a set of images and sounds, produced by a computer, that seem to represent a place or a situation that a person can take part in" (Cambridge Dictionary Online). These environments enable FL learners to enter worlds in which they can make contact with the target language and which include culturally relevant objects (Golonka et al. 2014). Taking into consideration the importance of situated and contextual learning to FL learning, Lan (2020) strongly suggests to incorporate virtual realities in FL courses because of the power of VR to involve students in immersive contexts and meaningful interactions. Furthermore, some VR tools allow students to develop spatial awareness also through movements and gestures to interact with others and with the virtual worlds. This can abundantly facilitate the educational achievements of this type of learning (Wang et al. 2019).

In particular, Lan (2020) proposes a model to make the most of the different virtual reality tools that FL educators may choose to employ in their classes (see Figure 8). The author believes that only through learner-centred approaches the fundamental features of VR will actually lead to successful language learning.



FIGURE 8. HOW THE SPECIFIC FEATURES OF FL CAN MATCH WITH SUCCESSFUL FL LEARNING (LAN 2020, 2).

The same author claims that one of the most important strengths of VR for FL learning is the variety of visual explorative experiences they can provide. Blyth (2018) agrees on this statement and specifies that VR are being used by an increasing number of FL educators with the purpose of providing students with the opportunity to visit places they could not in the past because of several reasons such as distance, cost, or other factors simply related to the organization of field trips. At different degrees, multimedia technology can indeed promote complex visual experiences in which virtual visits are made possible. At the same time, it can encourage students to actively participate in environments rich of audio, visual and spatial stimuli (Ho et al. 2011). Virtual visits and trips can be based on several topics and have different time length exactly like school-based trips. They can also embrace several technological tools and platforms which nowadays can include computers, but also VR

headsets or smartphones (Pérez-Sanagustìn et al. 2014) in which several distinct applications can be used, or specifically designed, for educational purposes (Harley et al. 2016).

For instance, Second Life is an online virtual world where users create avatars and can interact with other avatars, with places and objects. In addition, in this virtual reality users can design different kinds of buildings including museums and art galleries in which students can watch photos, paintings, videos and sculptures (Calongne and Hiles 2007). The authors claim that by the time they wrote their paper, a good amount of FL teachers had chosen to use Second Life in their classes in the United States. For example, Second Life has been exploited in a project by Ho et al. (2011) with the aim of engaging students in innovative cultural activities which could enhance creativity in productive and receptive meaning-making in multimodal contexts. In particular, this goal was achieved by the creation of a virtual museum by the students. The way in which virtual museums are thought by these scholars resembles MOSAICA, a web-based system in which users could share their cultural experiences and artefacts online through multimedia. MOSAICA was created in order to preserve stories, traditions and diverse cultures in a virtual reality (Barak et al. 2009). Also Christal et al. (2001) in one of the first studies on this field, agree on the importance that VR can gain in promoting culture. Moreover, they assert that the creation of virtual museums through digital media, the Internet and other multimedia tools can preserve heritage languages and serve to effectively perpetuate the collaboration between schools and museums.

Reflecting on the difficulties that may arouse from taking students to museums, especially due to geographical distance and disapproval by the school administrations, Ruanglerbutr (2016) suggests more research on the integration of virtual reality tools and/or high resolution images in the classroom in order to be able to observe possible positive effects. In this respect, Sederberg (2013) conducted a study in which she included two virtual visits in which she used online images and videos. According to her (2013, 251), this type of visits can improve "students' transcultural competence and critical thinking about the interrelations of culture and language". Nevertheless, she also claims that they are more challenging for students because of the lack of one of the main features of learning at the museum, concrete tangible objects. For this reason, the author highlights the importance of encouraging more discussions and activities supporting learners in linking virtual museums to classroom education and to make it more effective.

3-D software which are usually for free such as Google Maps, Google Earth or Google Arts and Culture can be successfully employed to carry out tours including 360° views. In the specific field of language education, only a few studies have been dedicated to the application of these software to foreign language learning. For example, one of the first studies concerns the enhancement of Danish language through the practical task of adding tags to Google Maps and Google Earth (Bo-Kristensen 2009; as cited in Chen 2020). Another more recent study focussed more in depth on the experience of the discovery of faraway places through the use of Google Earth. The abovementioned study proves that this software can be successfully integrated in EFL courses in order to help students to improve their oral skills (Awada and Diab 2018). Furthermore, the authors claim that Google Earth had a positive impact on the arousal of cultural awareness through the exploration of different geographical places. The innovative ways in which this project was actualized made learning enjoyable for students and reduced anxiety. Also Chen (2020) employed Google Earth in his EFL course. He noticed an improvement in middle school students' explanatory writing thanks to virtual trips they could take part in autonomously in different cities. He also observed a growth in intrinsic motivation and sense of engagement with the learning tasks. Moreover, Awada and Diab (2018) and Chen (2020, 18) agree on the fact that "Google Earth can be a fun and powerful tool to establish the linkages between formal and informal learning environments as well as facilitate learners' critical thinking and spatial analytical competency".

With regards to museums, they have made some effort to enter the world of Internet since the 1990s, although their purpose has been mainly related to marketing and promotion, and, thus, not to create a connection with the public (Gaia and Boiano 2020). Nevertheless, nowadays several museums are enriching their websites with more online resources regarding their artefacts and an increasing number of museums have recently started to deliver visits through VR tools. Gaia and Boiano (2020) talk about one of the first virtual museum tours to be implemented, which today is offered by the Van Abbenmuseum in Eindhoven. In this museum, visitors (especially disabled ones) have the chance to visit the collection while they are connected to Skype and transported through the gallery by a robot accompanied by a guide.

At the moment, more and more museums are starting to use Google Arts and Culture, a new software which enables users to see high quality images and entire art galleries with a 360° view. The museum educator/guide and the visitors meet via online software allowing videoconferencing and the sharing of screens. In this way, the museum educator/guide can share his/her own computer screen in order to show the museum collection to the visitors who can participate simply by speaking or writing in the chat. The main advantages of these visits are delineated by Gaia (2020) and are quite similar to those of distance learning (see § 1.4.2). They include much more flexibility in terms of time schedule and organization of the visit, less time and money spent on transports, and the possibility of using really high quality sound and images. In particular, in Google Arts and Culture visitors can even appreciate tiny details of the displayed objects, usually not visible during a normal museum tour. At the same time, the author highlights the technical problems which might emerge from the use of these online tools, once again very similar to the technological disadvantages mentioned in § 1.4.2. Likewise, it is also important to highlight that virtual tours require specific preparation and training by the educator/guide in order to be carried out appropriately. Compared to other types of virtual tours, this one seems to have the potential of being even more educationally beneficial to students since it can almost be close to a "real" experience inside a museum. However, apparently no studies have been carried out on non-formal language learning experiences at the museum which make use of VR tools with 360° views like those we have mentioned in this paragraph.

2. THE STUDY

2.1 Introduction

The present study aims at investigating the impact of an art-based CLIL module on vocabulary learning. All the activities of this module were held via synchronous distance learning and inspired by the artworks that the participants had the opportunity to observe and analyse during a virtual tour and two more lessons revolved around the artworks included in this tour. First of all, we chose to focus on vocabulary learning since not only is it generally recognized as crucial for FL learning, but also because many scholars consider it to be at the very basis of linguistic knowledge. Yet, it causes the most relevant problems for FL students (Meara 1980; Nation 1990; Segler et al. 2002) and, at the same time, lexical errors are evaluated as the worst ones by native speakers (Gass and Selinker 2001; as cited in Kleinman 2017; Politzer 1978; Johansson 1978; as cited in Roos 1994). Several studies on FL learning at the museum have already gathered data in favour of the hypothesis of it contributing to an improvement in vocabulary knowledge by the participating learners, although none of the projects was specifically aimed at ascertaining this. These studies mostly collected qualitative data suggesting that, thanks to its intrinsic characteristics accompanied by appropriate language teaching methods, FL learning at the museum can be highly beneficial to the enrichment of students' lexicon (see § 1.2.2 and § 1.3.4 for more details).

