People's Democratic Republic of Algeria

Ministry of Higher Education and Scientific Research

University of Oum El Bouaghi

Faculty of: Letters and Languages

Thesis

Presented to obtain

3rdCycle Doctorate

Branch: English Language

Specialty: English Language

Title :

Improving Students' Vocabulary Repertoire through the Implementation of Multiple Intelligences Theory-inspired Instruction.

-The Case of 2nd Year Students at Mentouri MC Secondary School, Ain Mlila.

Presented by :

Ouissal ZAIMI

Publicly defended on 05/05/2025 in front of the following committee members:

N°	first and last name	Grade	University	Quality
01	**Mohamed Hamza MERABET**	MCA	Larbi Ben M'hidi University, Oum El Bouaghi	President
02	**Sarah MERROUCHE**	Prof.	Larbi Ben M'hidi University, Oum El Bouaghi	Supervisor
03	**Riad BELOUAHEM**	Prof.	Mentouri University, Constantine 1	Examiner
04	**Madjida CHELLI**	Prof.	Mentouri University, Constantine 1	Examiner
05	**Djallel BOULMAIZ**	MCA	Larbi Ben M'hidi University, Oum El Bouaghi	Examiner

Dedication

Gratefully, to my parents.

Lovingly, to my sisters.

Acknowledgments

I would like to begin by expressing my profound gratitude to Allah for His endless blessings and guidance, which have been my source of strength throughout this journey.

Foremost I extend my deepest gratitude to my supervisor, Prof. Sarah MERROUCHE. Her patience, consistent support, and invaluable feedback have been essential to the success of this thesis. I am deeply thankful for her dedication and the attention she has shown to this work.

I am also profoundly thankful for the esteemed members of the jury— Dr. Mohamed Hamza MERABET, Prof. Riad BELOUAHEM, Prof. Madjida CHELLI, and Dr. Djallel BOULMAIZ —for their constructive feedback and critical insights that greatly enhance the quality of this thesis.

I would like to express my gratitude to my pupils who participated in this study. Their cooperation and active engagement were crucial in this study.

My gratitude extends as well to my respected teachers at Oum El Bouaghi University.

Lastly, I am deeply grateful to my parents and sisters for their continuous support and encouragement throughout every step of the way.

Abstract

The challenges involved in teaching and learning English as a foreign language (EFL) in Algerian classrooms include the diversity in learners' profiles and the insufficiently addressed yet important place of vocabulary. Drawing on the Multiple Intelligences (MI) Theory (Gardner, 1999), this study aimed to enhance learners' vocabulary repertoire, by implementing MI-inspired instruction, after the exploration of the MI profile of learners using Multiple Intelligences Inventory (Mckenzie, 2017). Conducted with second-year pupils at Azri Mohamed Secondary School in Oum El Bouaghi, over a period of four months, the study employed the Vocabulary Knowledge Scale (VKS) (Wesche & Paribakht, 1996) to measure the vocabulary repertoire before and after the intervention. The MI profiling results revealed a predominance of linguistic followed by visual intelligence, with varied degrees of other intelligences including the less dominant existential intelligence. Results from the VKS indicated that the implemented MI-inspired instruction significantly improved learners' vocabulary repertoire ($t = -1.668$, $p = 0.013 < 0.05$). However, the outcomes in productive vocabulary (ability to use the words in speech or writing) were not as significant ($t = -1.170$, $p = 0.249 > 0.05$). This suggests that while MI-inspired teaching can enhance receptive vocabulary, it is less effective in improving productive vocabulary. The findings highlight the potential of integrating the MI Theory into EFL instructional strategies to cater for the diverse learning needs and intelligence profiles of learners, which, in turn, can enhance the outcomes in vocabulary learning.

***Key words**:* Multiple Intelligences Theory, Multiple Intelligences Profile, Vocabulary Repertoire, Multiple Intelligences-inspired instruction.

List of Tables

List of Figures

List of Abbreviations

CG: Control Group

EFL: English as a Foreign Language

EG: Experimental Group

ESL: English as a Second Language

FL: Foreign Language

IQ: Intelligence Quotient

L1: First Language

MI: Multiple Intelligences

SPSS: Statistical Package for the Social Sciences

VKS: Vocabulary Knowledge Scale

2AS: Second Year Secondary School

Table of Contents

General Introduction

General Introduction

1. Background of the Study

English has become a lingua franca that is spoken by millions of people around the globe. Nowadays, whether for academic or communicative purposes learning English has become a necessity. However, it is a challenging task with many intricacies to overcome.

To begin with, teaching and learning EFL is not a simple process primarily because of the inherent variation among learners, within the same classroom. EFL learners show a wide range of preferences, interests, needs, and distinct learning profiles. A study that reviewed different studies about learners' differences and models of learning styles including the MI theory revealed agreement among researchers on the fact that recognizing learners' differences in the classroom and raising teachers' and learners' awareness about the different learning styles is crucial in an effective and dynamic EFL classroom (Bhandari, 2022).

Accordingly, the MI theory (Gardner, 1999) stood out as a theory that endorses learners' individuality recognizing learners as uniquely intelligent individuals. This suggests that the MI theory can provide a valid framework to ensure good EFL learning/teaching practices (Armstrong, 2000; Fleetham, 2006). According to the MI theory, learners differ in learning because they have different sets of intelligence. They differ in the nature of the cognitive strengths they mobilize in the learning process. Yet, this theory and its application have not been thoroughly explored within the Algerian setting (Boulmaiz, 2017; Hadj Said, 2021), which suggests that potential implications and adaptations remain largely unexamined. More

insightful examination that is specific to the unique dynamics of the Algerian context is needed.

In addition, as with any other language, learning English involves learning all its complex aspects such as its syntax and semantics. Vocabulary learning is one of the main components of foreign language (FL) learning (Nation, 2001; Schmitt, 2000; Webb & Webb, 2020; Wilkins, 1972) that has been sidelined for many years due to the early structural approaches. However, most researchers agree on the significance of vocabulary learning in EFL classes (Nation, 2001; Schmitt, 2000; Webb & Chang, 2012; Webb & Webb, 2020). EFL learners face a great amount of vocabulary to learn (Nation, 2001; Webb & Webb, 2020; Zwier & Boers, 2023), but not all of them intend to learn this amount in the same way.

Moreover, vocabulary is not a dispensable part of language or an aspect that can be put aside (Webb & Webb, 2020). Words are the main component of language and without them, there is no language at all. In fact, 'without grammar very little can be conveyed, without vocabulary nothing can be conveyed' (Wilkins, 1972, p.111). That is to say that the lack of lexis affects what learners want to convey even if they know the correct grammatical form of their message. Furthermore, without vocabulary knowledge, learners cannot decode a message. Regarding skills like reading & listening, one cannot read or listen without the knowledge of vocabulary (Herbertson, 2010). A decent vocabulary repertoire is required for EFL learners to properly communicate and convey messages. Schmitt and Rodgers (2002) referred to vocabulary repertoire as encompassing a range of words that learners know, suggesting that it is more than just a list of words, but rather a dynamic resource that is subject to change and growth with exposure and intentional learning. Nation (2001) added that in addition to the set of words a learner can recognize and understand when reading and listening,

vocabulary also includes words a learner can use in speaking and writing. Similarly, Webb and Webb (2020) defined it as the range or the entire stock of words known and used by an individual in comprehension and production. In brief, vocabulary repertoire is the set of words an individual knows and understands, including their structure, meanings, use, and links to other words, and whose development is a continual process (Literacy Teaching: Toolkit, 2021).

Vocabulary instruction is defined as the methods and practices aimed at enhancing learners' knowledge of words (Webb & Webb, 2020) for both receptive and productive purposes (Nation, 2001), including comprehensive approaches that combine intentional and incidental learning through exposure (Schmitt & Rodgers, 2002). However, due to vocabulary being shadowed in the Algerian EFL class by an exam-centric system that focuses on grammar (Bemmoussat & Bouyakoub, 2019), vocabulary instruction is overlooked (Arab, 2015; Boucherfa, 2021). According to Boucherfa (2021), secondary school English language instruction is test-oriented, and around 65% of the syllabi are dedicated to form-focused and grammar instruction. Additionally, a study carried out by Arab (2015) confirmed that limited vocabulary knowledge is the major cause of the lack of proficiency of learners in basic language skills. Yet, with the growth of learner-centeredness, more and more attention is given to how learners learn other language aspects, vocabulary included. Promoting vocabulary growth has become a major concern for educators in recent years (Chacón-Beltrán et al, 2010; Dóczi & Kormos, 2016; Zwier & Boers, 2023). There is no doubt that vocabulary learning is indispensable in learning English. Nation (2001) underlined the critical importance of developing an adequate lexical approach since learners' skills in using the language are heavily dependent on the number of words they know,

particularly in the early stages of learning an FL. He stated that a systematic, principled approach to vocabulary development results in better language learning.

The traditional and limited nature of EFL vocabulary instruction is underscored (Dóczi & Kormos, 2016; Webb & Webb, 2020). However, how learners can learn new words effectively has gained importance, and rubrics such as ‘working with words’ have appeared in today’s Algerian secondary school course book, and teachers are always looking for suitable ways to teach vocabulary in an effective way. In this respect, the MI theory can provide a valid framework to ensure good vocabulary teaching practices and improved outcomes for learners. Since each learner has a different way of learning, Gardner (1983, 1999) argued that each learner may have one or more types of intelligence that mainly direct the way s/he learns, including showing sensitivity and strength in all or some of the linguistic abilities such as word meanings, word order, word sounds, and language function. MI theory gives importance to each individual's mental ability, so it can have many implications in teaching and learning practices. It presents a wide variety of teaching strategies and instructions that target and trigger different types of intelligences. In order to teach vocabulary, teachers have to cater for a variety of activities that target different learners with different abilities and learning styles and try to trigger the competence of each learner to achieve better outcomes. In this case, MI theory helps teachers to expand their teaching repertoire and to include a broader range of instructions and teaching materials to reach all learners. The main of MI theory is to meet if not all, most learners' needs.

A study on writing development was conducted to see whether teaching English through MI-based activities can enhance students’ performance in writing, including activities teaching new vocabulary items that learners encounter in the lessons and use in their writings. The findings suggested that MI activities implemented in a content-

based framework were effective in helping the students improve their writing skills, at least on a topic covered in the lessons. They also showed that students made use of the vocabulary items they learned through MI instruction. The MI-based activities seemed to help the students learn and retain whatever they learned and use it when necessary, including vocabulary items (Zennure & İsmail, 2016).

A meta-analysis was conducted to examine the effectiveness of MI applications on academic achievement in Turkey. A total of 71 studies, 66 dissertations, and 7 articles were included in the meta-analysis. The results showed that MI applications have a significant and positive effect on academic achievement including all aspects of language (Eyüp & Seyat, 2015).

A study aimed to examine the impact of MI-based differential learning on the development of critical thinking skills among Indonesian university students revealed that multiple intelligences-based differential learning positively influenced critical thinking development. The study suggested that incorporating differential learning based on MI offers a promising pedagogical approach that could enhance students' cognitive abilities in line with 21st-century educational demands (Alhamuddin, et al., 2023).

Interestingly, examining the effect of the MI theory on vocabulary is not thoroughly explored. Exploring the possible implications of the MI theory on vocabulary, which is a crucial component of language, should have received more attention. To examine the effectiveness of activities based on the MI theory in students' learning and retention of vocabulary, an experimental study was conducted on 11th-grade students in a Turkish high school. The results show that there was a significant positive effect on the achievement and retention of student's English vocabulary. The

experimental group that received MI-based instructions scored better in the post-test and the retention test compared to the control group which received traditional vocabulary instruction, that is, writing and explaining new words in sentences and then memorizing them (Akcin, 2009). However, the test used was a gap-filling exercise where students had to choose the correct word from four options to complete a sentence. This type of test did not test their ability to use the words productively; it only measured the size of their vocabulary repertoire.

The present study fills a gap by mainly connecting vocabulary repertoire with instruction inspired by the MI theory, particularly within the Algerian context, by exploring the potential positive impact of the MI theory on vocabulary. To our knowledge, no previous research within the Algerian context has pursued this line of research. In addition, this study uses the VKS test that effectively assesses both the breadth and depth dimensions of the vocabulary repertoire across different degrees of word knowledge. This differs from more conventional and commonly used vocabulary tests like the Vocabulary Levels Test and the Vocabulary Size Test, which focus solely on measuring vocabulary size (refer to section 3.3.1). Moreover, a gap in the literature was found regarding the portrayal of Algerian EFL classes in terms of MI profiles. These profiles have the potential to describe the unique ways our learners are intelligent and to provide insights into understanding their differences.

2. Statement of the Problem

The globalized world of today makes learning EFL a necessity, as it allows access to limitless knowledge and resources in all fields, including education. However, both teachers and learners face several challenges in this pursuit. Learners, for instance, have different perceptions of learning, as well as varying cognitive strengthens

mobilized according to their needs and preferences, which they ultimately need to identify and then apply the most befitting learning tendency (Armstrong, 2000; Gardner, 1999). Besides, the challenges involved in learning an FL such as English, especially some aspects like the amount of vocabulary they are expected to learn can be very daunting (Nation, 2001; Schmitt, 2000). As for teachers, they are faced with the challenge of designing engaging lessons that cater for varying learning profiles, needs, and preferences. They need to implement innovative strategies to make learning English more effective and to engage all learners regardless of their individual differences.

On the one hand, the dynamics of learning, particularly how the human mind works during the learning process, have long been seen as a key factor influencing educational processes (Armstrong, 2000). The realization that learners do not gain knowledge in the same way or with the same level of proficiency has led to a growing interest in understanding these variations in competencies (Gardner, 1999). Traditionally, learners were often categorized as either 'intelligent' or 'unintelligent' based on exam performance, an oversimplified approach (Gardner, 1983). However, the advancement of cognitive research has provided a more nuanced perspective. The MI theory, pioneered by Gardner (1983), asserts that intelligence is multifaceted, not singular. Learners have distinct profiles of intelligence, each responding differently to varied triggers and strategies. This results in classes characterized by learners' diversity. Respectively, in any EFL classroom, such as in Algeria, it is evident that learners show varying competencies and, consequently, diverse learning needs. These learning differences make it challenging to adopt a single teaching strategy, or instructional approach, particularly when it comes to teaching vocabulary (Dóczi & Kormos, 2016; Nation, 2001). Although proficient students typically excel in following lesson

instructions and exams, the diversity in cognitive functions calls for a broader approach that taps into learners' individual strengths. The challenge of teaching English, especially vocabulary, in classrooms with uniform instruction is determining the extent to which these different types of intelligences are recognized, stimulated, and accommodated. This points to the issue of how the principles of the MI theory can be effectively implemented in the Algerian EFL context to enlarge the learners' vocabulary repertoire.

On the other hand, many approaches have different ideas on what matters the most in learning English. Due to the early structural approaches, most instruction was mainly designed to convey knowledge about the English language but little knowledge of its use in real-life contexts was conveyed, which gave more importance to some aspects of the language such as grammar at the expense of other aspects such as vocabulary (Nation, 2001; Schmitt, 2000; Webb & Webb, 2020; Wilkins, 1972). Herein lies a critical issue. Based on our experience as a secondary school teacher, it is questionable whether learners in present-day Algerian EFL classrooms are learning sufficient vocabulary and if their vocabulary repertoire meets the expected curriculum goals. An analysis of the Algerian English curriculum revealing high reliance on form-focused and grammar instruction entails that there is a noticeable lack of emphasis on vocabulary instruction (Boucherfa, 2021), which hinders learners' capacity to effectively use the language. The vast amount of English vocabulary that needs to be mastered highlights the need for more focus on vocabulary learning, given its importance alongside other linguistic components (Nation, 2001; Schmitt 2000). It is acknowledged that vocabulary proficiency plays a crucial role in learning English, as it affects learners' ability to convey and understand meaning (Zwier & Boers, 2023).

Consequently, a lack of vocabulary knowledge can potentially demotivate learners from engaging with the language.

Notably, based on my experience as a secondary school teacher, the Algerian context of teaching English shows both a lack of vocabulary teaching and a lack of variety in instruction (Arab, 2015; Bemmoussat & Bouyakoub, 2019; Boucherfa, 2021), frequently favoring linguistic intelligence above other intelligences. This tends to overlook the varied learning abilities and cognitive traits of learners, ignoring their needs and preferences. Consequently, addressing the unique learning profiles of learners through more individualized vocabulary teaching such as MI-based instructions is needed to better align instruction with learners' strengths and preferences.

3. Aims of the Study

This study aims to acknowledge learners' differences by gauging their different MI profiles, emphasizing the fact that Algerian EFL classes are varied in terms of learning needs and preferences. It also aims to bring up front vocabulary as an essential part of EFL learning. Accordingly, the study investigates the sensitivity of learners' vocabulary repertoire to MI-inspired teaching. It seeks to promote incidental and implicit vocabulary learning based on the class's MI profile, using a variety of MI-inspired materials and instruction to cater for all intelligences. In other words, the study aims to explore how MI-inspired instruction can be implemented to improve the learners' vocabulary repertoire. In hopes of encouraging the implementation of more learner-sensitive teaching practices based on the MI theory in the EFL classroom, particularly in vocabulary teaching, the aim is to move beyond traditional teaching

strategies and explore new horizons that focus on learners, taking their needs and cognitive capacities into account while celebrating their differences.

4. Research Questions and Hypotheses

Research Questions

The main research question that the current study aims to answer is the following:

Research Question: Can MI-inspired instruction improve learners' vocabulary repertoire?

In addition, the study sets out to answer the following sub-questions:

1- How does the distribution of the MI profiles vary among learners in the class?

2- What are the dominant intelligences among the MI profile of the present EFL classroom?

3- Is the MI profile of the teacher different from that of the class?

Research Hypotheses

The study sets out to test the following hypotheses:

Null Hypothesis (H_0): MI-inspired instruction has no effect on improving the learners' vocabulary repertoire.

Alternative Hypothesis (H_1): MI-inspired instruction does enhance the learners' vocabulary repertoire.

We also hypothesize that:

- The distribution of the MI profiles among learners in the class is diverse, reflecting a range of dominant and secondary intelligences.

- The dominant energy within the MI profile of the class is linguistic.

- The MI profile of the teacher is different from that of the class.

5. Methodology

The study employs a quasi-experimental design (Nonequivalent-groups pretest-posttest design) that sets out to test the relationship between the improvement of vocabulary repertoire (dependent variable) and the use of MI-inspired instruction (independent variable). It was carried out in Azri Mohamed Secondary School, in Oum el Bouaghi province, during the academic year (2021/2022). Two groups of second-year literary stream learners were selected, with twenty-two learners per group. One group was designated as the experimental group (EG) and the other as the control group (CG). The researcher aimed to test the sensitivity of learners' vocabulary repertoire to MI-inspired teaching. Therefore, the study went through three phases: prior treatment, treatment, and post-treatment phases.

In the prior treatment phase, the researcher used the Multiple Intelligences Inventory to gauge the MI profile of the EG and identify the predominant intelligences in order to design the treatment accordingly. Subsequently, both the CG and EG s were tested using the VKS test to assess their initial vocabulary repertoire.

In the treatment phase, the EG received MI-inspired teaching including instruction and materials for a period of four months, while the CG stuck to textbook instruction. Examples of the MI activities that are used in the

EG to target learners' vocabulary repertoire, both explicitly and implicitly, are word-search puzzles (verbal-linguistic intelligence); matching exercises, classifications and categorizations (logical-mathematical intelligence); PowerPoint presentations, pictures (visual-spatial intelligence); hands-on activities (bodily-kinesthetic intelligence); singing (musical-rhythmic intelligence); pair work, group work (interpersonal intelligence); using personal notebooks (intrapersonal intelligence); reflecting on one's learning (existential intelligence); bringing some objects from natural life (natural intelligence).

In the post-treatment phase, both groups were tested again using the same v VKS test to measure learners' vocabulary repertoire and to detect any improvement post-treatment. Data was collected and analyzed through descriptive and inferential statistics, using Microsoft Office Excel 2010 and Statistical Package for the Social Sciences (SPSS).

6. Basic Assumptions

The researcher started the present research with three basic assumptions. The first assumption is that learners' performance in the vocabulary tests reflects their actual vocabulary repertoire. This assumption is based on the idea that sometimes learners might perform better than their actual competence due to various factors like luck or external support, or vice versa, where their competence might be better than their actual performance due to factors that hinder it, such as anxiety or time constraints. The second assumption is that the CG is not getting exposed to the treatment by any means. This assumption helps ensure that any differences in outcomes between the two groups are indeed due to the treatment itself and not influenced by unintended exposure to the treatment. Third, assumptions related to learners answering the inventory include the

assumption of honesty and self-reflection. The researcher can only assume that learners engage in self-reflection while answering the inventory providing honest information that truly reflects their characteristics and preferences.

7. Significance of the Study

The significance of this study lies in its attempts to mend the gap between a number of interconnected issues in the context of teaching EFL. First, it acknowledges the inherent diversity among learners since they have unique profiles of MI. Yet, the present teaching strategies tend to overlook these differences resulting in one-size-fits-all practices, where all learners are exposed to the same materials and instruction. This disregard for learners' differences hinders language learning and fails to make use of learners' diverse strengths and preferences.

Second, a notable issue arises in terms of vocabulary teaching. Inadequate vocabulary learning is common among learners, and emphasis on vocabulary teaching seems to be lacking. This deficit in vocabulary learning is closely related to the broader problem of instructional neglect occurring when both learners' MI differences and the important aspect of vocabulary in English language teaching are marginalized.

To address these challenges, the study emphasizes the need to reconsider the place of vocabulary and reevaluate the approach to vocabulary instruction in the Algerian EFL classroom. It promotes an approach that not only emphasizes vocabulary teaching but also aligns with learners' unique MI profiles. Teachers can cater for learners' diverse strengths and preferences by integrating teaching practices that are inspired by the MI theory, thereby improving vocabulary learning and overall language learning outcomes. In summary, the study tries to close the gap between the ignored aspects of learners' differences, notably their MI profiles, and the imperative need for

more effective vocabulary instruction in the realm of teaching EFL in the Algerian classroom.

8. Structure of the Thesis

The thesis is structured into six chapters. The first three chapters focus on the literature review: the first chapter is devoted to the literature on the MI theory, the second explores the MI theory in the EFL classroom, and the third covers vocabulary learning/teaching. The following three chapters address the practical side of the study. Chapter four details the methodology followed, including the instruments and the treatment employed. Chapter five presents the results attained, followed by their discussion and interpretation. Finally, chapter six outlines the pedagogical implications based on the discussion of the attained results, discusses the limitations faced in the study, and offers suggestions for future research related to the theme of the study.

Chapter One: Multiple Intelligences Theory

Chapter One: Multiple Intelligences Theory

Introduction

Intelligence meant different things over long periods of time. For so long, it was considered one block of construct that an individual either possessed or did not. However, with the progress of cognitive research, it is now believed that intelligence is a 'multifaceted' universal human possession. Yet, not all humans are intelligent in the same way. The MI theory (Gardner, 1999) has revolutionized the educational field, ever since it challenged the traditional views on intelligence. The MI theory emphasizes individual differences and studies the possibility of responding to uniqueness. In this chapter, we aim to review MI theory by first looking into what intelligence is, what the MI theory is, what makes a certain mind capacity an intelligence, and what characterizes each intelligence. We also set a differentiation between learning styles and MI, and explore how MI is measured.

1.1.Intelligence

In order to understand the MI, it is important to understand first what intelligence is. Intelligence has been a part of research across all fields; thus, coming up with one single definition was and still is a controversial matter, which has a long history. It appears that its meaning has changed over different fields, as well as among scholars and experts. Intelligence dates way back in history. Since the rise of the Greek civilization, human beings have been described as a species in an endless quest for knowledge. Ever since the existence and importance of mental powers had taken a place in discussion. Individuals who were able to use their mental powers stood out. The pursuit of knowledge was as important 'virtue' as faith and courage. Views and research on 'intelligence' have never ceased. However, two parties were formed:

those in favour of seeing all intellect as one piece, and those 'in favour of its fragmentation into several components' (Gardner, 1993, p.7).

First attempts to measure intelligence date back to the early 1900s, when the psychologist Benett developed a written test of intelligence which contained a series of questions to determine children's risk of failure in school so that they can get appropriate support. Then, in 1912, the psychologist Stern worked on Benett's test and came up with the IQ (Intelligence Quotient) test. IQ is 'the ratio of a person's mental age to their chronological age' (Fleetham, 2006, p 18). Scoring 100 and above in the test indicated that the person is 'intelligent'. However, the IQ test measures only a limited set of mental capacities, which are verbal and numerical reasoning, visual thinking, and logical problem-solving. Later, another expanded version of the IQ test was developed which is the Wechsler Adult Intelligence Scale. It measures 'general intelligence' or the 'g' factor. It assesses a total of 13 mental faculties like sequencing, arithmetic, and processing speed, but still has various limitations. Both tests ignore people's skills that are equally valuable and not present in the test. People's potential should not be reduced to a single number (Fleetham, 2006).

As cited in Susana (2013), Spearman (1997) defined intelligence as a general cognitive ability that can be measured numerically through the IQ test, which he called 'general intelligence', abbreviated to the ' g-factor'. Later, Oller (1978) claimed that the g-factor presented by Spearsman was equivalent to language proficiency, and what the 'IQ' test measures is L1 proficiency. So, for him, intelligence was the same as linguistic ability. Then, Carroll (1997) argued that even though intelligence is highly correlated with verbal ability, it cannot be the single capacity involved in mental capacities, simply because language is not the only way of expressing mental development. Before the introduction of the MI theory, Thurstone

(1938, as cited in Susana, 2013) claimed that intelligence was not one general ability. He claimed that intelligence is made of seven primary mental capacities, which are: reasoning, verbal comprehension, perceptual speed, numerical ability, word fluency, associative memory, and spatial visualization.

Gardner (1983) summarised the efforts to conceptualize intelligence in three different historical phases: lay theories, the standard psychometric approach, and pluralization and hierarchization.

- Lay theories are characterized by the absence of a scientific definition of intelligence. However, outstanding figures like Jane Austen and Gandhi were often called 'smart', i.e., people with remarkable accomplishments were known to be superior to others when it came to mental powers.
- The standard psychometric approach presents early attempts by psychologists to define intelligence and measure it.
- Pluralization and hierarchization are characterized by viewing intelligence as a single general capacity for problem-solving and conceptualization, i.e., 'general intelligence'. Then, psychologists argued that several components of intelligence either have a hierarchal relationship between them, or a hetererchical structure indicating that all the components are equivalent.

Gardner (1983) claimed that by the MI theory, he added new trends to the list above, which are contextualization and distribution.

- Contextualization has to do with the fact that 'Intelligence' is not independent of the cultural setting. There is an interaction between certain potentials and the characteristics of a certain cultural setting.

- Distribution focuses on the relationship between the individual and the immediate environment. Intelligence, here, extends beyond what is in one's head to the tools one uses, notational memory, and the network of associates. This differs from the three first phases, which assume that intelligence is carried out in one's head, and from contextualization, where intelligence is viewed in relation to a larger context or culture.

Gardner (1993) worked on expanding the latter view of distribution by providing evidence from cognitive and developmental psychology and building upon findings from neurobiology.

In working on the MI theory, Gardner (1983) found himself in direct confrontation with the well-established 'IQ' tests cherished by the psychological establishment. Gardner (1983) argued that the 'IQ' test relies on language and one's ability to define words and know world facts, overlooks one's potential for future growth, and neglects other intellectual strengths. It is true that IQ measures a valuable set of skills, but it is a narrow set of skills that are most valued by society (Fleetham, 2006). Gardner worked his way to MI theory from the definition of intelligence as 'the ability to solve problems or the ability to create valuable products in a certain cultural setting' (Gardner, 1993, p.xxviii), which does not mention the source of these abilities and how they are tested. In 1994-1995, after the MI theory was widespread, Gardner (1993) proposed three outstanding uses of the term 'intelligence': First, it is a universal property, i.e., all human beings have nine intelligences. Second, it is a dimension of difference between human beings, i.e., identical MI profiles do not exist; third, it is the way one does a task in accordance with one's own objective, i.e., the choice of how to carry out a certain task according to one's own goal.

Legg and Hutter (2006) published a collection of 70 different informal definitions of intelligence. It is described as the 'largest and most well-referenced collection there is' (p.1). They have organized the 70 definitions under three sections: Collective definitions, which were agreed upon by many individuals and that cannot be attributed to a single individual; definitions of psychologists; and definitions provided by Artificial Intelligence research. Although some of these definitions were less precise than others, Legg and Hutter (2006) induced that there are some common features between the 70 definitions:

- Intelligence is an individual property that people use when interacting with one environment or more.
- Intelligence is co-related to the person's ability to succeed regarding a goal or an objective.
- Intelligence depends on the person's ability to adapt to different objectives and environments.

They finally came up with their proper informal definition of intelligence: 'Intelligence measures an agent's ability to achieve goals in a wide range of environments.' (Legg & Hutter, 2007, p.8). They argued that the ability to learn or understand things is already part of the individual's capacity to succeed in multiple environments (Legg & Hutter, 2007).

In conclusion, intelligence can be viewed as an individual property that people make use of to achieve a certain objective. In relation to EFL, it is the learner's ability to succeed in language learning by mobilizing their different mind capacities, in their own environment or different environments, to produce language that is valuable in their culture. Whether all learners have that same capacity to the same extent and

whether they all make use of their capacities to learn and understand language the same way, is a controversial issue that learning theories try to study. One influential theory that contributed to the matter is the MI theory.

1.2. Multiple Intelligences Theory

For twenty years, Gardner has worked on neuropsychology trying to understand how the human capacities evolve, work together- at times- and how they are organized in the brain. He documented how different cognitive functions are dominated by different parts of the brain, which have directed him to look further into the human mind and its frames leading him to the theory of MI (Gardner, 1999).

Gardner (1983) distinctively used the term *'intelligence'* in three ways. One, intelligence as a possession that is owned by all human beings i.e., all human beings have a set of different intelligences. Two, intelligence as a dimension of differentiation i.e., identical profiles of intelligence cannot be found even among twins due to genetic and experiential reasons. Three, intelligence as the way in which one performs a certain task according to his goal i.e., how one approaches a task according to what he aspires to achieve (Gardner, 1983). He implied that human beings have a set of discrete computers, which scarcely operate separately from one another, instead of one *'general purpose computer'* -referring to the mind-. He claimed that human beings have a set of autonomous intelligences and that there is not a person who has only one intelligence, which is referred to by psychologists as *'General Intelligence'* (Gardner, 1983).

According to Armstrong (2000), the MI theory broadens the scope of human potential since it assembles one's capacity to solve problems and one's ability to make valuable products in a context-rich and natural setting. The MI theory posits that

there are several ‘ways of knowing’ that operate differently and serve as unique and effective pathways to learning (McKenzie, 2005). The MI theory is the manual that attempts to explain how the operating system of the mind works (McKenzie, 2005). Through the MI theory, Gardner (1983) aimed to provide evidence that individuals possess multiple capacities and potentials that can interact and be used productively. He believed that these multiple capacities can be mobilized 'throughout the various institutions of a society' (Gardner, 1993, p.4). According to Berman (1998), the MI theory provides a more comprehensive definition of intelligence because it recognizes intelligence as something that can be developed.

Gardner (1993) elaborated that the idea that was behind generating the MI theory was his work in neuropsychology trying to understand human abilities, how they are organized in the brain, and how they work together or separately. Although the MI theory was the work of a psychologist, Gardner (1999) noticed that the MI theory was of most interest to educators rather than psychologists. Despite it being the brainchild of Gardner (1983), its applications are the handiwork of educators (Williams, 2002). The MI theory was originally developed to explain how the mind works, but it succeeded in demonstrating that learners come to class with diverse intellectual profiles (Moran, Kornhaber, & Gardner, 2006). According to McKenzie (2005), its best application is as a learning theory, which introduces new paths to learning.

1.2.1. The Multiple Intelligences

Gardner (1983) established a tentative set of criteria that a mental capacity has to meet in order to be classified as intelligence and not just as a talent or an aptitude, which both connote abilities beyond human understanding (McKenzie, 2005). Any

type of intelligence, including the '8 ½ Intelligences' (Gardner, 2006, p.21), should be supported by evidence from the following eight criteria:

- **Potential Isolation by Brain Damage**

If each intelligence is related to a specific area of the brain, it should be subject to isolation by brain damage. Working with people with brain damage, Gardner has noticed that brain injuries seemed to unpair a certain intelligence while leaving the other intelligences untouched. For example, a person with damage in the left frontal lobe may lose some of his linguistic intelligence (incapacity to speak, read, and write), while he can still show signs of other intelligences (ability to dance, sing, do the math, reflect on feelings and connect with others). Damage in the temporal lobe in the left hemisphere may affect musical capacities in particular while personal intelligences are impaired by damage in the frontal lobe. Consequently, Gardner argued for the existence of eight autonomous brain systems (Armstrong, 2000).