Concerning the mode in which the museum visit was carried out, although some researchers have highlighted the conspicuous advantages that virtual tools can bring to language learning (see § 1.4.3), no studies adopting 3-D technologies showing 360° views of museums' spaces have been conducted before in the field of non-formal FL learning at the museum. Virtual Realities can indeed engage students in a meaningful use of language and, more in particular, in immersive and interactive contexts in which they can live fruitful educational experiences in innovative ways (Lan 2020). Furthermore, the novelty of this study consists in the delivery of the lessons: they were held completely online via synchronous computer-mediated communication (i.e., videoconferencing) which permitted the students to access the lessons from their own personal computers and to interact in real time.

Thus, the main research questions that we addressed are:

- 3. Does virtual FL learning at the museum have a positive impact on students' vocabulary learning?
- 4. Do students perceive virtual FL learning at the museum as beneficial to their vocabulary knowledge?

The first research question aimed at exploring the possible improvements in students' written receptive and productive knowledge of a selected lexical list concerning Art in general and the virtually displayed objects and buildings in particular. This question was addressed by using descriptive and inferential statistics to compare the results of a pre-test and a post-test.

The second research question was posed to observe students' perceptions on the outcomes of the module, in particular regarding their vocabulary knowledge. In order to do so, a questionnaire was administered. The questionnaire had also the aim of complementing the quantitative data in the triangulation process by evaluating if the test results converged with students' perceptions about the outcomes of their virtual experience of FL learning at the museum. Given the established research, we expected to give quantitative evidence of a significant improvement in students' vocabulary knowledge of the target words and, at the same time, that this evidence was supported by students' reports of their perceived outcomes. Thus, the research hypotheses were respectively the following:

- 1. Students improve their vocabulary knowledge after the treatment⁵;
- 2. Students perceive a vocabulary improvement after the treatment.

Furthermore, the fact that this MA dissertation is based on a particular learning experience of English at the museum which apparently has never been carried out before brought us to the decision to detect students' attitudes towards these types of modules. In particular, two items of secondary importance for the main purposes of this study have been included in the questionnaire to get an insight into students' level of appreciation of the activities. Moreover, the conclusions of this study and further observations by the writer of this dissertation and by the teachers involved in the project brought to light interesting aspects which could be delved into in future research on this field of applied linguistics (see § 2.9).

2.2 School Context and Participants

The present study is based on a short-term project held in the CPIA (Centro Provinciale per l'istruzione degli adulti; i.e., Provincial Centre for Adults' Education) of Venice. The main purposes of CPIAs consist in the creation of:

⁵ In this study the treatment is this specific CLIL/non-formal learning module aimed at the improvement of vocabulary knowledge.

- 1. Educational paths for adults aimed at the achievement of school qualifications and certificates;
- 2. Initiatives for the extension of the educational offer aimed at the integration and enrichment of adults' educational paths and at the facilitation of the conjunction with other educational and formative paths;
- Experimental and developmental research activities on adults' education aimed also at the enhancement of the role of the CPIA as "service facility". (MIUR official website, our translation)

Thus, these Italian institutions primarily give adults the opportunity to obtain school qualifications. Furthermore, they are open towards different projects which can be educational and formative, while, at the same time, aimed at maximizing experimentation and the development of activities which promote innovative learning and CPIAs' role of "service facility". These types of institutions cover the secondary school level of instruction, encompassing both middle school and high school courses. They also offer language courses of Italian as a Second Language in order to facilitate the integration of immigrants.

Coming back to this specific study, in particular, the activities of our module were created for a group of 23 students who attended the CPIA of Venice to obtain the middle school qualification valid in Italy. The project was also conducted thanks to La Buona Scuola law (i.e., Italian Law 107/2015 also known as The Good School) which prompted the Venetian CPIA to look for innovative and flexible ways to integrate Art in their school curriculum. The latter is not part of their school curriculum, hence, some of their teachers thought that FL learning at the museum could be a fruitful way to make students familiar with this subject and, at the same time, to promote non-formal EFL learning. Moreover, given students' financial status and the distinct issues concerning the organization of a school trip, the possibility of participating in a distance learning module designed around a virtual tour was received with great favour by their English teacher and by their school coordinator. In fact, they were enthusiastic about the short project and chose to call it and present it to the class as Art without Borders, emphasising the fact that this module provided students with the opportunity to access Art and, more specifically, an art museum in spite of all the obstacles which often make it an elitist and/or difficult-to-realize experience. The class was also given the possibility of using this project in their tesina, a very short final dissertation required to students willing to obtain the middle school qualification, if they wished. Some of them actually did so: they took inspiration from the project or used some of the selected artworks in their final works.

The group was composed of 16 male and 7 female participants who the author/practitioner of the study did not know before the beginning of the module. However, they knew each other quite well since they were involved in this project with their classmates. In fact, the project took place at the same school hours in which the students would have normally attended their EFL lessons. Their native language was not Italian: the group was multilingual and their origins were quite heterogeneous. In more detail, 8 of them came from Albania, 4 from Kosovo, 2 from Pakistan, 1 from Ukraine, 1 from Egypt, 1 from the Philippines, 1 from Bengal, 1 from Eritrea, 1 from Peru, 1 from Macedonia, 1 from Moldavia, and 1 from China. Due to the nature of the hosting institution, also

their age was heterogeneous and ranged from 16 to 43 years old. Their level of English proficiency can be defined as basic/elementary ($A2^6$), even though a few of them had a higher level because of either their origins or their educational and personal background.

2.3 Overview of the Module

2.3.1 Modality, Structure and Content

As we said in the introduction of this chapter (see § 2.1), this dissertation is based on a study on the impact, in particular on vocabulary learning, of an art-based CLIL module revolving around a virtual museum tour. Since the lessons were held via synchronous computer-mediated distance learning, we chose to use Google Meet, a free software permitting videoconferencing, as the medium of communication. A great advantage of this kind of software is that the participants were able to see simultaneously the faces of their peers, of the person leading the lessons and the computer screen that she was sharing with them. To facilitate the effective use of the selected mode of delivery of the lessons, the 23 students were divided into two groups. In fact, they took part in meetings scheduled at different hours, but designed to contain the same activities. We decided to plan the sessions this way in order to increase the quality of the learning experience and the possibility of active participation. Furthermore, this choice aimed at diminishing the chances of technological problems which could be caused by the malfunctioning of the Internet connection, of the personal devices or of the software. The students were also asked to mute their microphones and to interact only by writing on the live chat, so that they could participate without jeopardizing the quality of the sound. Furthermore, nowadays videoconferencing software allow users to record the whole meeting or part of it, according to their necessities⁷. In fact, all the meetings were recorded and uploaded in a shared online drive so that the students could watch them again whenever they liked. Apart from the students, their English teacher and the author of this thesis who was in charge of delivering the lessons, also other 2/3 teachers of the class (usually the SL Italian teacher, the coordinator of the course, a technology teacher; and some other school teachers curious about the project) attended the module. The English teacher introduced the lessons and participated mainly as a moderator in the chat, while the rest of the teachers who attended the lessons did not participate much, although they sometimes intervened with interesting links with other subjects.

The entire module was completed in a week in April 2020 and was composed of three lessons: a previsit lesson, the virtual visit, and a post-visit lesson (see Tab. 5):

⁶ With this categorization, we are referring to the CEFR levels (see Council of Europe's official website for more details).

⁷ More specifically, it is the host of the meeting that can record it.

LESSON	MAIN FOCUS	TIME LENGHT
1-PRE-VISIT	Introduction and preparation	2 h
2-VIRTUAL VISIT	Activities at the museum	1h.30 m
3-POST-VISIT	Consolidation	2 h

TABLE 5. THE STRUCTURE OF THE MODULE.

The first lesson was completed in 2 hours and its aims were motivating the students and introducing them to the themes and the artworks of the museum visit. In addition, this pre-visit phase was also planned in order to give particular relevance to the vocabulary which the learners were supposed to either get familiar with or revise. This was done by using screen sharing to show a PowerPoint presentation which contained interactive activities designed for the abovementioned purposes. Furthermore, the pre-visit lesson contained many visual stimuli related to Art so that students could start familiarizing themselves with Art in general and with the target vocabulary selected for them in particular. In this way, we wanted to make sure that they could make the best of the activities not only of the museum visit, but also of the post-visit lesson.