Armstrong (2000) summarized the primary brain areas associated with the eight intelligences in the following table:

Table 1. 1

Brain Areas Associated with the Eight Intelligences

Intelligence	**Neurological Systems (Primary Areas)**
Linguistic	Left temporal and frontal lobes (e.g., Broca's/Wernicke's areas)
Logical-Mathematical	Left frontal and right parietal lobes
Spatial	Posterior regions of the right hemisphere
Bodily-Kinesthetic	Cerebellum, basal ganglia, motor cortex
Musical	Right temporal lobe
Interpersonal	Frontal lobes, temporal lobe(especially right hemisphere),limbic system
Intrapersonal	Frontal lobes, parietal lobes, limbic system

Naturalist	Areas of the left parietal lobe are important for discriminating“living” from “nonliving” things

(Armstrong, 2000, p.5)

- **The Existence of Idiots Savants, Prodigies, and Other Exceptional Individuals**

Idiots Savants are individuals who excel exceptionally in a particular intelligence and have a retarded human performance in the rest of the intelligences (uneven profile of intelligences), most common among children with mental disabilities and autism. Prodigies are individuals who are 'highly precocious in one or more areas of human capacity' (Gardner, 1983, p.67). For example, someone with exceptional mathematical skills has low language functioning and poor connection with others, or someone who can draw amazingly well or has a great musical memory without being able to excel as well in other intelligences. Idiots Savants and Prodigies have been found in all eight intelligences. The existence of such exceptional individuals allows the observation of certain intelligence in isolation.

- **An Identifiable Core Operation or Set of Operations**

Intelligence should have a set of basic information processing operations that deal with input triggered by a certain kind of information. For example, the ability to imitate movements by others can be one core operation of kinaesthetic intelligence, and sensitivity to pitch is one core of musical intelligence.

- **A Distinctive Developmental History and a Definable Set of Expert “End-State” Performances**

Growth in certain intelligence should have a history following a developmental pattern. According to Gardner (1983), each intelligence has its own time of appearing in one's life either rapidly or gradually. For example, musical intelligence emerges and develops very early in one's life and it remains active to his

old age. On the contrary, mathematical intelligence is believed to rise in adolescence and early adulthood and decline after 40. In addition, intelligences can be seen best in their 'end-state' in the lives of exceptional and highly talented individuals throughout history. Musical intelligence can be seen and analyzed through Beethoven's symphonies, and spatial intelligence through the paintings of Michelangelo in Sistine Chapel (Armstrong, 2000). The following table shows the developmental trajectory for each intelligence:

Table 1. 2

The Developmental Trajectory of the Intelligences

Intelligence	**Developmental Factors**
Linguistic	"Explodes" in early childhood; remains robust until old age
Logical-Mathematical	Peaks in adolescence and early adulthood; higher math insights decline after age 40
Spatial	Topological thinking in early childhood gives way to the Euclidean paradigm around age 9–10; the artistic eye stays robust into old age
Bodily-Kinesthetic	Varies depending upon component (strength, flexibility)or domain (gymnastics, baseball, mime)
Musical	Earliest intelligence to develop; prodigies often go through a developmental crisis
Interpersonal	Attachment/bonding during the first 3 years is critical
Intrapersonal	Formation of the boundary between "self" and "other" during the first three years is critical
Naturalist	Shows up dramatically in some young children; schooling or experience increases formal or informal expertise

(Armstrong, 2000, p.5)

- **An Evolutionary History and Evolutionary Plausibility**

The roots of intelligence have to reach way back in the history of evolution. For intelligence to be more 'plausible', it has to have an evolutionary history and be present in the evolution of other species. For example, spatial intelligence can be seen in early cave drawings and in the way certain insects move in space. Musical intelligence traces back to archaeological evidence of the existence of musical instruments in the early ages and bird songs. In addition, the importance of certain intelligences may have

changed over time. The value of spatial intelligence may have increased due to technological evolution, in contradiction to naturalist and bodily intelligence which was more valued early in history when people used to hunt, harvest and build silos.

- **Support from Experimental Psychological Tasks**

Psychological studies demonstrate that intelligences can work in isolation. Someone may have the ability to read but fail to transform that ability into doing math, which means failure to transfer linguistic ability to mathematical intelligence. The same thing goes for cognitive abilities such as memory. Individuals have selective abilities, for instance, one can have a good memory for words but not for faces. 'People can demonstrate different levels of proficiency across the eight intelligences in each cognitive area' (Armstrong, 2000, p.8)

- **Support from Psychometric Findings**

There should be standardized measures to support the credibility of intelligence. In measuring the MI, Gardner (1993) pointed out that instruments that measure intelligences should focus on the outcome, i.e., ‘what subjects can accomplish, putatively given a specific intelligence or intelligences’ (p.xiv).

- **Susceptibility to Encoding in a Symbol System**

The ability to use symbols is one sign of intelligence. The ability to symbolize (re-presentation or bringing into present something that is not actually here) is a unique human capacity. For example, a short-written word can be symbolized and an entire range of associations can be brought up in the mind, for instance, the word 'CAT' is a set of printed marks that can bring to the mind images, sounds, and memories. Each intelligence has its own unique symbol system. Linguistic intelligence has a number of spoken and written intelligences. Spatial intelligence has

a set of graphic languages (Armstrong, 2000). Some of the symbol systems of each intelligence are:

-Linguistic intelligence: phonetic languages, e.g., English.

- Logical /mathematical intelligence: computer language, e.g., basic.

- Spatial intelligence: Ideographic language, e.g., Chinese.

-Bodily/kinaesthetic intelligence: Sign languages, Braille.

- Musical intelligence: Musical notational systems, Morse code.

-Interpersonal intelligence: Social cues, e.g., gestures and facial expressions.

-Intrapersonal intelligence: Symbols of the self, e.g., in dreams and artwork.

-Naturalist intelligence: Species classification systems, e.g., Linnaeus; Habitat maps.

Gardner (1983) pointed out that the list of intelligences can be expandable or subject to change if a suspect intelligence meets all the above criteria.

Being an 'intelligent' person has meant different things through time. In ancient civilizations like the Greek, it meant being physically strong and having virtuous behaviour. Then later in time, especially in Western societies, it meant mastering classical languages and mathematics. At the beginning of the 21st century, 'intelligent' people were defined as those who made sense of computer symbols and used them to solve problems (Gardner, 1999). Ever since, the human mind has become the subject of measurement and experimentation. Gardner (2006) presented an alternative vision of the mind which is a pluralistic view of mind, recognizing different facets of cognition and acknowledging that people have different cognitive strengths.

Gardner (1983, 1999) describes '8 and ½ ' different types of intelligences:

1.2.1.1. Verbal-Linguistic Intelligence

According to Gardner (1999), linguistic competence is the most common one among human beings. Linguistic intelligence mainly revolves around the mastery of language. Linguistic intelligence is the ability to use words efficiently to attain a certain purpose in both oral and written forms. It includes the ability to manipulate the structure, sound, and meaning of language in addition to its pragmatic dimensions. Individuals with this type of intelligence can use language to convince others to take a certain action (rhetoric), to remember information (mnemonics), to explain, and to talk about themselves (metalanguage) (Armstrong,2000). In addition to the ability to express oneself orally and in writing, Mckenzie (2005) added that it is the ability to learn an FL.

Verbally intelligent individuals think in words, so learners with this type of intelligence learn best through words, poems, storytelling, etc. According to Nolen (2003), language allows them to better process and memorize information. Verbal learners in particular show interest in vocabulary and grammar. Their strength lies in their ability to use words, which helps them to be persuasive and accurate explainers. Linguistically intelligent learners can analyze language and create a better understanding of meanings by manipulating language. That is why they can be better poets, teachers, storytellers, journalists, and writers. EFL teachers can ignite or nurture linguistic intelligence by focusing on activities such as reading, writing, and giving oral reports from real-life situations. They should use correct language in a way that shortens the gap between the learner and the material in hand (Nolen, 2003).

Linguistic intelligence passes the empirical tests of intelligence, and calling linguistic skills intelligence is consistent with findings from traditional psychology. Damage in the Broca area (which is responsible for the production of grammatical sentences in the brain) causes difficulty in putting words and sentences together while keeping the ability

to understand them. In addition, the development of the gift of language has been universally unproblematic and constant in most children across cultures (Gardner, 2006).

1.2.1.2. Logical-Mathematical Intelligence

According to Gardner (1983), logical-mathematical intelligence is the ability to detect patterns, to reason and to think logically. It means solving mathematical problems logically and analytically. Hence, it is the ability to manage the use of numbers, problem-solving, and reasoning effectively. This type of intelligence includes learning through calculation, inference, classification, categorization, generalization, hypothesis testing, etc. (Armstrong, 2000). Logically intelligent learners can follow logical sequencing and long chains of reasoning. They are also quick calculators, which is a trait that shows in their early age. They can be mathematicians and scientists; however, mathematicians show interest in the abstract, unlike scientists who are interested in explaining physical reality (Nolen, 2003).

Gardner (2006) explained that there are two main facts about logical-mathematical gifted individuals. First, the problem-solving process is rapid, for instance, scientists cope with several variables and evaluate numerous hypotheses all at once. Second, the solution can be 'constructed before it is articulated' which 'underscores the non-verbal nature of intelligence' (p.12). The fact that being able to find solutions without even having the solution process invisible to the problem solver (Eurika) happens frequently to some people, which indicates the work of logical-mathematical intelligence (Gardner, 2006). In addition, it has empirically been proved that certain areas of the brain are more prominent in solving mathematical problems than others (the frontotemporal lobes are associated with logical deduction, and the visuospatial areas in the parietofrontal lobes are associated with numerical calculation). In addition, the existence of savants who show remarkable abilities in calculations and

great deficiencies in other abilities, and the children's prodigies proves that logical-mathematical intelligence has recognizable cognitive features, and its development in children has been documented already (Gardner, 2006). These are all evidence of the existence of logical-mathematical intelligence.

1.2.1.3. Visual-Spatial Intelligence

This intelligence revolves around the *'visual-spatial world',* which entails the ability to think or perceive the world by understanding the relationship between image, color, shape, line, form, space, and meaning (Armstrong, 2000). Visually intelligent individuals have the capacity to create and manipulate mental images in problem-solving. According to Gardner (1983), spatial thinkers have an accurate perception of the visual world which is why they can transform and modify initial perceptions. They have the ability to visually and graphically represent their visualization and to well orient themselves in the space around them (Armstrong, 2000). Architects, painters, and sculptors rely on spatial thinking in using colors and imagination to visualize and create their art. Visually intelligent individuals are interested in the concrete world as in what they can see and feel.

Spatial problem solving like the use of the notational system of maps required for navigation, or visualizing an object from different angles, chess games, and visual arts all employ special intelligence in the use of space. Damage to the posterior regions of the right cerebral cortex causes failure in recognizing faces, finding one's way to a site, and noticing details is evidence of the association of special intelligences with certain brain areas and their isolation. Also, the existence of child prodigies like visual artists and savants all support the existence of special intelligence (Gardner, 2006).

1.2.1.4. Bodily-Kinesthetic Intelligence

Bodily-kinesthetic intelligence enables individuals to understand the world around them through their bodies. They, also, express their own ideas and feelings with their body. Bodily-kinesthetic intelligent people are skilled in using their bodies for purposeful expression. Coordination, strength, balance, dexterity, speed, and flexibility, in addition to tactile and haptic capacities, are the physical skills that characterize this ability (Armstrong, 2000). It involves physical activities such as moving hands, dancing, constructing models, etc. Bodily intelligent individuals have great control over their bodies and movements. They show great ability to control their movements. That is why they can be good surgeons as well as athletes or sculptures. People with kinesthetic intelligence like to touch things in order to learn (Nolen, 2003).

The cognitive features of bodily-kinesthetic ability are more than just carrying out a mime sequence or hitting a ball. Evidence of cognitive features lies in the ability to use one's body to express emotions like in dancing, to play a game, or to create a new product like devising an invention. The existence of child prodigies like Babe Ruth, the localization of control over body movements in a certain area of the brain (the motor cortex), and the evolution of body movements are all evidence that bodily-kinesthetic 'knowledge' is an intelligence with cognitive features.

1.2.1.5. Musical-Rhythmic Intelligence

It is the ability to perceive, discriminate, transform, and express musical forms. Sensitivity to melody, rhythms, and musical forms is highly recognizable in people with musical/rhythmic intelligence (Armstrong, 2000). Musical intelligence is generally recognized at an early age. Musically intelligent individuals show an understanding of pitch, rhythm, and timber. They can convey feelings through music. individuals with this intelligence have the ability to recognize and learn through sounds, songs, rhythms, etc. Musical intelligence also inter-relates with logical-mathematical intelligence since

music has ratio, regularity, and mathematical patterns, which is another reason why it should be nurtured (Nolen, 2003).

Gardner (2006) explained how musical intelligence meets all the criteria for an intelligence. Take the example of the Violinist Yehudi Menuhin who by the age of ten was an international performer. Yehudi's musical intelligence has manifested so early in his life. His powerful reaction to violent sounds at the age of three and his remarkably rapid progress on the instrument means that he was biologically prepared for music performance, which is also evidence from child prodigies that suggests that there is some biological link to a particular intelligence. Moreover, the ability of other special children to excel in playing instruments such as autistic children who fail in other areas of communication indicates the independence of musical intelligence. Additionally, even though musical skill is not clearly localized in the brain as natural language, it has been proven that certain parts of the brain, which are located in the right hemisphere, play an important role in the perception and production of music. There is also evidence of a selective loss of musical ability in brain damage, however, the particular susceptibility of musical capacity to brain damage relies on the degree of training and some other individual characteristics. Evidence from various cultures indicates that music is a universal faculty, which suggests that there is a 'raw' computational ability in early childhood. Finally, musical notation provides a versatile symbol system (Gardner, 2006). In conclusion, although musical capacity is not typically an intellectual skill like mathematics, its inclusion in the intelligences is empirically justified.

1.2.1.6. Intrapersonal Intelligence

Intrapersonal Intelligence is the capacity to understand one's self and show awareness of one's inner thoughts. Gardner (2006) explained that intrapersonal

intelligence is ‘knowledge of the internal aspects of a person’ (p.17). It involves being aware of their own emotions, recognizing and distinguishing between different feelings, and using this awareness to understand and guide their behaviour. Intrapersonal intelligent people show high awareness of their self-knowledge and how to act according to that knowledge. They are more aware of their inner moods, motivations, capacities, desires, and intentions and are capable of self-discipline. People with intrapersonal intelligence tend to have an 'accurate picture' of themselves (Armstrong, 2000). Learning in this case occurs through metacognitive practices such as expressing feelings, writing journals, etc. This intelligence develops from internal resources; this is why this type of individual needs to be praised, constantly. They are generally patient, disciplined, and highly self-respected. Hence, they can be encouraged by involving them in imagination exercises (Nolen, 2003). However, since intrapersonal intelligence is private, detecting it by observation needs evidence from language, music, or some other more expressive forms of intelligence. For instance, intrapersonal knowledge can be detected by observing the use of linguistic intelligence as a medium of expression. Individuals with impaired intrapersonal intelligence like autistic children, who often fail to refer to themselves, can show remarkable capacities in musical or special non-personal realms (Gardner, 2006).

1.2.1.7. Interpersonal-Social Intelligence

Interpersonal-social Intelligence is the ability to understand other people's moods, emotions, intentions, and motives. Interpersonal intelligent people show high sensitivity to other people's feelings, in addition to their facial expressions and voice (Armstrong, 2000). In more advanced forms; they can read the hidden intentions and desires of other people (Gardner, 2006). They are, also, sensitive to gestures and

manners (Susana, 2013). Individuals with this type of intelligence partly perceive the world through other people and group associations.

Religious and political leaders, salespersons, therapists, teachers, and parents all show advanced interpersonal skills. Brain research indicates that the frontal lobes of the brain are associated with interpersonal knowledge. Damage in this area can cause severe personality changes. Since prehistory, skills like hunting and killing required group cohesion, leadership, organization, and solidarity, which proves the importance of social interaction (Gardner, 2006).

At the beginning of the 21st century, Gardner (1999) declared that the list of MI can be subject to extension. In addition to having to meet the eight mentioned criteria, intelligence is defined in terms of an 'end state' i.e., a socially recognized and valued role that relies heavily on a particular intellectual capacity. Consequently, he added ‘naturalist intelligence’ to the seven intelligences and named other ‘candidate intelligences’.

1.2.1.8. Naturalistic Intelligence

This intelligence revolves around sensitivity to the environment and natural phenomena. It is the ability to recognize and classify components of the environment; the flora and fauna (Gardner, 1999). Naturalistically intelligent people are known to observe, experiment, reflect, and form questions related to the environment they are part of (Susana, 2013). They also show sensitivity to other natural phenomena (Armstrong, 2000). They have the talent of caring for, taming or interacting with various living creatures. Individuals of this type like to discuss environmental issues and show sensibility towards the future of the world. Field trips, pet caring, nature observation, article sorting from nature, and telescope use can all be beneficial for this type of individual (Nolen, 2003).

Evidence to support the existence of a naturalist intelligence was persuasive for Gardner (1999) to consider it as an intelligence. The existence of biologists like Charles Darwin and ornithologists like John James Audubon, who remarkably excel at identifying and distinguishing between species, is proof of a high degree of naturalist intelligence. The ability to recognize instances as members of a species and be aware of how to distinguish diverse plants, animals, and mountains develops starting from childhood. Even though most people now are not in direct contact with 'nature' they still depend on naturalist intelligence to make choices such as which car to drive, where to live, and which pair of sneakers is more appropriate (Gardner, 2006).

1.2.1.9. Existential Intelligence

Although Gardner (1999) said that the list of intelligences is open, as long as the candidate intelligence meets the eight mentioned criteria for an intelligence, he argued against the existence of spiritual intelligence for lack of evidence. Gardner (2006) argued that an individual's phenomenological experience should not be confounded with intelligence. Feeling in touch with a 'higher being' or in touch with the world is not a valid indicator of intelligence. If a person has a high degree of a certain intelligence, he is intelligent even when he does not have phenomenological reactions. Additionally, if being spiritually intelligent means being inseparable from a belief in a certain religion, then this requirement deviates from the original criteria for defining intelligence. However, Gardner (1999) found one facet of spirituality that is a promising candidate to be considered as intelligence, which is existential intelligence: 'the intelligence of big questions' (Gardner, 2006, p.20).

Gardner (1999) argued that if human beings can relate to the world of nature they can also relate to the supernatural world. He defined existential intelligence as 'a concern with ultimate life issues' (Gardner, 1999, p.60). It is the ability to locate oneself

with respect to existential features such as unanswered questions about the meaning of life and death, the fate of the world, profound experiences, and total immersion in works of art and love (Gardner, 1999). These questions transcend perception because they concern matters that are too big or too small to be perceived by one of the five sensory systems (Gardner, 2006). Existential intelligence revolves around understanding processes within a larger existential context. It can include philosophy, aesthetics, religions, and values of truth and beauty (McKenzie, 2005).

Individuals like philosophers, religious leaders, and statesmen are high-end embodiments of existential intelligence. Also, existential intelligence issues arise in every culture. Children start raising existential questions from an early age even though they do not always listen to the answers. Additionally, myths and fairy tales speak to their fascination with existential questions. However, there is no evidence of the involvement of certain brain areas with deep issues of existence (Gardner, 2006). Existential intelligence remained as 'candidate intelligence' for lack of empirical evidence.

These multiple human capacities are independent from one another to some extent. Brain research indicates that some faculties can be lost due to brain damage while others remain working. hence, a relatively high ability in one particular intelligence does not require a similar ability in another intelligence. This does not indicate that adult roles depend on a single intelligence. Every cultural role requires a combination of intelligences. For instance, playing a musical instrument transcends reliance on musical intelligence. It calls for bodily-kinaesthetic intelligence, interpersonal skills, and intrapersonal intelligence, all in varying degrees. This is why it is important to view individuals as a collection of aptitudes rather than owners of one singular problem-solving faculty Gardner (2006). Additionally, it is important to note

that having strong intelligence does not mean that one necessarily acts intelligently. In other words, a person with strong mathematical capacity can either use it to carry out complex experiments in physics or can waste it playing number games multiplying digits in his head. The MI theory overcomes biases that indicate that some virtues like logical thinking and rationality are more important than other virtues. If a human ability cannot be readily tested, then it is not worth the attention, and all the solutions for a problem can be given through one certain approach like logical-mathematical thinking (Gardner, 2006). In conclusion, to have a better chance of dealing with different problems, all human intelligences should be recognized and nurtured. Working on mobilizing the full range of human abilities will help individuals believe in their competence and feel more engaged in working for the broader good of the world.

Armstrong (2000) summarized the key points in the MI theory as follows:

- Each person possesses all eight intelligences: All individuals have capacities in all the intelligences; however, how they function together is unique to each individual. An average person can be highly developed in some intelligences, quietly developed in others, and relatively underdeveloped in the rest.
- Most people can develop each intelligence to an adequate level of competency: All individuals have the ability to develop all the intelligences to reasonable levels if they are properly encouraged and given the right instruction.
- Intelligences usually work together in complex ways: Intelligences do not exist and function in separation from one another. No activity is fully musical or purely bodily-kinesthetic. Intelligences are always in endless ways of interaction in their specific cultural contexts. According to Tirri and Nokelainen (2011), there are three main ways for intelligences to interact: interfere with each other, compensate for each other, and catalyze each other.

- There are many ways to be intelligent within each category: There is a rich variety of ways to be intelligent within one intelligence or between intelligences. A person can be linguistically intelligent even though he has low reading proficiency, just because he has amazing storytelling ability.

1.3. Learning Styles and Multiple Intelligences

In an attempt to design educational models that interpret human differences, the Learning Styles Theory and the MI theory were put forward. Both theories combine insights from biology, psychology, anthropology, and studies of art and culture. Lesiak (2015) defined style as 'a term that refers to consistent and rather enduring tendencies or preferences within an individual's (p.252). According to McKenzie (2005), learning styles are fixed modes of understanding used by learners regardless of the instruction they receive, whereas MI are flexible conduits of cognition that can be applied by all learners in varied contexts. Moreover, the Learning Styles Theory is concerned with differences in the process of learning, whereas the MI theory is concerned with the content and products of learning (Silver, Richard, & Matthew, 1997).

All learning styles models have two main points in common:

- A focus on process: Learning-style models are concerned with the process of learning: how individuals absorb and think about information, and how they evaluate the results.

- An emphasis on personality: Learning-style theorists generally believe that learning is the result of a personal, individualized act of thought and feeling.

However, it is believed that learning styles theory in general and learning styles models are not quite sensitive to the effects of context on learning (Silver, Richard, & Matthew, 1997).

In the tenth anniversary of the MI theory, Gardner (1993) said that he had noticed that the MI was conflated with learning styles. He affirmed that they are not the same. Gardner (1993) set the difference between the two theories explaining that in MI theory, he started ‘with a human organism that responds (or fails to respond) to different kinds of *contents* in the world’ and that ‘those who speak of learning styles are searching for approaches that ought to characterize *all* contents’ (p.45).

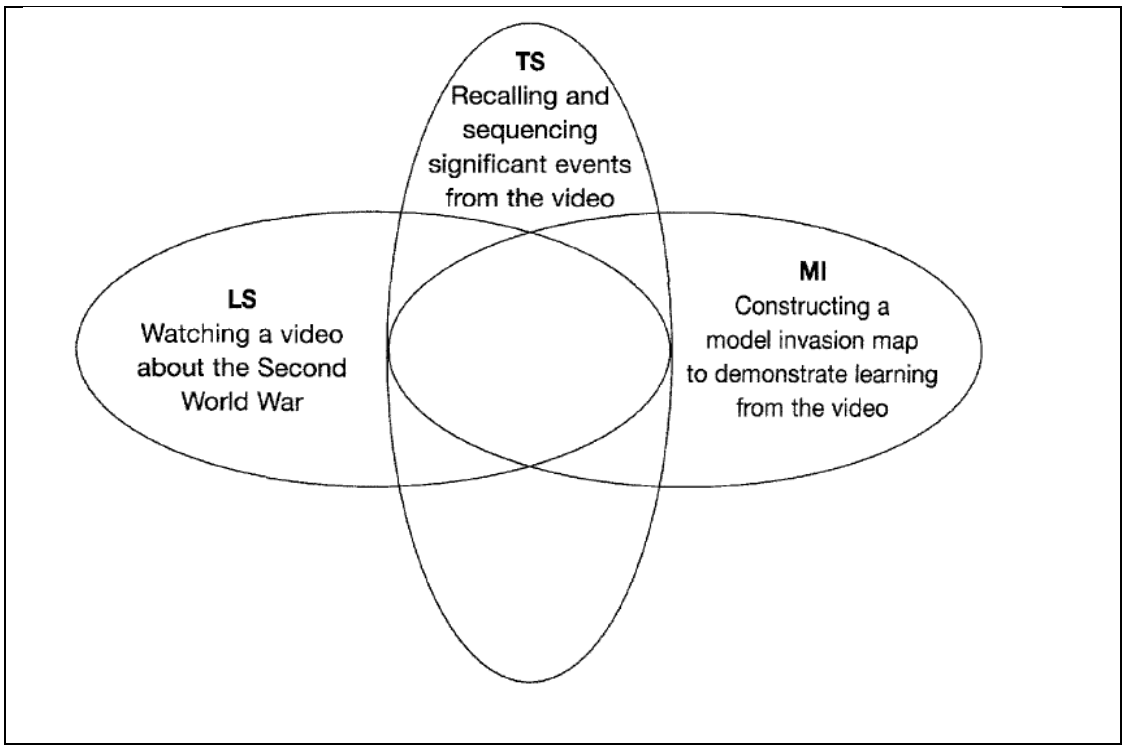
He explained that Intelligence is the ‘computing power of one’s musical or spatial capacity. Style is the way a person is said to approach a certain task. He also noted that, for him, the MI theory represented a comprehensive framework, and its value should be judged based on how thorough the framework is and how useful it is to scholars, rather than solely through tests (Gardner, 1993). He added that the notion of style appoints ‘a general approach that an individual can apply equally to every conceivable content. In contrast, an intelligence is a capacity, with its component processes, that is geared to a specific content in the world (such as musical sounds or spatial patterns)’ (Gardner, 1993, pp. 202-203). However, the MI theory fails to consider the ‘affective' part of learning, unlike the Learning Styles Theory which considers the psychological 'affect' and individual personality in understanding differences in learning (Silver, Richard, & Matthew, 1997).

Armstrong (2000) argued that the MI theory differs from the current learning-style theories because it has a different type of underlying structure. It is a cognitive model that describes how individuals use their different intelligences to solve problems and create culturally valuable products, unlike learning-style theories which are process-oriented. To label a learner as 'a verbal learner' or 'a visual learner' is the tendency of the learning styles model, unlike MI theory which emphasizes that every learner has all the intelligences that work together and are not mutually exclusive. Educators should

provide instructional opportunities, that promote all the intelligences and not label or exclude individuals (McKenzie, 2005). Fleetham (2006) added that both learning styles and MI describe the learning process. However, learning styles are the different ways learners take in information, and MI are the skills learners use to solve problems and make products to demonstrate learning. Fleetham (2006) also mentioned thinking skills which often get confused with MI. Thinking skills are the different ways in which learners process, store, and retrieve information. He demonstrated the difference in the following example:

Figure 1. 1

Difference between Learning Styles, Thinking Skills, and Multiple Intelligences



(Fleetham, 2006, p.12).

Learning styles (LS) take place in the 'front-end' of learning, thinking skills (TS) in the middle, and MI take place in the back end. (Fleetham, 2006, p.12). Although they all have common features, learning styles, thinking skills, and MI are not the same.

Another view of the two theories found that learning styles and MI are complementary. Learning styles focus on the individual learning process and Gardner's content-oriented model of the MI surprisingly complements each other (Silver, Richard, & Matthew, 1997). Since Learning Styles Theory is believed to undervalue context, without MI, style is rather abstract. Moreover, without learning styles, the MI theory is unable to describe different processes of both thought and feeling. Thus, each theory addresses the gap found in the other. Together, they form an integrated picture of intelligence (Silver, Richard, & Matthew, 1997).

1.4. Multiple Intelligences Measurement

In general, scientists test and measure intelligence based on their understanding of its nature. Psychologists, educators, professionals, etc., test intelligence to measure people's different intellectual abilities, or to monitor changes in the intellectual ability of a particular person over time (Cianciolo & Sternberg, 2004). For instance, educators may use intelligence tests to make decisions about learners who need educational assistance. According to Cianciolo and Sternberg (2004), there are two types of mental tests, that get mistaken for one another: intelligence test and achievement test. Both tests have common features of time limits and multiple-choice questions, and are both used to repport significant information about a person's mental capacity. However, they differ in that achievement tests measure the effects of a systematic program of instruction or training, whereas intelligence test measures what a person can do intellectually without the benefit of specific training or education. Generally speaking, tests of mental abilities, whether they are intelligence tests or achievement tests, ‘measure both intellectual aptitude and the outcomes of learning’ (Cianciolo & Sternberg, 2004, p.31).

In measuring the MI, Gardner (1993) pointed out that instruments that measure intelligences should focus on the outcome i.e., 'what subjects can accomplish, putatively given a specific intelligence or intelligences' (p.xiv). Many MI tests assess preferences and are self-reported. They report how a person perceives himself in a given shot of time rather than assessing the actual strength of a given intelligence in actual accomplishment (Gardner, 1993).

In order to use the MI in teaching practices, teachers need reliable and valid ways to test learners' different abilities. Gardner (1993) suggested that the assessment of any intelligence should be carried out using the tools of that intelligence. For

example, musical intelligence should be assessed using musical instruments. However, this kind of assessment is demanding in terms of materials and is time-consuming. MI measurement should be practical, feasible, and accessible for educators. Gardner (1993) pointed out, on several occasions, that standardized tests measure 'a small part of the total spectrum of abilities' (Armstrong, 2000, p.12).

Since the intelligences do not work solely, and they are in constant interaction, they should not be measured solely or without taking into consideration the effect of context. Data from 22 different countries demonstrates that there are several context-specific ways of assessing MI, for instance, structured interviews, self-reports, and using significant others as informants (Cited in Kirsi, Petri, & Erkki, 2013, p. 440).

However, until nowadays, there does not seem to be any standardized instrument measuring the MI. Many self-report inventories are used, but research says that self-report measures of intelligence modestly correlate with performance measures and have a validity limit of 0.3 for self-estimates of intelligence (Beth A., Michael C., & Philip A., 2006). The validity of self-evaluation instruments with rating scales, like any rating system is affected by three defects: severity (tendency to rate too low on all characteristics), leniency (tendency to rate too high), and central tendency (tendency to avoid extreme judgments and rate in the middle of rating scales) (Kirsi, Petri, & Erkki, 2013). Yet, the primary dynamic aspects of learners' personal learning processes are their perceptions of and beliefs about themselves as learners, as well as their affective experience in relation to the intelligences (Kirsi, Petri, & Erkki, 2013). That is why self-evaluated intelligence entailing learners' perceptions and beliefs about themselves as learners can be an empowering tool in their studies.

Many self-reporting inventories and questionnaires are widely used to gauge MI profiles, namely: the Teele Inventory of Multiple Intelligences (TIMI), Birmingham

Grid for Learning (BGFL), the MI Wheel, the Multiple Intelligences Profiling Questionnaire (MIPQ), the Multiple Intelligences Developmental Assessment Scales (MIDAS), the Multiple Intelligences Inventory (MII), etc.

Certainly, scores people get from these instruments should not be used to label them. The emphasis of scholars should be on how to turn these scores into opportunities and actions for learners to contribute to their communities and to understand how and why they do so. Measuring the intelligences should go beyond scores and incorporate how the person perceives and contributes to ethical, cultural, and social aspects of the environment (Tirri & Nokelainen, 2011). Scholars should go beyond measuring capacities to better understand intentions. People, in general, are not just mer responders to stimuli, they direct their actions and commit themselves to constant evolution because what they do with their intelligences affects their cultural environment. At the end of school, what learners collect should be more than scores. It should be what they can give to their communities with the mind capacities they develop in school, which is the core purpose of the MI theory (Tirri & Nokelainen, 2011).

Assessment of the intelligences should help guide learners and teachers to understand the potential they have to contribute to their communities. MI assessment should be contextualized, i.e., looking into what the intelligences are being used for. Intelligence assessment can be used by educators to provide a shorthand description of learners, which helps them predict how learners are likely to behave in relevance to different intelligences.

Conclusion

For so long, intelligence was considered as one block construct, which can be measured in isolation. However, with the progress of cognitive research, it is now believed that intelligence is a universal property. The MI theory implies that intelligence is not just one entity; rather, it is ‘multifaceted’. Cognitively speaking, all human beings have all the intelligences; however, not all of them are intelligent in the same way. Profiles of intelligences are so unique that identical ones among individuals are not to be found. Hence, the cognitive capacities of human beings cannot be fully appreciated if other types of intelligences such as spatial, bodily-kinesthetic, musical, interpersonal, and intrapersonal are not recognized, in addition to linguistic and logical intelligences.