The second lesson lasted 1 hour and a half and was the actual virtual tour inside –and outside- the Peggy Guggenheim Museum of Venice. This specific museum was chosen in order to be consistent with the type of Art which is usually studied in the third year of middle school in Italy, that is modern and contemporary Art. Furthermore, the fact that we wanted to get the students to participate in a learning experience in an important museum of the area they were living in and which they had not visited before influenced our choice. In particular, we opted for diverse Peggy Guggenheim Museum's artworks characterized by different styles and techniques so that the group could get to know a heterogeneous variety of art pieces. At the same time, the works of art presented in the visit were chosen because they were considered appropriate to stimulate students' curiosity and carry out captivating activities suitable to their language proficiency level and their general characteristics.

The visit started from a visual perspective that students would not have the possibility to appreciate without the VR (i.e., Virtual Reality) tools used in the module: the view of the museum and of the area around it from above made available thanks to the use of the satellite mode of Google Maps and shown through screen sharing. Then, in the remaining parts of the visit, 360° views of the rooms of the museum from Google Maps, high quality images from the official website of the Peggy Guggenheim Museum, and part of a video from YouTube were employed. In more detail, at the beginning of the visit, we briefly introduced the visit talking about the museum and the area in which it is located. This brief introduction was accompanied by ice-breaking and motivating exchanges in front of the entrance of the museum. There, the students had also the opportunity to take a look at the street in which the Peggy Guggenheim Museum is situated as it would have happened if they had been in the location for real. Then, still taking advantage of 360° views shared to all the participants from the screen of the author/practitioner, we moved to the inner garden where we started to introduce the history and architecture of the palace. The activity was completed in several steps which required

the movement from the garden to the centre of the Grand Canal, which is not usually part of the museum's tours, and was concluded in the terrace in front of the museum. Then, we played part of a video showing the first artwork that the students were going to observe, the painting *On the Beach* by Pablo Picasso, and the room in which it is exhibited. After the video, the activities about this painting were conducted with the support of high quality images retrieved from the official website of the museum. The visit went on with 360° views of the rooms in which the two remaining works of art included in the module, the painting *The Attirement of the Bride* by Max Ernst and the sculptural work *Silver Bedhead* by Alexander Calder, are preserved. Once again the activities were carried out also with the aid of high quality images. At the end of the activities the students were asked to freely express a general opinion on the artworks of the visit and a justified preference for a certain piece of art and/or part of the visit.

During the activities the learners themselves constructed their knowledge about the content of the visit. In fact, the author/practitioner did not assume the role of tour guide, but created specific activities that allowed the group of students to speculate on different aspects concerning the selected artworks. Only when the students had carefully observed the artworks to make their assumptions and communicate them in the chat, the author/practitioner intervened to confirm what the students said and to add some additional information. Furthermore, several activities in which the participants could solve different tasks permitted further interaction with the displayed objects. The museum visit was indeed designed to meet the teaching method chosen for the entire module in order to achieve the specific learning goals (see § 2.3.2 for more details on the teaching strategies employed to do so).

The last meeting of the module took about 2 hours and several activities were carried out in order to summarize and consolidate the content about Art and the specific artworks of the virtual visit. Moreover, at the same time, we made sure that the learners could produce the target words of the module again by participating in the chat. Obviously, they could also read them and listen to them when repeated by the author/practitioner reading their messages out loud. In particular, the students themselves were asked to explain the content of each part of the visit, this time without the visual support, by re-constructing it cooperatively in a brainstorming activity. Then, in order to definitely confirm their reconstructions of the content and summarize it, they were briefly shown the building and the selected artworks of the Peggy Guggenheim Museum once more and the author/practitioner verbally intervened to guide them. After this, a few more activities were carried out with the same purposes we have mentioned above.

About a week later, a follow-up meeting was organized in order to give students general and individual feedback about the results of the tests. Furthermore, their teacher informed them of her overall evaluation about the experience and about how the single students had done in the entire module considering also their participation during the lessons and the improvements she observed. Although this meeting was not part of the module itself, it was a great chance to say goodbye to the students and the teachers who attended the lessons and to exchange further opinions about them.

2.3.2 Teaching Method

One of the module's most important aims was to improve students' vocabulary knowledge of a selected list of vocabulary. This list contained 28 words: 9 of them were specifically related to Art and Architecture, and the rest were quite generic words. Due to the proficiency level of the participants, we decided to include quite high-frequency words, although also some low-frequency and specialized words connected to the analysed artworks entered the list (see § 1.3.1 for more details on the categorization of the words depending on their frequency). Apart from the specific language goals, the module had some content-related objectives: introducing students to Art in general and to the proposed works of art and the museum in which they are preserved in particular. In order to reach our main objectives, the CLIL methodology was chosen and applied to non-formal FL learning at the museum. Thus, we attempted to integrate the abovementioned content learning and EFL learning in the virtual non-formal context described in the previous paragraph by alternating the activities at the museum with in-school activities before and after the visit. In fact, one of our main objectives was to implement a project which promoted the connection between school and the external world, which is indeed consistent also with one of the most relevant objectives of non-formal learning. For this reason, a module divided in three lessons was considered as the best option to carry out the project and to make the connection between CLIL at school and at the museum possible, as also suggested by Fazzi (2019, 325).

In particular, regarding the use of the target FL, CLIL was implemented in a flexible trans-linguistic way; that is, English was the predominant language of instruction and communication, but also Italian was strategically used by the author/practitioner orally, and by their English or their Italian SL teacher in the Google Meet chat when needed or specifically required by the students. In this respect, throughout the module great attention was paid to providing comprehensible input and several strategies of language simplification were adopted (see Berruto 2012; Bosc 2012; Lombardo 2018). Among these strategies great emphasis was on redundancy, especially of the target words. In fact, all the words of the list were repeatedly emphasised by the author and their written production was encouraged during all the activities.

The students were involved in practical task-based activities with clearly-set goals in which they could apply problem-solving skills and feel involved in pseudo-real-life situations (e.g., reading/listening to a pseudo-authentic texts, talking with the artists of the selected artworks, expressing opinions and choices, etc.). Thanks to the use of synchronous computer-mediated communication, this could take place fluently because students could use the target language and read others' contributions in the chat, while they watched the images on their screens and listened to the author of the study who guided them during the activities. Furthermore, thanks to inductive collaborative methods, the students themselves could draw accepted conclusions and derive satisfaction and motivation from them (Sheils 1993) since these conclusions were like puzzles made of the different pieces of information provided by students' active participation.

At the same time, CLIL methodology was implemented by taking advantage of the beneficial characteristics of non-formal learning at the museum. In fact, although students could not physically be at the Peggy Guggenheim museum, we tried to create multi-sensorial activities in which they could engage interactively with the artefacts at least to some extent. Since the actual physical aspect of the

experience was clearly not going to be feasible, we used the virtual tools at our disposal the best we could through 360° views and high quality videos and images. In this way, students were able to benefit from dynamic 3-D images of the specific parts of the museum we chose to visit and from rich visual stimuli supporting vocabulary learning and helping the memorization of new words in the long-term memory. In short, none of the activities would have been possible, without the visual component provided by modern technology. In addition, many activities took advantage of the visual stimuli of the module which sustained learners' cognitive activation in order to help them to participate in the activities by elaborating their own opinions and observations derived from the input coming from the displayed objects. Apart from the great benefits that this could bring to the advancement of productive skills, it was also fundamental for the self-noticing of the gap between what students were able to do with their vocabulary knowledge and the vocabulary that was needed to perform a certain task. Self-noticing and guided noticing were made true by the constant oral (by the author) and written (by the students) use of the selected words elicited in the activities and, simultaneously, visually present in the artworks. So, through redundant oral, written, spatial and visual stimuli and the teaching method illustrated so far, we tried to lead students to a successful EFL vocabulary learning.