Chapter Two: Multiple Intelligences in the EFL Classroom

Chapter Two: Multiple Intelligences in the EFL Classroom

Introduction

One of the significant advances in FL learning in the last decades is research done in the area of learner differences. Learners are no longer viewed as 'the same'; learners, indeed, have different learning profiles. The MI theory is a learner-based theory that views learners as 'multi-dimensional' in terms of capacity, not only cognitive, but also physical, artistic, social and spiritual capacities, which can all be subject to change and progress. The MI theory ensures that all the intelligences are equal and present in all learners; however, the difference lays in which of the intelligences interact to facilitate a problem-solving situation for one learner. Not all learners use all the intelligences equally; thus, learners definitely have different MI profiles. Moreover, all the intelligences are both changeable and trainable. The different intelligences are considered as personal tools that learners mobilize to process information depending on the nature of the task they are faced with. Hence, the MI theory can serve as a framework to assist EFL teachers to address learners' differences by stimulating different intelligences using a variety of language instructional tasks that can increase the effectiveness of FL learning. Learners can show progress if they are given the opportunity to use their areas of strength.

Accordingly, this chapter introduces the MI theory into the EFL classroom. We begin by closely looking at linking the MI to the teacher and the learners. Next, we explore various stages and strategies for teaching with the MI, in order to accommodate the various intelligences in the classroom, along with follow-up activities. Finally, we discuss the MI domains and the MI lesson plan.

2.1. Multiple Intelligences: Teacher and Learners

2.1.1 Multiple Intelligences and the Teacher

Like any other model of learning, educators have to understand the basic theoretical foundation of it and apply it to themselves first before taking it to a classroom environment. Before implementing MI theory educators should first determine the nature and quality of their MI and seek ways to develop them. Fluency in one intelligence or lack of fluency in another can affect the educator's competence. MI theory can help teachers to identify their strengths and areas that need improvement. Teachers generally use the intelligences they are most strong in when teaching. They enjoy working with the intelligences that stimulate their mind (Nicholson-Nelson, 1998). However, it is important for teachers to develop self-awareness about the intelligences they use in their teaching and the intelligences they tend to avoid.

One way of developing their self-awareness is by using inventories. Teachers can use the Teacher Reflection Inventory suggested by Nicholson-Nelson (1998, p.159) to help them reflect on their teaching style. They can review the inventory to see which intelligence they are strong in and which intelligence is challenging to use. Then, they can discuss the results with other colleagues. Another inventory teachers can use is the MI inventory suggested by Armstrong (2000, p.13). It is said to connect the teacher (and adults in general) to their own life experiences with the MI.

Armstrong (2000) affirmed that MI inventories can be useful in surveying one's teaching style and how it matches up with the intelligences. Teachers should know how to bring resources from all the intelligences into the classroom. One way of doing so is by drawing on other colleagues' experiences and expertise and using technology.

After reflecting on the results teachers get from inventories, they begin to recognize the intelligences they tend to avoid or use the least. Nicholson-Nelson (1998) suggested the following gap-mending strategies to start mending the gaps found:

- Team Teach and Call on your Colleagues: the teacher can use expertise from another teacher with strengths in the intelligences he wants to nurture. Both teachers can switch learners to teach to their strengths. For example, in teaching a unit with the general theme of sports. If the language teacher, whose strength is in teaching language, is not familiar with the content being studied, he can mend the gap by teaming up with the physical education teacher where both teachers can help learners achieve a better understanding of the material. The teachers' room and the school are full of specialists and teachers with different talents and skills. The teacher of music, the teacher of computer science, the librarian, or the resources specialist are all resources that can help teachers teach a certain material. For example, to promote linguist intelligence, the EFL teacher can use the help of the librarian to find interesting resources.

- Recruit Guest Speakers: If the teacher's weakness is musical for example, he can search for someone who is musical and ask him to come to the class and help with teaching a certain material and talk to learners about their area of expertise. This can be so encouraging to learners who get to meet real-life examples from the different intelligences.

- Fight Through your Intelligence Shutdown: If the teacher is not good at physical activities, yet they have in the class learners with high kinesthetic

intelligence, they should attend workshops and read books to better understand bodily skills and figure out how to integrate them into the lesson. The teacher should not avoid any intelligence present in his class. He should give a chance to all the intelligences and seek ways to integrate them into his teaching style.

Moreover, according to the 'Pygmalion effect' or the 'self-fulfilling prophecy', teachers' beliefs about their learners can affect how learners actually perform in the class (Campbell & Campbell, 1999). Positive teachers' beliefs and expectations are a key variable that affects student outcomes. Thus, the MI theory provides teachers with a model of intelligence in which to believe. If every teacher believes that learners are intelligent creatures with different potentials in different fields, they will bring out the human learning potential they are mandated to develop in every learner. It is difficult to help improve learners' performance without knowledge of their intellect and different mind capacities. MI theory gives teachers the theoretical foundation to boost their beliefs about student competence (Campbell & Campbell, 1999). According to Campbell and Campbell (1999), the MI theory positively affects teachers' beliefs about learners' intelligence, classroom instruction, and student achievement.

Although teachers are responsible for the intellectual development of their learners, they lack adequate theory of human intelligence, and IQ tests were their only exposure to the idea of intelligence (Campbell & Campbell, 1999). Consequently, before teaching with the intelligences, teachers must first believe that all learners can learn, and the MI theory can back up that belief. The MI theory frees teachers from negative beliefs about the intelligences (like the belief that intelligence is genetically determined, or that intelligence is only verbal and mathematical), and it directs them to create environments and instructional methods that develop all learners' competencies.

Teachers should be more open and accepting of all learners and their differences (Campbell & Campbell, 1999).

2.1.2. Multiple Intelligences and Learners

Individual differences in educational settings are celebrated, nowadays. They gained an important value in teaching/learning practices in general and EFL learning in particular. Learners' diversity is noticed in how EFL learners perceive learning in general and which mind strengths they mobilize in the learning process according to how their mind acts in the thinking and learning process. In any EFL class, it can be noticed that not all learners have the same competence; therefore not all learners learn the same way. They opt for the most suitable learning strategy they find according to their own mind capacities. This diversity of learners makes it hard to adopt one suitable teaching strategy, one convenient instruction, or one type of activity to teach any aspect of the language. It is hard to find classes that are homogeneous in terms of learning abilities, mind capacities, styles, and preferences.

According to Jane and Carmen (2004), the MI are *'personal tools'*, which are put into use to recognise new information and to store it for easy future retrieval. Armstrong (1999) added that none of these intelligences is superior to the other. They all are autonomous, subject to change, and are actually trainable. Thus, the MI theory can act as a framework for EFL teachers to address learners' uniqueness and individuality. Additionally, it provides language learners with a variety of ways to strengthen their performance according to their different mind capacities.

All learners have all the intelligences and they can develop and nurture all of them. However, some intelligences manifest earlier than others, which is why when they come to school they come with established ways to learn within one intelligence

more than another (Armstrong, 1999). Thus, it is important to assess learners' MI before carrying out teaching models. Despite the non-existence of a single standard test that can provide accurate information on learners' MI, teachers are invited to observe how their learners operate in the class and how they spend their free time in the school, too. To personalize learning, teachers should understand learners: the way they learn, what motivates them, and who they are. MI theory is a powerful tool to portray learners, it describes their skills, preferences, and potential (Fleetham, 2006). Armstrong (2000) described learners of each of the intelligences as follows (p.22):

Table 2. 1

Description of the MI's Learners

Children who Are highly:	**Think**	**Love**	**Need**
Linguistic	In words	reading, writing, telling stories, playing word games	books, tapes, paper,writing tools, diaries, dialogue, discussion, debate, stories
Logical-Mathematical	By reasoning	questioning, experimenting, figuring out logical puzzles, calculating	materials to experiment with, , manipulatives, science materials trips to the planetarium and science museum
Spatial	in images and pictures	designing, visualizing, drawing, doodling	art, LEGOs, videos, movies, slides, mazes, imagination games, puzzles, illustrated books, trips to art museums
Bodily-Kinesthetic	through somatic sensations	dancing, running, building, jumping, touching, gesturing	role play, movement, drama, things to build, sports and physical games, tactile experiences, hands-on learning
Musical	Via rhythms And melodies	singing, whistling, humming, tapping feet and hands, listening	sing-along time, musical instruments, trips to concerts, music playing at home and school
Interpersonal	by bouncing ideas off other people	leading, relating, organizing, manipulating, mediating, partying	friends, group games, social gatherings, community events, clubs, mentors/apprenticeships
Intrapersonal	in relation to their needs,	setting goals, meditating,	time alone, secret places, self-paced projects, choices

	feelings, and goals	planning, dreaming, reflecting	
Naturalist	through nature and natural forms	playing with pets, gardening, raising animals, investigating nature, caring for planet earth	access to nature, opportunities for interacting with animals, tools for investigating nature

(Armstrong, 2000, p.22).

Armstrong (2000) also invited teachers to observe learners' intelligences while functioning in the class. He encourages teachers to keep track and record their observations, for example keeping journals, talking with other teachers, talking with parents, asking learners, looking to school records, and using checklists for assessing learners' MI. Teachers can use the checklist suggested by Armstrong (2000, p24) to assess learners' MI while observing them.

MI evaluation should not only be done by the teacher. Learners should be encouraged to self-evaluate their own intelligences. Tirri and Nokelainen (2011) added that self-assessment is an important step to help learners grow as learners and human beings. Self-assessment helps learners to identify their own strengths and weaknesses. learners need to have a clear idea about the kind of person they are and the kind of people they are studying with. learners' perceptions about themselves as learners along with their affective experiences of self in all areas of intelligences are dynamic key factors in their personal learning processes. Learners' beliefs of self are a central cognitive feature behind learners' personal understanding, interpretations, and self-regulation (Tirri & Nokelainen, 2011). Thus, self-evaluated intelligence can be a more empowering tool in their studies. Besides, self-evaluation in this case is believed to be less threatening than evaluation done by teachers. Self-evaluation activates learners' autonomous and reflective senses and helps them in their continuous growth.

It provides teachers as well as learners with the necessary guidance and feedback in the teaching/learning process. According to Tirri and Nokelainen (2011), self-evaluated intelligence is highly related to learners' self-esteem and self-confidence. Learners can use the suggested Multiple Intelligences Profiling Questionnaire (MIPQ) by Tirri and Nokelainen (2011, pp.12-13) as a self-evaluated intelligence tool to evaluate their own intelligences.

2.1.2.1. Teaching Learners about Multiple Intelligences

Before teaching through the intelligences, it is important, first, to teach learners about the intelligences. Learners should be informed on the variety of ways they can learn new materials to reflect on their own learning and select the appropriate strategy for them. One simple way to introduce the MI theory to learners is by explaining it. Teachers can illustrate each intelligence and encourage learners to see themselves as 'intelligent'. Nicholson-Nelson (1998) believes that instead of overwhelming learners with activities to analyze their own strengths and weaknesses to limit their potential to one or two intelligences, teachers should encourage learners to assume that they are intelligent in all the intelligences and have the potential to excel and improve all their intelligences using their talents and skills.

Nicholson-Nelson (1998) suggested the following start-up activities to introduce learners to the intelligences:

- **Ways We Are Smart**: The teacher can start by asking learners to name the ways people are 'smart' and record their ideas on the board. Learners mostly recognize verbal-linguistic and logical-mathematical intelligences but fail to acknowledge other forms of intelligences. Then, the teacher should point out that even though these two intelligences are the most recognized ones in school, there are other ways of being smart. The teacher can name famous footballers to ask learners whether they think

they are 'smart' people, or name famous musicians and ask learners how these people are 'smart'. The teacher can use Armstrong's wording: word smart, picture smart, number smart, body smart, music smart, self smart, people smart, and nature smart. After giving examples and discussing each of the intelligences, the teacher can ask learners to elaborate examples for each type of intelligence.

- **Telling Tableaus**: They are 'frozen pictures' in which learners pose to act out a scene describing a certain type of intelligence following the caption given by the teacher. Each group of learners has a caption, for example, helping settle arguments between people to represent interpersonal intelligence. Learners develop a frozen scene according to the caption and act in front of the class and other learners try to guess the type of intelligence the frozen tableau is describing.

- **Television Drama**: Parts of television shows could be used to introduce the different intelligences in class. Learners can watch a recorded part of the chosen show and discuss the different intelligences people in the show are using. Then, the teacher can stop the show at a critical point and learners start guessing how each character would act or react according to their intelligence.

The following are some other activities to teach about the MI suggested by Armstrong (2000):

- **Field Trips:** The teacher can take learners to places where each intelligence is valued and practiced to give them a real-life picture of each intelligence, like museums (spatial intelligence), zoos or parks (naturalistic intelligence), libraries (linguistic intelligence), science laboratories (logical intelligence), etc.

- **Biographies:** The teacher can use biographies to study the lives of people who have excelled in one particular intelligence or more. For example, Marie Curie (logical intelligence), Van Gogh (spatial intelligence), Beethoven (musical

intelligence), etc. Or, the teacher can use fictional book characters and discuss the different ways those characters are being 'smart' for example, the beast character in 'Beauty and the Beast'. Learners can discuss which intelligence each of these people or characters are strong in, how they demonstrate that strength, and how they are intelligent in more than one way.

- **Lesson Plans:** The teacher can create lesson plans to teach one subject through different intelligences.

- **Experiential Activities:** The teacher can involve learners in activities from different intelligences like writing a piece, doing some math task, drawing something, etc, then having learners express their feelings on how they relate to each activity.

- **Wall Displays:** The teacher can use wall displays that show the nine ways to learn something or hang posters demonstrating the different intelligences.

- **Human Intelligence Hunt:** The intelligence hunt can aid learners in understanding the different intelligences as well as getting to know each other by discovering each one's talent. The teacher prepares a list of capacities that correspond to each intelligence and learners have to find other learners from the room that matches elements from the list.

There are many other activities that teachers can use to teach learners about MI and make them aware of their existence and application. This can aid learners to make sense of their own learning experiences.

2.2. Teaching with Multiple Intelligences

It is impossible to give each learner a curriculum that matches their unique intelligence. The MI theory keeps learning manageable while respecting individual capacities. There are several ways of using MI without having to prepare the same

lesson in various ways. Teachers can offer a range of MI-inspired activities throughout the whole curriculum. They may deal with one linguistic intelligence over a period of time, and then shift focus to visual intelligence over another period. Over time, the teacher gets to know better learners' strengths and matches them with activities more accurately. There is no single particular way to implement the MI, however, MI-inspired teaching can grow naturally following the stages suggested by Fleetham (2006).

2.2.1. Stage One: Understanding Multiple Intelligences

The MI are best observed in practice. The more teachers use it the more they understand it. Fleetham (2006) compared thinking in MI to wearing special glasses. MI glasses give the teacher the ability to see skills and talents across nine different areas. The MI can help teachers reframe how they see learners. For example, a learner who struggles with writing and reading, but loves drawing and football can be viewed through MI glasses as a learner with visual and kinaesthetic strengths that have to be applied in developing the learner's linguistic skills. The MI theory shifts focus from weaknesses by keeping a balanced view of learners' abilities. It focuses on what learners are good at and how they can improve. For teachers to develop their ability to see their learners through MI glasses, Fleetham (2006) suggested that they write a portrait of learners who are the most challenging to teach, including things that make them difficult to teach, and then weigh these things up against the intelligences. There must be a relationship between what makes some learners who are difficult to teach and what they are good at. Learners who tap out rhythms on the desk while working on a task are musically intelligent. Learners who refuse to collaborate in group work are generally learners with strong intrapersonal intelligence and so on.

2.2.2. Stage Two: Speaking Multiple Intelligences Language

To get familiarized with the MI and engage learners in understanding how they work, teachers should refer to the intelligences in their talk. The teacher can describe a learner's piece of writing as excellent linguistic intelligence. He can ask learners to identify which type of intelligence they are using in a certain activity. Exposing learners to the vocabulary of MI will get them familiarized with it and encourage them to use it too. Most often, it is difficult to convince learners that they are smart. They like to believe that they can avoid hard work by not acting 'smart'. Thus, if the teacher manages to get his learners to identify and acknowledge their strengths, they will eventually be convinced that everyone is clever in a certain way and they will get the courage to use that in learning. What teachers think and what they say are strongly connected (Fleetham, 2006). If learners believe that their teacher believes in their strengths, their self-belief will shift too. Hence, to put the MI theory into practice it is important for learners to understand it and use its language. At the beginning of the course, the teacher can use a short questionnaire asking learners whether they believe they are or are not clever. At the end of the course, the same questionnaire can be applied to notice the shift in learners' beliefs about themselves (Fleetham, 2006).