However, as Hampel and Stickler (2005) suggest, synchronous language distance learning implies more effort by whoever is delivering the lessons. In particular, the phase of preparation of the activities required paying special attention to the media that would be used to carry them out. Furthermore, during the lessons specific skills were needed in order to make the learning experience productive. For example, apart from guiding all the activities and the virtual tour and, thus, being in control of all the technological tools employed in the project, we also had to deal with students' participation constantly checking their interventions in the chat and responding to them. In fact, the development of certain multitasking skills as those recommended in § 1.4.1 is highly desirable in this type of contexts.

2.4 Methodology of Research

Following Brown's categorization (2004) this study can be defined as primary since it does not derive from the analysis of the research and writings of others. In particular, the selected methodology of research is based on the typology of mixed methods in which triangulation is employed to augment the validity of the research and have a more comprehensive view on the main issues identified by the research questions by employing both quantitative and qualitative research methods. In more detail, considering all the specific features of this study, we can say that its methodology of research leans towards the statistical/experimental side of the qualitative-quantitative continuum for several reasons (see Dörnyei 2007). First of all, the main purpose was to prove precise and pre-established hypotheses; namely, 1) students improve their vocabulary knowledge after the treatment and 2) they perceive this vocabulary improvement. In order to gain the data necessary to confirm these hypotheses objectively, the results of a pre-test and a post-test were compared and a questionnaire was administered to the students. The raw data gathered from the tests were elaborated and made reliable through descriptive and inferential statistics, while the data derived from the questionnaire were transformed into hard data by applying descriptive statistics methods. Indeed, the only method of analysis that tended more directly towards the interpretative/ethnographic side of the *continuum* was the one employed to process the single open-ended question of the questionnaire (Content analysis, see Dörnyei and Kata 2012; Sándorová 2014), although some simple descriptive statistics calculations were employed also for this item.

Thus, taking into consideration the main characteristics of mixed methods as presented by Ivankova and Creswell (2009), in the triangulation process of the present study the *weight* of the quantitative method and the qualitative method is not equal and the former clearly tends to prevail over the latter. However, in respect of *timing*, the order of the data analyses of the tests and the questionnaire is not necessarily sequential since they do not depend on each other, but converge after the data have been elaborated separately. Therefore, the conclusions of this study have been drawn through the *mixing* of different instruments and data analysis procedures.

In particular, taking Ivankova and Wingo's 2007 and Ivankova and Creswell's 2009 graphical representation of mixed methods as pragmatic models, our research design can be graphically summarized as follows (see Figure 9):





FIGURE 9. RESEARCH DESIGN

In Figure 9 the reader may have noticed that the abbreviated form of "quantitative" is written in capital letters, while the abbreviated form of "qualitative" is not. This is due to the abovementioned factor of *weight*, being the quantitative method predominant. However, apart from the mixing with qualitative instruments and data analysis procedures, there is at least one more reason why this study cannot be defined as purely experimental: the sample size is not very large and this aspect draws the study nearer to the qualitative side of the *continuum* in which case studies can be found. In particular, we conducted our treatment on a particular group of learners belonging to a specific local institution which chose to host the author/practitioner of this research project who both delivered the lessons and carried out the study.

2.4.1 Instruments

In order to answer the first research question, we decided to collect quantitative data by administrating a pre-test and a post-test to account for the vocabulary learning outcomes as objectively as possible. Furthermore, a questionnaire was completed by the students in order to address the second research question and to complement the quantitative data with qualitative data regarding students' personal perceptions on their vocabulary learning outcomes. This triangulation was also useful to observe whether the test results corresponded to students' perceptions or not. In the following paragraphs the instruments used in the triangulation will be described more in depth.

2.4.1.1 The Pre-test and the Post-test

When the tests were designed, the administration of a pre-test and a post-test which were identical was considered as the most adequate choice. In this way, a proper comparison could be conducted

between the scores the students obtained before the beginning of the module and the scores they obtained after the three meetings. In order to compare the results of the tests, the participating students were also asked to insert their names⁸. The test was designed to investigate quantitatively the written knowledge of the target vocabulary with items that could be suitable for online delivery. Thus, 23 items were created and divided into 4 sections (3 of them containing 6 items and the last one 5 items) consisting in:

SECTION	EXAMPLE
 A facilitated cloze exercise in which the students had to fill in the blanks producing the appropriate word, whose initial letter was provided. 	-W is the contrary of peace.
2. An exercise in which students had to choose the correct word form from three options.	-These children REMEMBER/REMIND/RESIGN me of my brothers.
3. A recognition exercise in which students, after reading a sentence containing a target word had to choose the image representing that word.	-The wizard is wearing a long CLOAK.
4. A meaning-based exercise in which in a list of 5	-A painting is an ARTWORK.-I can eat a GROUND FLOOR.

⁸ It is important to highlight that they were assured that their identity would not be revealed in this dissertation.

TABLE 6. THE SECTIONS OF THE TEST WITH CORRESPONDING EXAMPLES OF THE ITEMS.

The test was specifically designed to meet students' EFL level and characteristics: the sentences were short, did not contain difficult grammar or lexis and the target vocabulary was graphically marked. In order to avoid any doubt about the adequacy of the test for the specific group of students, before its administration also their English school teacher was consulted and she expressed her approval. However, before the realization of the test, Nation and Serragiotto's directions on how to assess vocabulary knowledge (2001; 2016) were taken into consideration as a starting point, even though adapted to the specific sample of the study. In fact, as the reader is able to see in Table 6, each section of the test had a specific purpose. In this respect, each item tested the knowledge of a specific word and, in particular, the first section aimed at testing the productive knowledge; the second section at testing the recognition and consequent production; the third and fourth sections at testing the receptive knowledge of the form and the meaning of the selected vocabulary, respectively. The insertion of images in at least one section of the test was considered extremely appropriate not only because it was recommended by the abovementioned authors who wrote about the most appropriate ways to assess vocabulary learning, but also because the participants processed the target words with the aid of visual support throughout the module.

We decided to evaluate only written knowledge since students actually interacted with the rest of the participants connected in the videoconferences mainly writing in the chat. Consequently, requiring them to take an oral examination might have resulted in a disproportionate effort and have undermined the students' outcomes. Furthermore, in order to lighten the cognitive burden of the test and to keep the focus exclusively on the lexis, the learners were examined only on the base form of the target vocabulary. None of the items was obligatory: the students were free to leave any of them unanswered, so that they did not feel any pressure in completing all the items of the test.

2.4.1.2 The Questionnaire

At the beginning of the questionnaire the participants were asked to insert their names so that we could be able to compare the results of the test with their perceptions. It was designed to suit the online delivery and was composed of 8 items. They consisted of 8 sentences that the students had to score through a Likert scale with ascending values ranging from 1 to 4 depending on their agreement with what was stated in each sentence (the typical 5 points were avoided to prevent neutral responses which would have damaged the quality and usability of the data). 6 out of 8 items were completely focussed on attesting whether students perceived an improvement in their English language lexical competence after the module. In particular, these items especially concerned English vocabulary (Item 4), its receptive and productive knowledge (Item 5, and Items 7 and 8) and the *use* of new words

(Item 6) considered like in Nation's framework regarding vocabulary knowledge (2001) as the competence to adequately produce words in different textual and situational contexts. However, since during the preparation of the module we realized that a high degree of novelty in the delivery of the lessons was insistently emerging, a few items about the level of satisfaction with this new mode of carrying out FL learning at the museum were included in order to gain a general idea of how students perceived this virtual FL learning experience and to prompt further research, although this was not the central aim of the study. The entire set of items is presented in Table 7 in which each of them is accompanied by the explanation of the information we intended to gain by including it in the questionnaire.