2.2.3. Stage Three: Building Multiple Intelligences Profiles

One way to build MI profiles is for the teacher to ask how he is clever and how his learners are clever. Activities that the teacher best master defines his MI strengths and activities that learners best engage with are based on their MI strengths. Sometimes, the two may not be the same. It is important to note that MI profiles are an ongoing process, not one final product because learners keep growing and

changing (Fleetham, 2006). The following tools can help teachers build up an MI profile:

- **Questionnaires:** A questionnaire can be the first glimpse at learners' MI profile; the first step into discovering and developing learners' abilities. It should not be used to label learners or to limit their potential. Questionnaires cannot cover all the questions about the MI but they can give an accurate first impression of a learner. They reveal learners' strengths; however, learners should not be restricted to those strengths only. Their other intelligences should be enhanced by using those strengths.
- **Observation of Behaviour:** Thousands of interactions take place in classroom, everyday. Some of these interactions pass unnoticed, while others stand out because they can tell the teacher about learners' MI profiles. Learners talking, arguing, moving around, listening, etc., can give the teacher an impression of learners' strengths and weaknesses. Observation of MI signs in each learner every day is not obvious. Instead, teachers can focus on a group of learners at a time, a specific activity, or evidence of one intelligence. Teachers can keep notes whenever they notice MI-related behaviour, or they can use observation sheets. A suggested observation sheet by Fleetham (2006, p.128) can be used by teachers.
- **Talking with Parents:** Parents have better insights into their children's abilities, learning styles, interests, and motivations due to their close family interactions. This information can be linked to the student's MI profile by teachers. Parent meetings offer a prime chance to create learner profiles, allowing teachers to understand learners better. During these meetings,

teachers can ask MI-related questions like hobbies, musical involvement, reading, and storytelling.

- **Talking with Learners:** When learners understand the MI principle, they will be able to assess it themselves. The teacher can ask learners questions like 'What is your favourite subject in school?', 'which lessons do you enjoy?', 'what do you do in your free time?', etc.
- **Using Performance Data:** It is an MI profiling tool that looks into evidence produced by learners. Performance data can be tests or exam scores. However, they may not test all learners' talents. Exams are an end product that generally tests memory skills, reading, and writing. Some learners come to school with already developed kinaesthetic or interpersonal skills, but these skills are not used to assess their learning. To collect performance data, Fleetham (2006) suggested that teachers consider which intelligence the data maps onto, keeping in mind that data for all the intelligences is probably unavailable and that the data may not give a true picture of learners' intelligences.
- **Using Work Samples:** What learners produce as an end product can tell a lot about a learner's intelligences. To use work samples, final projects can be used to give learners the opportunity to choose how to demonstrate understanding or learning in general. Learners can choose to write a poem, sing a song, paint, act in a scene or any other group work, make a diary, etc. Learners' choice, in this case, indicates areas of strength. What learners avoid usually points out their areas of weakness. The teacher can create a portfolio of evidence based on learners' work samples.

The teacher can come up with a class MI profile which is an average profile generated from all learners. It indicates the strongest and the weakest intelligences, and the kind of activities that the majority of learners will respond to enthusiastically. Many of the MI profiling methods can be used alone or in combination over the academic year (Fleetham, 2006).

2.2.4. Stage Four: Create a Multiple Intelligences Environment

After understanding the MI theory, speaking its language, and knowing how to create MI profiles, teachers need to bring this to life in the classroom. They can use an esteem board on which learners get rewarded for their work. Each intelligence has its place on the board. Having a learner's name on the board inside the 'spatially intelligent' block for drawing a touching scene of pollution, or inside the block of 'linguistically intelligent' for writing a remarkable speech about the environment helps learners feel that what they produce in the class is valuable, recognizable and rewarded (Fleetham, 2006). The board should be kept dynamic and alive. It can be cleared at the end of each unit to make room for other learners' significant accomplishments in all the intelligences. This can create active and dynamic learners who believe in the different ways of being 'clever'. Or, teachers can use different corners or areas of the classroom to link it to one or more intelligences, like a corner for the intrapersonal learners where they can take a seat and work on a task, or an art area for visual and kinaesthetic accomplishments, etc (Fleetham, 2006).

2.2.5. Stage Five: Teach and Learn with Multiple Intelligences

There are two main ways to teach and learn with the MI: teachers design personalized activities and instructions to match learners' MI strengths, or learners choose from different MI activities and instructions to personalize learning to meet

their curriculum goals (Fleetham, 2006). The former seems more applicable since it focuses on developing and using specific intelligences and is teacher-driven. It relies mainly on ‘building on strengths’ and ‘talent development’ (Fleetham, 2006). Fleetham (2006) suggested the following table of teaching strategies that the teacher has to match with the class’s MI profile (Pp.91-92)

Table 2. 2

MI Teaching Strategies

Intelligence	**Teaching Strategies**
Verbal/linguistic	Explain in words and lectures Provide opportunities to read, write, speak, listen, persuade, inform, debate Tell stories Share your linguistic talents and hobbies with your learners (Poetry? Acting?)
Logical/mathematical	Provide opportunities to reason, enquire, evaluate and analyse Make connections between concepts Explain the steps of a lesson at the beginning Share your logical talents and hobbies (Mental maths? Sodoku? Logic puzzles?)
Musical/rhythmic	Use sound, voice, and music to enhance presentations, projects and learning environments Provide opportunities to compose and appreciate music and rhythm Make connections between music and other subjects Share your musical talents and hobbies (Singing or guitar?)
Visual/spatial	Provide opportunities for looking and watching - videos/photographs/diagrams Use mind mapping Use visual language: 'I see what you mean', 'It looks OK to me', 'Let me paint a picture for you' Share your visual talents and hobbies (Art? Photography?)
Interpersonal	Encourage collaborative group work and discussion Model emotional intelligence Show an interest in learners' lives outside of school Share your life outside school with your learners
Intrapersonal	Provide opportunities for learners to work independently Reflect on, audit, and develop your teaching Use regular goal setting, progress reports, and reflection times in class Remember to share some of your thoughts with your

	learners
Bodily/kinesthetic	Provide opportunities to move Explain concepts with hand movements Use bodily language: 'You'll get a feel for it', 'Get a move on!' Share your bodily talents and hobbies (Sports? 3D art?)
Existential	Ask questions such as 'Why?' and 'How?' Challenge beliefs Provide opportunities for extended thinking, such as P4C (Philosophy for Children) Share your existential talents and hobbies (Philosophy? Spirituality?)
Naturalist	Provide opportunities for outdoor study visits and field trips Draw attention to features of the natural world Present information in hierarchies and taxonomies Share your naturalist talents/hobbies with your learners (Gardening?Walking?)

(Fleetham, 2006, pp.91-92).

Additionally, Armstrong (2000) summarized teaching the intelligences in the table below. Teachers can make use of both tables to cater for the different intelligences to match the class's MI profile and to promote different mind capacities.

Table 2. 3

Summary of the Eight Ways of Teaching

Intelligence	**TeachingActivities (examples)**	**Teaching Materials (examples)**	**Instructional Strategies**
Linguistic	lectures, discussions, word games, storytelling, choral reading, journal writing	books, tape recorders, typewriters, stamp sets, books on tape	read about it, write about it, talk about it, listen to it
Logical-Mathematical	brain teasers, problem-solving, science experiments, mental calculation, number games, critical thinking	calculators, math manipulatives, science equipment, math games	quantify it, think critically about it, put it in a logical framework, experiment with it
Spatial	visual presentations, art activities, imagination games, mind-mapping, metaphor,	graphs, maps, video, LEGO sets, art materials, optical illusions, cameras, picture	see it, draw it, visualize it, color it, mind-map it

	visualization	library	
Bodily-Kinesthetic	hands-on learning, drama, dance, sports that teach, tactile activities, relaxation exercises	building tools, clay, sports equipment, manipulatives, tactile learning resources	build it, act it out, touch it, get a "gut feeling" of it, dance it
Musical	rhythmic learnings, rapping, using songs that teach	tape recorder, tape collection, musical instruments	sing it, rap it, listen to it
Interpersonal	cooperative learning, peer tutoring, community involvement, social gatherings, simulations	board games, party supplies, props for role-plays	teach it, collaborate on it, interact with respect to it
Intrapersonal	individualized instruction, independent study, options in course of study, self-esteem building	self-checking materials, journals, materials for projects	connect it to your personal life, make choices with regard to it, reflect on it
Naturalist	nature study, ecological awareness, care of animals	plants, animals, naturalists' tools (e.g., binoculars), gardening tools	connect it to living things and natural phenomena

(Armstrong, 2000, p.41).

The principle of the MI theory is no one set of teaching strategies will fit all learners all the time. All learners have different profiles in all the intelligences. As Gardner (1983) claimed, identical MI profiles do not exist. Thus, any particular teaching strategy can be successful with one group of learners and fail with another group. Catering to all learners' intelligences is, undoubtedly, challenging. Teachers are asked to use a wide range of teaching strategies and activities to target learners' individual differences, in this case, their different intelligences (Armstrong, 2000; Fleehtam, 2006). For example, the use of pictures or videos will particularly target learners who are spatial smart and the use of songs will find an enthusiastic response

from musically smart learners more than others. The teacher, here, is expected to shift focus from one intelligence to another along the course so that all learners connect with their highly developed intelligence, at some point. According to Fleetham (2006), the MI theory is more than a trendy educational tool, rather it is a scientifically validated philosophy. It gives teachers the perfect opportunity to discover, value, and enhance the talents of all learners, not just those who fit in traditional schooling.

Armtrong (2000) suggested the following teaching with MI strategies to adapt to course demands and the level of learners. Most of these strategies can also be adapted to target learners' vocabulary repertoire.

2.2.5.1. Teaching with Verbal-Linguistic Intelligence

According to McKenzie (2005), verbal intelligence has been valued and emphasized in the classroom because it matches the traditional ways of teaching. Armstrong (2000) claimed that linguistic intelligence is the easiest intelligence to develop strategies for because traditional linguistic strategies have been overused in schools, already. Textbooks, lectures, and worksheets serve as excellent materials for effectively teaching certain kinds of information; however, they seem to only reach 'book or lecture-oriented' learners. The following teaching strategies emphasize open-ended language activities, which reach out to the linguistic intelligence of each learner.

- **Storytelling:** Storytelling, an old cultural tradition, can be used as entertainment as well as an effective teaching method. The story can incorporate new vocabulary alongside lesson elements, interesting plots, etc., This can trigger learners' creativity and engagement. Storytelling enhances linguistic intelligence, imagination, and critical thinking.

- **Brainstorming:** Learners, when faced with a new theme or topic, tend to participate with fragments of ideas, first. Brainstorming is to jot down relevant ideas on the board without criticism. Ideas can be organized in a mind map or an outline. Then learners are asked to reflect on the ideas or to group them in a certain way to be used in a task, a project or to make a certain decision. It is important for learners to be praised for the ideas they give to the class. This technique reinforces learners' ability to think in words. For instance, in the Algerian EFL class, each English unit is centred around a specific theme, indicated by a tile (e.g., waste not, want not). To introduce the topic, the teacher can write the title on the board, use a mind map, and ask learners to say whatever comes to their minds concerning the title. The teacher writes down relevant ideas and related key vocabulary then asks learners to reflect on them and come up with a general idea of what the unit will be about. Brainstorming can also be used in pre-writing where learners brainstorm the topic they are going to write about (e.g., recycling). This strategy helps learners activate and strengthen their linguistic powers.
- **Journal Writing:** Learners should be encouraged to keep ongoing written records in a journal. It can be used to record feelings or daily activities in the school, to keep track of personal progress in a certain task or a class project, responses to the texts. It can be private or shared between the whole class. This strategy urges learners to use language along with newly learned vocabulary and keep track of their sentence structure progress or writing style changes. Word-smart learners need to express their ideas in different written forms. Since no strategy is purely one intelligence-oriented, keeping a journal can also help interpersonal intelligent learners to reflect on their own ideas and life.

It is particularly effective in vocabulary learning by asking learners to journal new vocabulary they learn or want to learn. One way to do so is the 'Known and New Chart' strategy suggested by Bishop, et al. (2009).

- **Publishing:** Learners should have a designated space in class or school to display their writings and ideas. This can involve a class bulletin board where learners' poems and pieces are displayed, fostering discussions among peers. Such a strategy empowers learners linguistically, motivates writing development, and encourages sharing among learners.

2.2.5.2.Teaching with Logical-Mathematical Intelligence

Logical intelligence is not just the intelligence of mathematics but also of logic and reasoning. In the learning environment, it seeks structure and relies on sequenced lessons, and it is highly valued in traditional instruction (McKenzie, 2005). Logically intelligent learners are problem-solvers. They are capable of both deductive and inductive reasoning (Berman, 1998). Strategies to teach logical-mathematical intelligence boost critical thinking in general and is not only restricted to mathematics and science.

Armstrong (2000) suggested the following strategies to cater for logical-mathematical intelligence:

- **Calculations and Quantifications:** Teaching using numbers is not restricted to mathematics. Subjects such as history and geography can use calculation strategies to help learners memorise important dates of numbers. It is not easy to make reference to numbers in literature. In the case of the Algerian curriculum of English, many subjects in different fields are covered, for example the textbook of second year secondary school (2AS) includes texts about science and mathematics where learners who are logically intelligent are celebrated. Highly logical learners

can be engaged by keeping alert for interesting numbers and intriguing mathematical problems. This shows to learners that mathematics and numbers belong to real life and not just to math classes. For example, whenever there is a vote or a poll to take place, number smart learners can be put in charge of counting.

- **Classifications and Categorizations:** Logically intelligent learners have a remarkable ability to classify and categorize not only numbers, but information that can be organized around central ideas or themes, making it easier to remember and reflect on. Learners can be engaged in activities such as diagrams, timelines, listing attributes of a certain subject and mind maps. To foster vocabulary learning, learners can also categorize the vocabulary they meet into tables or regular and irregular forms, or they can use mind maps to keep track of all the information they can gather about a certain lexical item.
- **Socratic Questioning:** Instead of speaking directly to learners, teachers should participate in the dialogues with them helping them to sharpen their own critical thinking skills, and not just judge their ideas as right or wrong. The teacher plays the role of the questioner of learners' points of view. For example, in post-listening activities, learners may be asked to express their points of view concerning the topic in hand, where the teacher can take part in the debate and not just ask direct questions or give direct feedback.
- **Science Thinking:** Given the lack of fundamental knowledge of our learners about the vocabulary of science in English, it is important to seek out scientific ideas in all areas. Reading texts that include scientific principles, like the buoyancy principle or photosynthesis, encourages learners with logical intelligence to activate scientific thinking and be active in problem solving. For example, learners

may be asked to describe a solar system house or suggest scientific solutions to waste.

2.2.5.3. Teaching with Visual- Spatial Intelligence

Visual-spatial intelligence does not show up early in age, however, traces of its existence date back to caveman (Gardner, 1983). Prehistorical drawings prove the importance of this intelligence. Spatially intelligent learners respond to pictures in their minds as well as pictures in the external world such as photos, movies, drawings, graphic symbols, etc. The use of charts, maps, tables, illustrations, etc. promotes spatial reasoning and allows learners to picture problem solutions in their mind before putting them into practice (Mckenzie, 2005). The use of visual problem-solving devices like spider diagrams, memory maps, and peripherals placed at or higher than eye-level can have a significant effect on visual learners. In teaching English, Berman (1998) suggested 'guided visualisation' as a strategy to cater for spatial intelligence.

- **Guided Visualisation:** Also referred to as guided fantasies, creative visualisation, or inner journeying. It is a strategy that dates back to thousands of years. It involves creating pictures in the mind while following a certain script so the visualisation journey is directed or controlled by the script, but the content remains unpredictable. It facilitates learning by keeping the brain in a wide-open state.

Armstrong (2000) suggested the following strategies to cater for visual intelligence:

- **Colour Cues:** Visual learners show high sensitivity to colours, so colours can be used as a learning tool. Learners can be encouraged to use 'colour code' (e.g., red for the main points, green for the supporting details, and so on). It can also be used to draw attention to certain words or expressions.

- **Picture Metaphors:** It is to present a certain idea in a visual image. Metaphors can establish a link between prior knowledge and new presented ideas. Teachers can present a new key point with a visual image and let learners reflect on it, for example, how the branches of a certain idea are like a tree. Or, they can present certain key words with images like a picture of the three chasing arrows to introduce ‘recycling’.
- **Idea Sketching:** Sketching is a kind of visual thinking that should be valued in teaching. Visual smart learners should be encouraged to articulate their understanding into sketches or drawings. For example, learners can summarize new ideas in a drawing such as the process of plastic recycling, volcano raising or ecosystem.
- **Graphic Symbols:** To reach a wider range of learners, teachers should support their teaching with graphic symbols and drawings; however, it is a skill that needs practice. For example, teachers can use branches and roots to point out root words, prefixes and suffixes.