ITEM	DATA ABOUT:
1) Mi sono piaciute le attività d'inglese al museoI liked the activities of English at the museum.	General satisfaction
2) Credo che le lezioni a distanza siano una buona opzione per le attività d'inglese al museoI think that online lessons are a good option for the activities of English at the museum.	Satisfaction with the mode
3) Credo di essere migliorato in inglese dopo le lezioni d'inglese al museoI think I'm better at English after the lessons of English at the museum.	General improvement in English
4) Grazie alle lezioni di inglese al museo ho imparato nuove parole inglesiI learnt new English words thanks to the lessons of English at the museum.	Improvement in EFL vocabulary knowledge
6) Dopo le lezioni di inglese al museo so usare più parole inglesiI can use more English words after the lessons of English at the museum.	Improvement in receptive EFL vocabulary knowledge
5) Dopo le lezioni di inglese al museo capisco più parole inglesi I understand more English words after the lessons of English at the museum.	Improvement in the use of EFL vocabulary in different textual and situational contexts
7) Dopo le lezioni di inglese al museo so scrivere più parole inglesi I can write more English words after the lessons of English at the museum.	Improvement in written productive EFL vocabulary knowledge
8) Dopo le lezioni di inglese al museo so dire più parole inglesi I can say more English words after the lessons of English at the museum.	Improvement in spoken productive EFL vocabulary knowledge

TABLE 7. LIKERT SCALE'S ITEMS.

Apart from the items aimed at answering the second research question, at the end of the questionnaire students also found an empty space in which they could freely comment anything they wanted so that we could delve into students' general thoughts about this specific learning experience more in depth. Moreover, the open-ended item was included to observe whether the students explicitly mentioned something about vocabulary and to be able to collect any further information about it. While the answers to the 8 Likert scale items were obligatory, we reckoned that giving the possibility not to answer the last item was the most adequate choice so that students did not feel forced to add anything else to their submission of the questionnaire and could provide spontaneous answers. Also this instrument was viewed and approved by the English teacher before its administration.

2.4.2 Administration

Just as the module which was held completely online, the tests were administered online too. In particular, the pre-test and the post-test were made suitable for online delivery via Google forms in the quiz mode which allows whoever creates a test to assign precise scores to each item (in this case, every correct answer was worth one point). Right before the first lesson, all the students connected to the meeting received a link on the Google Meet chat containing the pre-test. They had a time limit of 30 minutes to open and complete the test. This happened under the surveillance of their teacher and of the author of this dissertation who were constantly available to provide students with help to solve eventual technical problems and, most of all, to make sure they felt at ease and took the test smoothly. In fact, the participants were specifically told that they could ask for any explanation concerning the completion of the test, although the written instructions were clear and were provided both in Italian and in English in all the sections. The students were not informed at all about the content of the test in advance so that the results could mirror their actual initial level of vocabulary knowledge as accurately as possible. As soon as the students completed and sent the form successfully, they were notified. They did not receive immediate feedback about their scores and their errors: they were supposed to get to know the correct answers only during the module and not before its completion. Exactly the same test was administered immediately after the last lesson in the same way as the pretest was. In order to test the efficacy of the module itself and to avoid anxiety, the participants were not explicitly told to study the list of target words and they knew that the test was not going to be assessed by their teacher and influence their final mark in English. Their total scores were conveyed to them in the follow-up meeting so that they could also have verbal feedback and ask for further explanations.

The questionnaire too was administered online via Google forms. The students were sent a link to complete it right after they took the post-test because it was fundamental to make sure that their memory about their learning outcomes was recent, and thus, more accurate. They did not have a time limit, but generally submitted the questionnaire in 5-10 minutes. The instructions, the statements of the Likert scale and the last item were simple and clear, and written both in Italian and in English. Before the administration, every item was briefly explained so that students could understand the exact information we wanted to obtain. Furthermore, during administration, the English teacher and

the author of this study were present online and made themselves available to the students who could directly tell them about any difficulty in the completion of the questionnaire. For the sake of the study, but also to make students understand that their opinion was important and was going to be taken in great consideration as well, before the administration of the questionnaire they were explicitly asked to express their opinions and ideas freely, being as sincere and objective as they could.

2.4.3 Data Analysis Procedures

Out of the 23 students who attended the lessons only 20 returned the pre-test, the post-test and the questionnaire. Thus, the 3 remaining students were excluded from the study. The first step in the analysis of the data derived from the tests was calculating the means, the medians and the ranges in order to obtain a general overview of the results. Then, after calculating the mean of the differences of the scores of the pre-test and the post-test through Excel, the quantitative data coming from the results were elaborated through inferential statistics in order to guarantee that our general conclusions were statistically significant. In more detail, first of all a one-sample one-tailed t-test (p<0.01) was carried out by the author and verified through Excel. Its aim was to check whether the data supported the following system of hypotheses about the outcomes of the treatment (i.e., the module) or not:

 $H_0: \mu = 0$ ⁹ \implies No mean change of students' scores $H_a: \mu > 0$ \implies Increase in the mean of students' scores

In this way, we tried to statistically support the rejection of the zero hypothesis (i.e., Ho) which states that, on average, after the module there would be no change, and thus no improvement in students' performances. On the other hand, we wanted to confirm the alternative hypothesis (i.e., Ha); that is, that on average, data were going to be consistent with an improvement in students' vocabulary knowledge. Consequently, we aimed also at being able to statistically claim that the module had a positive impact on vocabulary learning. Furthermore, in order to corroborate the alternative hypothesis, we found the estimated range of values of the mean of differences which reveals the possible range of values of the latter in the population through a confidence interval with a significance level of 99%. The means of the scores of each section of the tests were also calculated separately in order to obtain more information about students' performance in the different typologies of items and compare the results of the pre-test and the post-test considering every distinct section.

The raw data derived from the results of the 8 items of the Likert scale of the questionnaire were elaborated through descriptive statistics in order to be able to obtain a general overview of students'

Ha: δ>0

 $^{^9}$ Even more precisely, δ could be used to indicate the mean difference, so that the system of hypotheses could be also represented as follows: Ho: $\delta=0$

perceptions by observing the frequency levels which a certain value of the Likert scale presented for each item depending on students' responses. With regards to the open-ended item (answered by 10 participants), a qualitative Content analysis was carried out coding the written text of the answers by detecting the most common thematic categories (in particular, the suggestions by Dörnyei and Kata 2012 and Sándorová 2014 were considered as a starting point). In fact, every answer received one or more tags according to their semantic content. Depending on the number of occurrences of the tags, percentages were assigned to each thematic category.

With respect to vocabulary learning, the processed data derived from the analysis of the results of the vocabulary tests and of the questionnaire items regarding students' perceptions were compared with the aim of drawing our conclusions by observing whether a correspondence between quantitative and qualitative data could be found or not. Furthermore, the data concerning students' declared level of overall satisfaction of the online module obtained from the analysis of the questionnaire items aimed at ascertaining this level were taken into consideration in the paragraph dedicated to it in the discussion (§ 2.6.2).

2.5 Results

2.5.1 Test Results

Thanks to the pre-test we detected the initial level of knowledge of the selected vocabulary and, then, we were able to compare the results with those measured through the post-test. More precisely, students scored a mean of 10.7/21 points (ME=9, MIN=5, MAX=20) in the pre-test; while in the post-test they scored a mean of 14.1/21 points (ME=13, MIN=6, MAX=20). In the following table these results have been organized and summarized (Tab. 8)

	MEAN	MEDIAN	RANGE
PRE-TEST	10,7	9	5-20
POST-TEST	14,1	13	6-20
	+3.4	+4	

TABLE 8. RESULTS OF THE VOCABULARY PRE-TEST AND POST-TEST.

The mean difference of the scores of the pre-test and the post-test calculated through Excel demonstrates that, on average, the participants scored more than 3 points more after the module (Md=3.45, MEd=3). Thus, a general improvement can already be noticed through this first step of statistical analysis.

An important piece of evidence to statistically confirm the rejection of the zero hypothesis (i.e., Ho=no mean change of students' scores) was given by the analysis of the results of the t-test. It proves that the module had a statistically significant positive effect (p<0.01) on students' vocabulary knowledge (n=20, dgf=n-1, t=6.7, p-value=1.04863E-06 \rightarrow .000). Also the calculation of the expected values in the confidence interval of the mean difference (2.16, 4.74) seems to support the alternative hypothesis with a level of significance of 99% showing that the treatment is effective in producing lexical improvement and that the latter may range from more than 2 points to almost 5 points in the population.

Table 9 can be consulted to have a separate insight into the mean scores of every section of the vocabulary pre- and post-tests:

	SECTION 1	SECTION 2	SECTION 3	SECTION 4
	(MAX=6 points)	(MAX=6 points)	(MAX=6 points)	(MAX=3 points)
PRE-TEST M	1.45	3.35	4.35	1.55
POST-TEST M	2.30	4.40	5.25	2.20

TABLE 9. MEANS OF THE RESULTS OF THE DIFFERENT SECTIONS OF THE VOCABULARY PRE-TEST AND POST-TEST.

As the reader is able to see in Table 9, the mean scores for each sections demonstrate that the sample improved in all of them. In particular, the participants got almost the maximum points in Section 3 (M=5.25/6) in which they had to recognize some of the target words and choose the corresponding images, and in Section 4 (M=2.2/3) in which they had to pick the correct sentences showing they understood the meaning of the selected vocabulary. Also in Section 2, concerning the production of a word in a sentence after its recognition, the students got pretty high scores (M=4.4/6), although slightly worse than those previously illustrated for Sections 3 and 4. On the other hand, the lowest points were collected in Section 1 where the students improved, but still did quite poorly, with a mean score of 2.30/6 points in the production of the target words.

2.5.2 Questionnaire Results. The Likert Scale.

The results of the first part of the Likert scale regarding students' level of satisfaction of the virtual activities of English at the museum are reported in the following figure (9) in which the percentages of respondents who opted for a certain value from 1 (*I don't agree at all-Per niente d'accordo*) to 4 (*I totally agree-Totalmente d'accordo*) depending on their level of agreement on the statements of the items¹⁰ are presented:

¹⁰ You can find all the statements of the Likert Scale in Italian and in English in Tab. 7 of § 2.4.1.2.



FIGURE 9. RESULTS OF THE ITEMS OF THE LIKERT SCALE REGARDING THE APPRECIATION OF THE ACTIVITIES OF ENGLISH AT THE MUSEUM.

In particular, the results of Item 1 show that 95% of the participants liked the module, while only 5% (=1 participant) did not. The percentages of Item 2 are quite similar, showing that, in general, the large majority think that online lessons are a good option for the activities of English at the museum, although 10% (=2 participants) of the students did not agree.

Summarizing the answers of the rest of the items of the Likert scale, the results concerning English language and, more specifically, English vocabulary knowledge show that none of the students strongly disagreed and only 7,7% of them did not agree on an improvement after the module. On the other hand, the great majority did feel that they had improved thanks to the activities of English at the museum (92,3% of the students divided in 41,2% that agreed and 51,1% that totally agreed; see Figure 10).



FIGURE 10. STUDENTS' PERCEPTION OF THEIR EFL LEARNING OUTCOMES.

The results of every single item have been elaborated through descriptive statistics and gathered in the following figure (11) in which the percentages of frequency of selection of a certain Likert scale's value representing the level of agreement on the statements exactly like in the first 2 items (i.e., 1 = I *don't agree at all-Per niente d'accordo*, 4 = I *totally agree-Totalmente d'accordo*) are displayed:



FIGURE 11. RESULTS OF THE ITEMS OF THE LIKERT SCALE REGARDING STUDENTS' PERCEPTIONS OF THEIR LEARNING OUTCOMES.

Items 3 and 4 present the same frequency levels and suggest that the participants think they have improved both in English in general and in vocabulary knowledge in particular (5% did not agree, 35% agreed and 55% totally agreed). In Item 5 participants seem to express a solid conviction about their improvement in vocabulary receptive skills: none of them did not agree at all or did not agree, 45% agreed and 55% totally agreed with the statement. The following items are not as strikingly neat as those we have just described, but are still quite consistent with the perception of vocabulary improvement. In more detail, 15,8% did not agree, 47,4% agreed and 36,8% totally agreed on an improvement in vocabulary writing skills; and 5% did not agree, 55% agreed and 40% totally agreed on an improvement in speaking skills of the target words. It is noticeable that students have never opted for the minimum value (i.e., 1 = I don't agree at all-Per niente d'accordo) in the items containing statements supporting the idea of a perceived improvement.

2.5.4 Questionnaire Results. The Open-ended Item.

The Content analysis of the 10 answers to the open-ended item brought to the following thematic categories:

- 1) Expressing gratitude (70%=7/10 answers)
- 2) English vocabulary learning (50% = 5/10 answers)
- 3) Learning experience (50%=5/10 answers)
- 4) Art learning (40% = 4/10 answers)

Category 1 comprehends all the answers of the students who explicitly thanked the author of this study for the experience of *Art without Borders*. The textual parts of the answers concerning vocabulary learning were collected in Category 2: two of them reflect a perceived improvement in vocabulary knowledge in general, other two particularly mentioned an improvement in the written production of the target words, and another one was a comment by a student who declared that he appreciated the activities especially because they gave him the possibility to read and listen to new words. Category 3 includes the excerpts which expressed appreciation or personal opinions about some specific aspects of the experience. In particular, according to the participants, the virtual activities at the museum were both amusing and educational and the way they were delivered permitted fast and fluent interaction. All the fragments of written texts which contained comments on Art were gathered under Category 4. In this regard, in summary, students stated that they learnt new information about Art and appreciated the fact that they could actually see the selected artworks inside the virtual museum. One student even said that the module had spured him into continuing to study Art on his own.

2.6 Discussion

2.6.1 Vocabulary Learning

Taking into consideration the comparison of the results of the vocabulary pre-test and post-test administered to the students, we can clearly notice that they appear to be consistent with the alternative hypothesis stating that the virtual module of English at the museum can bring about an improvement in students' scores. Therefore, this type of learning appears to have a positive impact on students' vocabulary knowledge: an affirmative answer can be surely given to the first research question of this study (i.e., 1) Does virtual FL learning at the museum have a positive impact on students' vocabulary learning?), and hypothesis 1 can be confirmed. These results also reaffirm the established research in FL learning at the museum which had given mainly qualitative evidence before this study (Cooker and Pemberton 2010; Charalampidi et al. 2017; Clarke 2013; Fazzi 2018, 2019; Ruangletbutr 2016; Sederberg 2013). In this research project, FL learning at the museum has been implemented in a CLIL module characterized by the combination of student-centred inductive techniques in which the learners could actively participate in meaningful real-time communication. CLIL has already been recognized as an effective methodology to smooth the processes of vocabulary learning (Balboni 2008; Sylven and Ohlander 2014; Canga Alonso 2015) and this combination seems to have successfully brought to the abovementioned positive impact in a non-formal learning context as well. In fact, in this context students could benefit from contextualized interactions which were characterized by authentic input and, hence, as also suggested by previous research, the retention of vocabulary in the long-term memory was particularly facilitated (Balboni 2015; Roos 1994; Schmitt 2008).

Furthermore, the quantitative data gathered in this research prove that also the innovative mode employed in the delivery of the virtual lessons of FL learning at the museum may be fruitful in terms of vocabulary knowledge improvement. In particular, this could be due to a profitable use of a videoconferencing software which permitted effective communication and the sharing of all the inputs and materials which were essential for the lessons. Moreover, the virtual environment of the module seems to be particularly beneficial to FL vocabulary learning thanks to a pretty good degree of immersion and a wide variety of stimuli helping the memorization of new words. In fact, visual stimuli are thought to be of high importance because of their strength of making words *imageable*, of creating links between the written/spoken form of words and their visual representations, and of activating the right-side brain, besides the left-side one (Ellis and Beaton 1993; Balboni 2008). Apart from visual stimuli, during this virtual experience the students had also the chance to carry out multi-

sensorial activities which were characterized by a certain degree of dynamism and of interaction with the artworks and the museum rooms in which they are preserved. This made possible a unique virtual learning experience which could resemble the *real* one taking place physically inside a museum, although the artistic objects were not tangible.