2.2.5.4. Teaching with Bodily-Kinaesthetic Intelligence

It is simulated byactive interaction with one’s environment (Gardner, 1983). Learners with kinaesthetic intelligence are usually ‘overactive’ inside the classroom but they show remarkable ability to learn in an active environment. Integrating kinaesthetic learning activities into teaching strategies has proven to increase retention and understanding (Armstrong, 2000). It can be promoted through manipulative learning centers, science labs, active games and dramatic improvisations (McKenzie, 2005)

- **Body Answers:** Teachers can ask learners to respond using their bodies like raising their hands or holding up fingers, which is a traditional way to

show understanding. Body movements can be used as a medium of expression or response to instruction, for example smiling to show understanding, or using fingers to express the degree of understanding. Learners can be encouraged to use their bodies to respond to new vocabulary too, raising one finger when encountering a word they do not know and raising two to indicate that they are interested in learning the meaning of that word. This strategy will engage learners in the lesson, especially learners who are hyper active and bodily smart.

- **The Classroom Theatre:** Classroom theatre is one way of making learners move in the class and use their bodies and acting skills to engage in the lesson. For instance, the teacher can use short plays at the end of the lesson, allowing learners to summarize what have been learnt. Instead of reading about 'bullying', for example, learners can act a scene of bullying in front of the class. This can make learners respond enthusiastically and remember the lesson vividly. Warm-up exercises can be used to engage shy learners who are reluctant to participate in these dramatic activities.
- **Hands-on Thinking:** Bodily intelligent learners show high coordination of hand movements. They can be engaged in constructing things such as to recycle something or to conduct a scientific experiment in the class. Or, they can spell words using hand-made alphabet, etc. Using their hands to think or represent a concept or their understanding of an idea activates their bodily intelligence and enhances their willingness to participate in the lesson.
- **Body Maps:** Learners' body can be used as a pedagogical tool. It can be used as a map to teach learners about something. For example, in affixation, the head can represent the root, the right hand can represent the prefix and the left hand can be

the suffix. Using the body as a map encourages learners to be physically engaged and to memorize things.

2.2.5.5. Teaching with Musical-Rhythmic Intelligence

Musical intelligence is not just an auditory intelligence. It is the intelligence of picking up patterns including songs, poetry, instruments, environmental sounds and rhythms (Mckenzie, 2005). Musically smart learners show signs of this intelligence very early in life (Armstrong, 2000). They are sensitive to all sorts of sounds and rhythms. Taking advantage of this intelligence by integrating music in teaching can have a remarkably positive effect on learners in the class, even on those who score low in musical intelligence.

- **Rhythms, Songs, Raps, and Chants:** Teachers can put the main concept or idea to be taught into a rhythmic format that be sang or rapped for example, rhyming tongue twisters to teach homonyms, or using a song to present the concept of protecting the environment. Learners can be encouraged to come up with their own raps or songs to summarize or apply meaning from the subject they are learning. This strategy can be enhanced using musical instruments too. Learners who play an instrument can accompany other learners while rhyming or singing. Using music this way can assure effective learning and motivation to participate in the lesson.
- **Discographies:** Teachers can use recorded musical selection that can present the content of the lesson like recording songs to present a certain era of history or tapes of conversation between native speakers to teach phonetics. After listening to the recordings, the class can discuss the content and its relation to the main theme. This strategy can be used as an effective opener to the lesson.

- **Super memory Music:** Listening to music while learning has been proven to enhance learning in general, and memorization and retention in particular. Music is an excellent trigger for the memory. Having music playing in the background, while teaching, can activate learners' memory, in addition to its relaxing effect.

2.2.5.6. Teaching with Interpersonal-Social Intelligence

Social learners function better in class when bouncing ideas off other learners. Cooperative learning is most useful to this type of learners, as it promotes interaction among them. They make sense of learning by collaboration. All learners have interpersonal intelligence in different degrees; some learners are more social than other. When properly guided, social learners thrive in cooperative groups settings where they are allowed to ask, discuss and understand (Mckenzie, 2005). Thus, classroom interaction and connection between learners should always be promoted.

- **Peer Sharing:** Teachers can get learners to share their ideas in any task by asking them to think or to brainstorm in pairs. It can be applied to all sorts of activities. In pre-writing for example, learners can brainstorm in pairs. In peer-review, learners can exchange writing pieces and discuss with each other.
- **People Sculptures:** It is bringing learners together to represent a physical form, an idea or a learning objective. For example, three learners can be brought together to represent the prefix/root/suffix of a word. Or, a group of learners can hold letters to represent spelling words, or hold words to represent a sentence, etc. It is about bringing learning from theory to an accessible social setting.
- **Cooperative Groups:** Cooperative groups give learners the opportunity to function as a social unit. Teachers can assign groups from three to eight learners to solve a learning problem, which can work effectively in a variety of assignments. For example, in writing, learners can brainstorm or structure their

ideas collectively, then, responsibilities can be divided: each two or three learners work on a different part of the piece of writing. Learners can work collectively to review each others 'paragraphs. Each learner takes the responsibility of reviewing one aspect like spelling, grammar or punctuation. In teaching with MI, groups can be structured in a way that each group includes learners representing different intelligences and taking responsibility of suitable tasks accordingly. For instance, to come up with an acting scene about a certain topic, collectively, verbal learners may take charge of writing the script of the scene, visually smart learners take charge of how the scene will take place in the classroom, bodily kinaesthetic learners take charge of how to move in the scene, a socially intelligent learner may take charge of organising the group and the assignments, etc.

- **Simulations:** It consists of learners working together to create a temporary setting that serves as a context for the material being learned. For example, learners can create a simulation of a certain historical period. They can dress-up and decorate the class to match the event being learned 'as if' they were living in that era. Interactions that take place in simulations help learners develop better understanding because they get insider's view of the topic. Learners learn eagerly when they get involved in the lesson. Simulation is one way of getting learners reinforce their social interaction skills.

2.2.5.7. Teaching with Intrapersonal Intelligence

Learners are in constant interaction in the class, with the teacher and with each other. This can be intense for intrapersonally intelligent learners who need some time out to reconnect with their inner thoughts. Learners alike need to be given the opportunity to nurture their deep sense of individuality. They expect learning to be

meaningful to them and they constantly ask themselves: ‘Why do I need to learn this ?’ (Mckenzie, 2005).

- **One-Minute Reflection Periods:**Teachers should give learners time outs for introspection or deep thinking from time to time. A One-minute reflection period allows learners to digest what is being learned and connect it to their lives. It can also be a refreshing pause before moving to another task. It can take place any time in the lesson and it can last more than one minute. For example, after reading a text, learners can be asked to keep silent and are given some time to reflect on the text or the new language presented. Learners should not be obliged to share their thoughts with the class. This strategy mainly allows intrapersonal learners to take a time out to relax and recharge for the next assignment. Additionally, it helps learners with low level of intrapersonal intelligence to improve their connection with their inner self. The teacher can simply ask learners to take a moment to think about this or that.
- **Personal Connections:**Intrapersonally intelligent learners need to connect with what they are learning on a personal level. They constantly think about the relationship between what they are learning and their own life. It is the role of the teacher to make connections between the two. Teachers have to refer to learners’ personal feelings and experiences in their instruction. In warm-up questions, the teacher can ask learners about their experiences: ‘have you ever did this or that?’, or their feelings: ‘how do you feel about this or that?’. Giving the chance to learners to share their experiences or feelings can help them connect with the topic being taught.
- **Choice Time:** Allowing learners to take decisions and make choices about their learning experiences is an intrapersonal teaching strategy to boost learners’ sense

of individuality and autonomy. Teachers should expand choice-making experiences. Choices can be small like choosing which task to do first or significant like which final project to work on.

- **Coal-Setting Sessions:** Intrapersonal learners show a remarkable ability to set realistic goals for themselves. To help learners prepare for real life, teachers should give learners the opportunity for setting personal goals. They can be short-term goals like what they would like to learn in the present lesson, or long-term goals like what they want to accomplish by the end of the secondary school. They can be related to academic outcomes like what score they set for themselves in the exam, or they can be life goals like what occupation they see themselves doing in the future. Learners can share their progress with the class along the way.

2.2.5.8. Teaching with Naturalistic Intelligence

Most of learning is done inside a classroom, so learners who learn through nature are not in constant interaction with nature. This can be solved either by taking learners outside the classroom, or by bringing nature into the classroom so that learners with naturalist intelligence can have access to their naturalist side (Armstrong, 2000).

- **Nature Walks:** Although it is not always doable, nature walks can be programmed from time to time by teachers. The walk can take place in the woods or any natural setting near the class or the school. It can be used to help learners imagine the setting of certain topic or to prepare them for art-oriented activities like creative writing.
- **Windows onto Learning:** Learners are often found to stare through windows. This can be turned into a positive teaching strategy. When talking about

temperature for example, learners can stare out the window to describe the weather, or to describe the buildings outside when talking about architecture.

- **Plants as Props:** If teachers cannot take learners to nature, they should bring nature into the class instead. Bringing plants in the classroom serves not only to create a positive atmosphere, but also as a learning tool. Getting learners to observe how petals blossom or how plants react to sunlight can serve as a pre-reading activity to texts about plants such as photosynthesis. In teaching them writing descriptive paragraphs, learners can be asked to describe the plants. The teacher can make reference to a plant when teaching about the branches of a certain topic like the branches of government, etc. Naturalistic learners can be assigned to take care of the plants. Learners may take joy in observing the plants grow through the academic year.
- **Ecosystem:** It is important for learners to develop a sense of respect for the natural world. Whatever learners are learning, it has to be related to the ecology of earth. 'Ecology' should be more than one isolated unit or project in the curriculum. It should be integrated in every lesson. For instance, to talk about the government, learners may talk about ecological problems that should be solved. To teach literature, ecological plays, or texts talking about ecological issues should be favoured.

These strategies not only nurture naturalistically intelligent learners' connection with nature, they also stimulate all learners to grow a deeper interest in natural resources and problems (Armstrong, 2000). Learners should not be detached from the nature they live in once they are inside the classroom.

2.2.5.9. Teaching with Existential Intelligence

Existential intelligence is the ability to locate oneself with respect to existential features of the human condition such as the significance of life and death, the fate of the physical and psychological world and experiences like love and art (Gardner, 1999). It allows learners to locate themselves in the big picture whether it is the class, the community, or the world. They have the ability to summarize and synthesize ideas from many sources (Mckenzie, 2005). However, Armstrong (2000) believes that existential intelligence is not useful in an educational context because it may violate learners' belief systems or consciences with regard to life issues, especially in multicultural classes. It can likely incite controversy and confusion for teachers. Armstrong (2000) suggested that teachers can address existential intelligence by using texts or movies dealing with the origins of the universe and existential theories. They can use materials that raise opportunities for deep reflection on subjects like the nature and destiny of humanity. Additionally, to appreciate and relate to world events, learners need to be familiar with trends in philosophy and existential domains. In literature teachers can deal with the impact of the religion on subsequent writers, for example studying Shakespearian plays with reference to biblical and religious recourses interpenetrating them. Teachers can give learners the opportunity to reflect on and discuss existential themes in literature in relation to course objectives. To celebrate learner's existential intelligence in the classroom, teachers can take learners more deeply into the material being studied by focusing on how existential matters intertwine their studies and focus on how questions of ultimate life concerns are essential to understanding human culture (Armstrong, 2000).

2.5.6. Multiple Intelligences Follow-Up Activities

There are certain units or subjects that require a considerable dose of verbal-linguistic teaching strategies like lectures, texts, worksheets, etc. In this case, teachers can use MI follow-up activities to reinforce learning and provide further challenges for learners. The following are follow-up activities suggested by Nicholson-Nelson (1998).

- **Multiple Intelligences Discussion:** After the lesson, the teacher can open a discussion central to the lesson of the day. He can ask learners to use their multiple intelligences in the discussion. They may think of a peice of music that matches the topic,a physical movement they could perform, or they can sketch or draw the central idea of a text in the after reading discussion.
- **Intelligence Workout Routine:**The teacher can ask learners to create an exercice routine they can use for practice based on the different intelligences especially in memorization tasks. For instance, they can agree on certain visual symbols to identifie parts of speech or certain body movements to mark intonnation or phonetic symbols, for example learners can stand up to mark raising intonnation.
- **Unit Reviews:** After finishing a unit, the teacher can have learners work in groups or pairs to summarize the unit to understand the 'big picture' of the unit. Each group can choose an intelligence as a medium for review and discussion. They can come up with a painting, a song worksheet, a mind map, or a dance. What is important is to make sure learners understand the overall meaning of the unit according to different intelligences. They can later give a brief presentation to the class.

- **Two-Intelligence Reports:** After the whole class has covered a certain content, the teacher wan assign learners a research report asking them to include two intelligences in their report in addition to verbal-linguistic. For instance after reading a text about slavery or injustice, learners can complete a report about the social injustice theme in the text. The report must include at least two intelligences. Learners may create written reports with pictures, a class survey on a related topic to the theme, gather a group of classmates and direct them in performing a relevant tableau, a poem about justice, etc. The class will end up having different reports.
- **Current-Events Critiques:**The teacher should encourage learners to read newspapers or news magazines reltaed to the theme of the unit and ask them to look for and identifie the different intelligences they find in the various articles. Once learners learn that most articles are based on more than one intelligence, they can read between the lines for intelligence news. Sports articles can be used to identifie bosily-kinesthetic intelligences, and stock market news for logical-mathematical intelligence, etc. They can work individually or in groups. The teacher can challenge learners to find sevral intelligences and open a class discussion afterwards.
- **Special Spelling Activities:**The teacher can have learners use all the spelling words they have learned in a written or oral production. It can be an poem, a song, an oral presentation, etc. The aim is to allow learners to use all the new words they have learned for better retention according to their strength in a certain intelligence.
- **Alternatives Solutions:** After the study of a contemporary global issue or a historical incident, the teacher can devide the class in groups, each group

represents an intelligence, and ask them to come up with alternative solutions from the perspective of their assigned intelligence. Then kind of class meeting is held, where each group presents its recommendations. For instance, after the study of the distruction of the rain forests, an interpersonal solution could be to form a panel of experts to address the problem. A math-logical recommondation could be to publish statistical data, in support of the possibility of the extinction of rain forests in the future, to raise the awarness of people.

- **Guest Speakers:** After completing a specific unit, the teacher can bring in a guest speaker with relevant experience about the theme of that unit to talk to learners. For example, after a unit on scientific experiments, the teachermight invite the science teacher to explain to learners how scientific experiments are usually conductedin a laboratory setting.

Moreover, It is important for teachers to understand how all the MI can interact in the classroom for better application. There are three main ways for intelligences to interact : interference (they interfere with eachother), compensation (they compensate for eachother), and enhancement(they catalyze eachother) (Moran, Kornhaber, & Gardner, 2006). Interference occurs when one intelligence gets in the way of another intelligence, for instance, linguistic intelligence weakness can interfer with intrapersonal strengh. Compensation occurs when one particular educational standard can be met through another strength. For example, linguistic intelligence of a learner who writes well can compensate his logical weakness in poor argumantation skills. Catalysis occurs when one intelligence can egnite or amplifie the expression of another intelligence, like when a student can conceptualize a math problem through drawing. In this case his spacial intelligence catalyzes his logical mathematical

intelligence (Tirri & Nokelainen, 2011). Teachers should use this powerful aspect of the intelligences to build their teaching on having learners interact with the material, with eachother, and to mobilize their different intelligences toward particular purposes. Those predictions are important for developing teaching strategies, management strategies, and expectations about learners' performance in the future. Discerning learners' individual differences in capacities can help educators and teachers in selecting and modifying learning to their strengths (Tirri & Nokelainen, 2011). It is important to note that most performances of a task cannot isolate one intelligence. Teaching strategies should focus on patterns of interactions among the intelligences. Most skills combine more than one intelligence to achieve a purpose. For instance, dance combines musical intelligence to recognize and keep rhythm, bodily kinaesthetic intelligence to control body movements, spatial intelligence to move within the space of the dancing floor, logical intelligence to count time and steps, etc. So, through performances of tasks learners contribute to each other's identities and environment. Teachers should develop a combination of strategies not only to build on individual intelligences, but to help different intelligences synergize better (Tirri & Nokelainen, 2011). However, instead of creating nine different plans, teachers should focus on designing rich learning experiences to nurture all learners' combination of intelligences (Moran, Kornhaber, & Gardner, 2006). The MI theory offers teachers a suitable forum for allowing and supporting a wider variety of talents and skills to be expressed and used to contribute to the community.

Campbell and Campbell (1999) examined six different educational programs of six schools (two of them were secondary schools) that have used MI for more than five years to look into how these programs have affected learners' achievement. They examined the context as well as the proccess of MI-related successes in these schools.