Observing students' scores in the separate sections of the test (see § 2.5.1, Tab. 9), we can notice that although the participants improved in all of them, they particularly struggled in Section 1 (see § 2.4.1.1 for the explanation of the different sections) of both the pre-test and the post-test which required a written production without any help apart from the initial letters of the target words, while in the rest of the sections they obtained quite high scores, especially in the post-test. This finding is consistent with the notion of a sort of developmental continuum from receptive to productive knowledge claimed by many authors. Furthermore, it confirms the assumption that receptive lexicon knowledge is wider than the productive one, at least in the initial FL learning stages (Pignot-Shahov 2012; Schmitt 2008; Teng 2014). In fact, initially learners need to comprehend and consolidate the receptive knowledge of the target vocabulary, and only after this, they can feel totally confident to produce it correctly. In this respect, some of the students did not even try to fill in the items of Section 1, leaving them completely blank. Thus, some of the learners seem to be still too insecure to engage in the written production of the selected vocabulary. The results of the tests are reaffirmed by those of the questionnaire in which none of the students disagreed on an improvement of their vocabulary receptive skills, while some of them did in the items concerning productive skills. So as Lewis (1997a) asserts, the majority of low-proficiency FL learners appears to feel more comfortable in listening and reading rather than in engaging in production. This was also suggested by one answer of the openended item of the questionnaire in which one of the students who talked about vocabulary learning said he liked the module because it gave him the chance to read and listen to new words and, thus, he mentioned exclusively the application of receptive skills. However, a good number of students wrote the selected words while participating in the chat, so that a certain degree of improvement in vocabulary production can be empirically observed. Furthermore, the average scores of Section 2 of the test show that students were able to recognize and choose the adequate word to create a correct sentence. Nevertheless, in Section 3 and Section 4 which tested vocabulary comprehension, the students did better than in the other sections in the pre-test and the results of the post-test confirmed this trend, besides the improvement in vocabulary receptive skills after the module.

The improvement detected thanks to the administration of the tests can concern the fact that students actually knew words which they did not know at all before the module and/or that they had improved the knowledge of words which were already familiar to them. In fact, some of the learners may have upgraded the level of knowledge of the selected words. For example, before the module a word could be only comprehended, while at the end, some of students may have felt able -or almost able- to produce it.

Focussing more in depth on the second research question (i.e., 2) *Do students perceive virtual FL learning at the museum as beneficial to their vocabulary knowledge?*), it can receive a fully affirmative answer as well since, in general, our sample seems to believe that the module had a positive impact on both vocabulary comprehension and production. Consequently, also hypothesis 2 can be confirmed as we expected considering the established research on the field of non-formal FL

learning at the museum. In fact, qualitative data had already been gather before the current study in favour of teachers' and students' positive perceptions regarding vocabulary improvement thanks to this methodology. The results of the questionnaire showing that the great majority of students perceived this improvement are particularly relevant because they can complement this study with a further insight into the impact of these kinds of modules. For instance, if the students had obtained the same scores in the pre- and post-test, the results of the questionnaire could have shown a positive impact nonetheless. This is due to the difference of quality and depth of vocabulary knowledge that the students may feel after the module. For example, the participants who already knew the list of words both receptively and productively, could feel more prepared and comfortable in producing a word and use it in different situational and textual contexts, achieving higher vocabulary mastery thanks to the module. In fact, in general, the perceived improvement can indicate that students are progressing in the receptive-productive *continuum* even if it is not so noticeable in the results of the test. In particular, the results of the questionnaire showing that students perceived an improvement can mean that they feel more confident about their vocabulary knowledge, and, thus, they are gradually moving towards the productive side of the *continuum* and a comprehensive knowledge of the selected words.

Interestingly, the students perceived an improvement also in oral productive skills of the selected English vocabulary, even though in the module they had the opportunity to practice only written skills and the tests themselves examined written vocabulary knowledge. On the other hand, the participants who left a comment in the open-ended item of the questionnaire, agreeing on an improvement in vocabulary knowledge, explicitly talked only about the written knowledge of new words, so that more relevance seems to be attached to the latter. Although we did not test it, it is possible that students actually improved in the spoken knowledge of the selected words. It is also interesting to notice that they did not mention any other FL learning aspect, apart from vocabulary. This could mean that they recognize it as the most important linguistic aspect of their FL learning experience, although their entries might have been biased by the content of the items of the Likert scale.

In conclusion, comparing the results of the tests and of the questionnaire, we can claim that a convergence can be found: students improved in vocabulary knowledge after the module and they also perceived this improvement. In fact, the only person who disagreed in almost all the items concerning the perceived EFL improvement was one of the 2 students who scored the same points before and after the lessons¹¹. However, she did recognize an improvement in receptive vocabulary skills. The rest of the students achieved all some degree of improvement in the vocabulary test and responded to the questionnaire accordingly. Therefore, the triangulation seems to have been productive in bringing validity to this study, being the data derived from the two selected instruments highly consistent.

¹¹ The other student who had the same score in the pre- and post-test obtained 20/21 points, so he actually had little scope for improvement. However, in the questionnaire he declared to perceive an improvement as well (probably on the quality of his EFL vocabulary knowledge).

2.6.2 Students' Satisfaction

Regarding the first two items of the questionnaire which were included in order to obtain information that did not contribute to address directly the primary research questions of this study, but were considered adequate for the reasons described in § 2.4.1.2, favourable results have been collected. In fact, the great majority of students appear to appreciate online/virtual module of English at the museum. Taking into consideration the first statement of the Likert scale (i.e., *I liked the activities of English at the museum*), it is not surprising that the only person who disagreed was one of the 2 students who scored the same points before and after the lessons mentioned also in the previous paragraph. Thus, this student's low level of satisfaction of the module appears to be in some way related to her learning outcomes.

Nevertheless, also students' comments expressing gratitude and other positive opinions about the lessons were consistent with the general high level of satisfaction detected in the rest of items of the questionnaire. In particular, the fact that the participants liked the combination of "fun and education" of the module can be derived from these comments¹². This combination is typical of the teaching method applied during the lessons (see § 2.3.2 for more details on the teaching method) which is consistent with non-formal FL learning. The latter is able to connect stimulating cultural activities which usually take place out-of-school with in-school education, as we said in § 1.1 and § 1.2. Furthermore, thanks to the module, learners had the opportunity of engaging in art-based activities virtually inside a virtual museum. Reading their comments, we can assume that they also appreciated that this learning experience was useful to enlarge their knowledge about Art and it aroused in them an interest in this subject.

Also the item concerning the specific mode of delivery of the module; that is, synchronous distance language learning via videoconferencing and the use of VR showing the artworks and the rooms of the museum, seems to have received positive feedback. First of all, this is visible in the responses to the second item of the Likert scale in which a clear satisfaction with the mode emerges. Furthermore, this is also supported by the students who, in the dedicated questionnaire section, commented that "[being] virtually inside the museum [was] a nice experience". Thus, we can safely maintain that the use of VR tools can be a satisfactory option to carry out educational museum visits. At the same time, synchronous videoconferencing allowed the students to be active in the learning process and use language by constantly writing and interacting in the chat as they also stated in the comments. Many previous studies about synchronous computer-mediated communication have indeed attested that it can be beneficial to FL learning by permitting students to actively participate in modern environments that are becoming increasingly important in today society in which technology is pushing towards innovative ways of communicating (see § 1.4.3). Thus, to conclude, we can certainly say that not only was this mode of delivery beneficial to vocabulary learning, but it also received general appreciation by the students.

¹² During the lessons the students expressed very similar ideas also in the Google Meet chat.
2.7 Conclusions

In this study a module composed of three lessons, based on CLIL and non-formal language learning methodologies was conducted. The lessons were held completely online via videoconferencing and a virtual tour was carried out in the Peggy Guggenheim museum of Venice. In fact, all the activities revolved around this virtual tour and the artworks included in it. The main purpose of the current study was to gather evidence of a positive impact on students' vocabulary learning outcomes and perceptions after the module. Both the quantitative and the qualitative data derived from the study support the established hypotheses claiming that 1) students improve in vocabulary knowledge after the treatment and that 2) students perceive a vocabulary improvement after the treatment. Therefore, thanks to this study, we were able to confirm the positive impact of the combination of CLIL and non-formal language learning at the museum on vocabulary learning in a computer-mediated context.

In fact, we should particularly underline that these results were produced in an innovative environment: through this study we also endeavoured to pave the way for the use of synchronous computer-mediated synchronous communication and virtual reality devices in the delivery of FL lessons, especially those based on non-formal language learning at the museum. In particular, the application of an adequate videoconferencing software certainly determined the success of the module by providing the author/practitioner with the possibility of speaking and sharing her computer screen to the participants. At the same time, the students had the opportunity of interacting in the real-time chat, while attending the lessons and receiving continuous visual and spatial stimuli. The latter were made available through the use of simple VR tools, such as 360° views from Google Maps and satellite views which, potentially, can be employed by anyone who wishes to, since they are online for free.

In conclusion, this study constitutes an attempt to fill the gaps in several aspects of FL learning at the museum in regards of:

- The lack of experimental/statistical studies, especially concerning vocabulary learning;
- Alternative ways of delivering the lessons such as synchronous distance learning;
- Alternative ways of carrying out museum visits such as employing VR tools.

Thus, although these themes could be investigated more in depth in future studies (see § 2.9 for suggestions for future research), we could be pretty satisfied by the outcomes of the present research. In fact, thanks to it, we can finally give some statistical evidence of students' vocabulary improvement as a result of CLIL and FL learning at the museum's methodologies and sustain it also through

qualitative data obtained from students' reports of their perceptions. Furthermore, this study has attested new ways of delivering FL learning at the museum's modules which seem to be beneficial to language learning and, at the same time, appreciated by students. In particular, the mode of delivery of these modules embraces modern technologies which are rapidly and consistently entering our daily routines by providing innovative ways of communicating and interacting with the external world. For these reasons, we can take the liberty of suggesting to language teachers to try to gradually incorporate these technologies in their lessons.

2.8 Limitations of the Study

As we briefly said in § 2.4, this study was conducted on a quite small sample composed of heterogeneous participants belonging to a specific context and institution (see § 2.2). For this reason, in this aspect, it seems to lean forward the interpretative/ethnographic tradition of research, characterized by findings which are not easily generalizable. In this respect, we can also add that the small number of participants also implied the impossibility of involving a control group in the study, which could have been of use to compare different teaching methods.

Another limitation concerns the lack of a follow-up test to obtain information about the level of knowledge of the selected vocabulary after a certain period of time. According to the English school teacher who did a short examination on her own about a week after the module, the vocabulary was acquired and persisted overtime, but we cannot give significant evidence about it.

The mode of delivery could be improved by incorporating more adequate and/or sophisticated devices or enhanced uses of the existing ones. For example, the Peggy Guggenheim museum was not available in Google Arts and Culture which provides even higher quality images of museum spaces and artworks. Moreover, the online/virtual module in general could be improved by gaining more experience on the field which should also be attested by further studies. However, although several typical problems of distance learning, especially the technical ones (see § 1.4.2), occurred, they were overcome quite smoothly, despite only a minimal amount of information was available to help us on this specific mode of delivery of the lessons.

2.9 Further Observations and Suggestions for Future Research

Although the main focus was on the research questions, during the delivery of the module we had the opportunity to observe other aspects which could be explored in depth in further studies. First of all, a great degree of participation was witnessed since the first online lesson and it was met with surprise by the English teacher of the class who, before the beginning of the module, was sceptical about it. However, she was really glad to notice that even the students with a particularly low level of proficiency and those who usually did not participate in in-school activities tried to contribute. In fact,

in the chat the communication was fluent and fast and FL difficulties were overcome by a constant negotiation of meaning between the students who were guided by the practitioner/author and by their teacher. In particular, in this respect, we can suggest future research on learners' participation in synchronous distance language learning environments, aimed at observing both the quantity and the quality of interactions occurring in them and students' attitudes.

Carrying on with aspects concerning the delivery of the lessons, as we said in the previous paragraphs, the virtual mode was met by the students with high levels of satisfaction. Furthermore, from the comments left in the chat, we can presume that the experience of the virtual tour did not prevent students from feeling motivated to go to the actual museum. In fact, the participating students explicitly expressed their desire to see the artworks in person. Thus, the use of VR tools seems to have a positive impact on encouraging students to visit museum and, hence, this kind of technology, if well-employed in non-formal lessons, can even help these kinds of institutions to broaden their audience. In this way, these activities can serve to promote culture in general, which should be the main purpose of both schools and museums. Furthermore, they can bridge formal in-school learning with the external world and non-formal institutions. For these reasons, further studies on the application of VR tools in museum visits either in distance learning or in traditional contexts may be carried out so that a solid research can be established.

In respect to possible connections with other subjects, since many students studied SL Italian as well, the activities of *Art without Borders* appear to have also supported them in the construction of a certain degree of trans-linguistic knowledge of some words and phrases used in the module. In fact, Italian was strategically used and the target terms were also translated in this language by the author or by their EFL and SL Italian teachers when explicitly required. This can be a very fruitful way to provide students with the possibility to create interactive and fluid links between languages. The participation of other teachers made emerge interesting connections with other subjects as well, bringing to light the fact that CLIL can have the strength of successfully combining more than two curricular subjects simultaneously. In this respect, future research may focus on CLIL and non-formal learning at the museum involving different subjects (even more than two) and different target languages.

Returning to the main research questions of the present study, several studies could be brought forward in order to deepen the knowledge of aspects concerning vocabulary learning in non-formal contexts online or not. These studies could investigate the impact of this methodology on both the quantity of vocabulary learnt and the depth of this knowledge considering the receptive-productive *continuum*. Future research could also examine whether the learning of vocabulary through this teaching methodology persists overtime or not. Moreover, further studies may be conducted on learners of different levels of proficiency to see if similar results can be observed in students' outcomes and perceptions. Other studies may also particularly focus on receptive or productive vocabulary and, depending on the level of language proficiency, different types of words, from the most common to the most specialised ones, could be included. In this way, a more comprehensive understanding of precise lexical aspects could be achieved. In addition, it would be interesting to notice if the same results as those found in this research can be obtained from larger samples, augmenting generalizability and the possibility to compare different groups of learners.

CONCLUSION

The current MA research project took the start from a module characterized by the combination of CLIL and non-formal FL learning and by an innovative mode of delivery based on distance and virtual learning. The module was art-based and revolved around a virtual museum tour. In this tour students were shown a certain number of artworks which were at the centre of the activities. In particular, the main aim was to prove through quantitative and qualitative methods that these types of modules can have a positive impact on students' vocabulary knowledge and perceptions. The data were highly consistent with the expected positive outcomes: the comparison of the results of a pretest and a post-test shows a significant improvement in students' scores and the results of a questionnaire support this finding with students' perceptions. Furthermore, participants appear to appreciate the modality of delivery of the lessons.

Thus, this study seems to line up with the established research on FL non-formal museum learning, which as we reported in 1.3.4, gives mainly qualitative evidence proving that this type of learning can be beneficial to vocabulary knowledge. In fact, these learning environments take advantage of rich visual stimuli and a variety of other inputs which in this project were provided by the technological devices used to deliver the synchronous online lessons and to carry out a virtual museum visit which incorporated 360° views and high quality images and videos. Furthermore, videoconferencing and screen sharing permitted the implementation of specific tasks aimed at involving students in authentic communication and in a certain degree of interaction with the selected artworks, although the latter were not tangible like in the previous studies on this field.

We can now claim that the abovementioned new modes of delivering lessons and museum visits in which CLIL and non-formal FL learning combine can really lead to successful and, at the same time, enjoyable vocabulary learning. Thus, we can suggest the development of future research which may deepen the understanding of vocabulary learning aspects in non-formal contexts. Further studies may be carried out on this topic either in traditional or in online/virtual environments which are becoming more and more important in modern society and education. Despite this increase in importance, too little research has been dedicated to this type of learning in the field of educational linguistics. Therefore, we wish that this MA research project could pave the way for the inclusion of new technologies, especially in non-formal FL learning at the museum.

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