They came up with the following fundamental principals of successful teaching with the MI:

- Teachers and the school should believe in and encourage intellectual diversity.
- Teachers should observe students and adjust their instruction accordingly.
- Students' learning should be dynamic, hands-on, and multimodal.
- Students' strengths should be used to improve their academic deficiencies.
- Students should have opportunities to personalize their educational experience.
- Students should develop autonomous learning skills.
- Students should be mentored in their intelligence strengths by the teachers and the school.
- Students should apply classroom learning in real life contexts.
- Assessment should be varied and should include performance-based measures.

MI-inspired teaching has been reported successful in improving performance on achievement tests by many researchers (Geimer, Getz, Pochert, & Pullam, 2000; Gens, Provance, VanDuyne, & Zimmerman, 1998; Greenhawk, 1997; Kuzniewski, Sanders, Smith, Swanson, & Urich, 1998; Mettetal, Jordan, & Harper, 1997, as cited in Susan et al, 2004). Additionally, Gardner (2006) reported the study carried out and published by Haley (2004). 23 FL and ESL (English as a Second Language) teachers and 650 students from three different countries participated in a research study to determine the effect of implementing the MI theory in everyday classroom activities to teach English as a second or aFL. The study started first with attemps to identifie the characteristics of each student's intelligence profile using an MI survey. Then, teachers developed a collection of instructional strategies and alternative forms of assessment, which accomodated eight intelligences. Results indicated that the choice of instructional strategies and how language information is presented affect students'

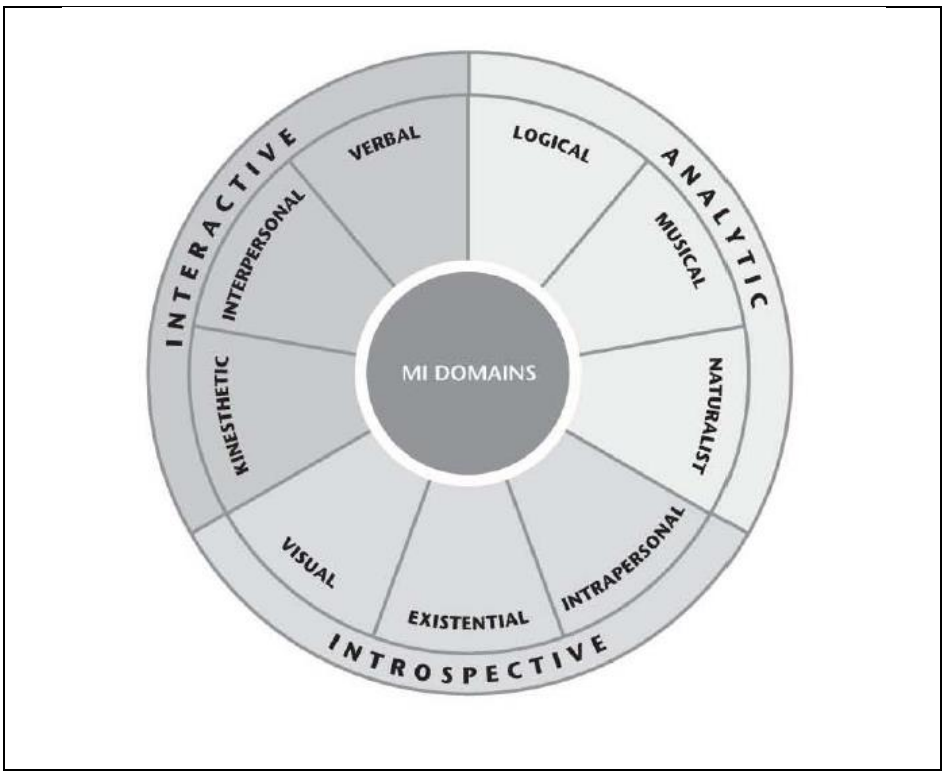
learning, students' attitudes, and the learning environment. Teachers reported that alternative MI instructional strategies had a remarkable positive impact on the achievement of some students in the study. The effect of MI intervention was documented through observations, exit slips, survey checklist, and the study of students' reactions and students' grades in participation, quizes, and projects before and after the MI study. Results demonstrated growth in oral and written proficiency in the target language (English). The exit slips demonstrated a high degree of positive attitude toward language study. Students were more enthusiastic about language learning and behaviour problems were minimized. The flexibility, variety, and choice that MI strategies allowed students in their classroom had a surprising affective outcome on both students and teachers (Haley 2004).

2.2.7. Multiple Intelligences Domains

The different intelligences function as distinct entities but also show areas of overlapping. However, when observing the intelligences operating in the classroom, they become fluid and free-flowing that it becomes difficult to find a clear cut between the intelligences. When breaking down the intelligences, Three distinct domains can be distinguished: interactive, analytic, and introspective (McKenzie, 2005). These domains serve as an organizer to understand the fluid relationship between the intelligences and how they function together (Seyyed, 2008).

Figure 2. 1

Wheel of MI Domains



(McKenzie, 2005, p.25).

- The Interactive Domain: McKenzie (2005) stated that the interactive domain consists of verbal, kinaesthetic, and interpersonal intelligence. They are typically used by learners to express themselves and interact with the environment around them. For instance, children do not just use language to state knowledge or express needs, they also use it to explore and inquire responses from others. So they use language to interact with others and the environment, which is the interactive function of verbal intelligence. Additionally, even though learners can complete a task individually, they are inevitably considering others in how they write, create, construct, or draw conclusions. So, these intelligences are by nature 'social processes' that encourage interaction to achieve better understanding (McKenzie, 2005).

- **The Analytic Domain:** This domain consists of the logical, musical, and naturalist intelligences. They are heuristic processes by nature because, even though they have a social or introspective component, they mainly promote the analysis of data and knowledge by learners. In musical intelligence, learners analyse sound patterns and visual patterns of musical symbols in order to create their own compositions. Problem-solving is an analytic process on which logical intelligence heavily relies. Additionally, in classification, learners classify things based on attributes that make sense to them so they analyse them according to a personal classification system, then share them with others to compare and contrast these classification systems. Analytic intelligences draw on analysing the data and incorporating it into existing schema (McKenzie, 2005).

- **The Introspective Domain:** It consists of the existential, intrapersonal, and visual intelligences. They are classified as affective processes by nature. For instance, in sculpturing, there is an emotional component to visualizing a piece of art before creating it. When visual intelligence is active there is an intuitive release of energy that is the catalyst of imagination and enthusiasm. Also, existential intelligence encourages emotional release based on personal experiences. And, in intrapersonal intelligence learning is reinforced by the emotional connections learners have with the topic in hand and with each other. These intelligences require a looking inward by learners and an emotive connection to their experiences and beliefs to make sense of learning (McKenzie, 2005).

Teachers can use the wheel of domains to get a handle on how the various intelligences interact in the classroom so that they plan lessons and units that address all the intelligences. These domains are not single entities that operate separately;

instead, teachers can use them to balance activities and instruction so that all the intelligences are brought together at a central point (McKenzie, 2005).

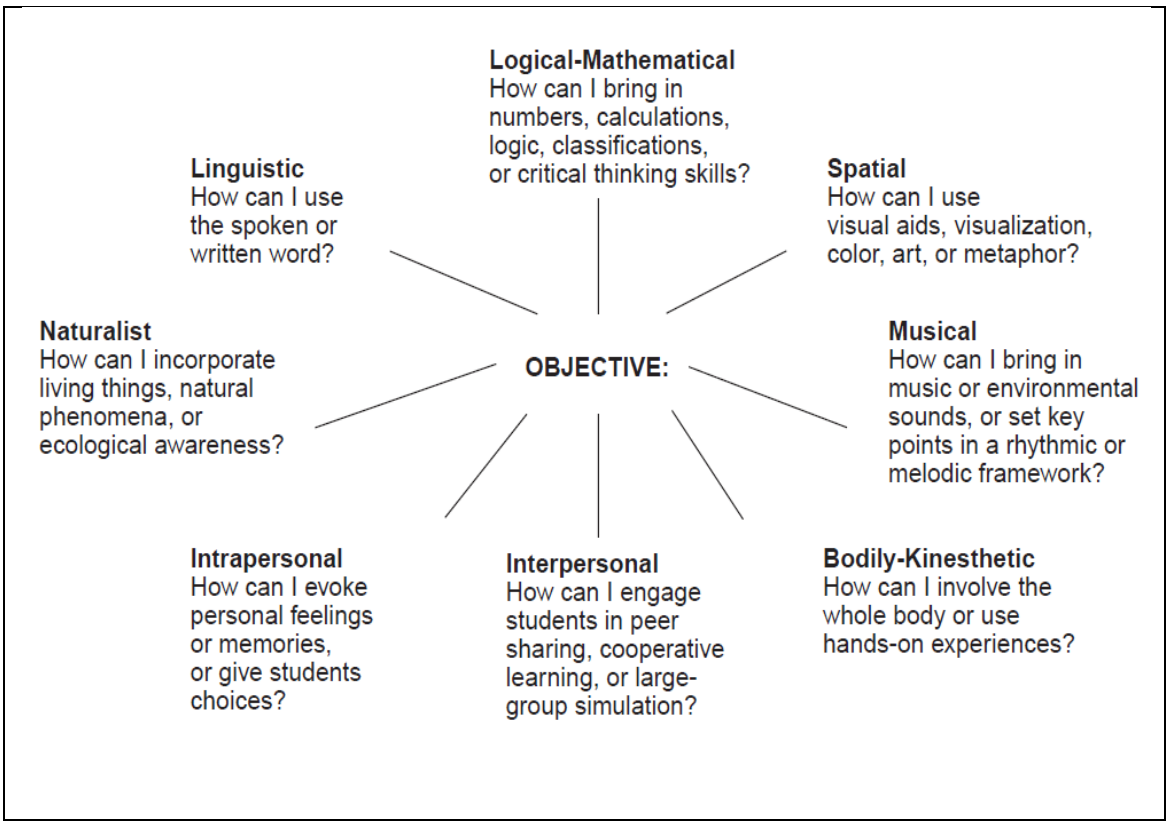
2.2.8. Multiple Intelligences Lesson Plan

According to Armstrong (2000), the MI theory can provide teachers with the context needed to address any theme and develop eight ways to teach it. All the intelligences can be addressed at least once in daily lesson plans or year-long programs. Using the MI theory means translating the material of one intelligence (e.g., text) to another intelligence (e.g., picture or logical symbols). Armstrong (2000) suggested the following procedure to create lesson plans using the MI theory as a framework:

a. **Focus on a Specific Objective or Topic:** The teacher should set the objective clearly and concisely.
b. **Ask Key MI Questions:** Before creating any lesson, the teacher should ask himself how he is going to develop a specific objective or topic according to each of the intelligences.

Figure 2. 2

MI Planning Questions



(Armstrong, 2000, p.45).

c. **Consider the Possibilities:** Based on the questions, the teacher can consider the possible materials and methods to be used.

d. **Brainstorm:** The teacher should brainstorm possible approaches for each intelligence, use an MI planning sheet, and list everything that comes to their mind. To stimulate his thinking, he can brainstorm with colleagues.

e. **Select Appropriate Activities:** According to the planning sheet, the teacher should select activities that are most applicable to their class.

f. **Set up a Sequential Plan:** Based on the activities the teacher has selected, he should design a lesson plan around his objective sequencing the activities within the allocated time of the lesson.

g. **Implement the Plan:** The teacher should gather the needed materials and apply the lesson plan. Changes can be made during the implementation of the lesson plan when necessary.

MI-based lesson plans should be able to connect students with real life where they have to function as part of it. Teachers should target subjects and skills that are found naturally in life, and give learners the opportunity to practice their MI in practical ways.

Another way of planning a lesson is using the MI wheel of domains suggested by McKenzie (2005). Teachers can use the wheel to select one intelligence from each domain and create a well-rounded lesson that stimulates a broad range of intelligences by tapping into all three ways of learning. The teacher can set an objective that deals with intelligences from the three different domains, for example, to recite a selected soliloquy from 'Mcbeth' (verbal), to understand the soliloquy's meter (musical), and to interpret the sentiment expressed in the soliloquy (existential). Or, he can target one domain and emphasize the connections between two of the three intelligences of that same domain. The MI wheel can be used in creating balanced lessons that are responsive to the distribution of intelligences in the class. Mckenzie (2005) suggested the following reflections to help teachers integrate the MI into their lesson planning:

- The teacher should review the curriculum standards to see if they target all the intelligences and look into how these standards can be applied utilizing all the intelligences.
- The teacher can use an MI inventory to determine how the intelligences are distributed, which are the three dominant intelligences, and which are the three at the bottom of scores.

- The teacher should look into how data from the inventory can be used in classroom instruction.
- The teacher should decide when it is appropriate to use intelligences of the same domain, and when different intelligences from different domains are applicable and why.

In teaching with the MI, it is important to be aware of which intelligences are being used in each lesson. Nicholson-Nelson (1998, p.25) suggested the following MI lesson assessment questions that teachers can use to reflect on their lesson planning and their use of the intelligences. They can also use it to evaluate and keep track of their teaching style in relation to the MI.

- What intelligences did this lesson call on?
- Which students seemed most interested and intrigued?
- Which students seemed disinterested?
- Were there any behaviour problems during the lesson?
- Were these problems possibly related to an intelligence? (i.e., talking, drawing, fidgeting).
- What could I have done differently to make the lesson more interesting to more students?
- What is another way I could have taught this material using different intelligences?
- What was my favorite aspect of this lesson?

Conclusion

In conclusion, although teachers are limited to one-hour class periods and standard curriculum demands, they should make room for exploring different learners' potentials and aid them in enhancing their performance in the school. If EFL materials and activities are approached from different angles, with respect to learners' various intelligences using different strategies, they can have a remarkably positive effect on each learner's language proficiency and boost learners' confidence in their ability to learn an FL.

Chapter Three: Vocabulary Teaching/Learning

Chapter Three: Vocabulary Teaching/Learning

Introduction

Doubtless, for effective use of the English language, knowledge of vocabulary is necessary. However, learning all the vocabulary is a very ambitious goal because even native speakers of English do not know every word in the language. Unlike native speakers whose vocabulary knowledge develops naturally in response to different experiences and learning opportunities, EFL learners experience a conscious and demanding process to learn new vocabulary. Brave attempts to provide accurate numbers of how many words are in English resulted in numbers way beyond the goal of EFL learners. No wonder why learning vocabulary is a seemingly daunting task for learners. Besides, investigating vocabulary involves addressing a number of problematic notions. Questions such as 'What is counted as a word', 'How many words are in the English language', and 'How much vocabulary is needed to use English effectively' are not easy to answer. Generally, research on vocabulary revolves around understanding the nature of lexis, its use in language, and investigating effective ways to enhance its learning. In light of this, the present chapter aims to review the theoretical background addressing the nature of vocabulary and vocabulary knowledge. Next, it goes through its implications in teaching and learning vocabulary. After that, we describe how vocabulary is assessed. Finally, we explore the potential of MI theory in teaching vocabulary.

3.1. Vocabulary and Vocabulary Knowledge

3.1.1 Nature of Vocabulary

Primarily, vocabulary can be defined as a ‘set of words’, which is a too simplistic and limited definition. The first question that should be asked here is: what is a ‘word’? There is not one universally accepted definition of what a ‘word’ is. There are widely varying figures of how many words native speakers of English know, partly because of the different ways a ‘word’ is defined. According to Carter (1992), the orthographic definition of a ‘word’ is ‘any sequence of letters bounded by a space or punctuation mark’ (As cited in Takač, 2008, p.5). This formalistic definition is not only limited to written language, it also neglects differences in meaning, homonomy, grammar functions, etc. Semantics view a 'word' as the smallest meaningful unit of language, which is not reliable as a definition because some units of meaning consist of many words (e.g. bus driver). In addition, certain integral parts of words cannot stand on their own even if we know their meaning like prefixes, and some meanings cannot be determined without looking into their function in organizing and structuring information like function words (e.g. but, if) (Dóczi & Kormos, 2016). Furthermore, according to Bloomfield (1926), a ‘word’ is ‘the smallest meaningful form that can stand on its own’. This raises the issue of idioms consisting of several orthographic words that cannot be reduced or stand alone without completely changing their meaning. Moreover, there are words that have the same form with entirely different meanings (As cited in Takač, 2008, p.5). Besides, meanings in English are often represented by multiple words (Schmitt, 2000). As an attempt to get past these unsolved problems, ‘lexeme’ and ‘lexical unit’ were introduced, defined as ‘an abstract unit that includes various orthographic,

phonological, grammatical and semantic features of a word' (Takač, 2008, pp. 5-6), or 'an item that functions as a single meaning unit, regardless of the number of words it contains.' (Schmitt, 2000, p.2).

Thus, vocabulary is more than just single words. Read (2000) explained that vocabulary consists of a variety of lexical items that consist of more than one word like phrasal verbs, compound nouns, and idioms, which are meaningful units that cannot be understood from knowing the meaning of individual words. Hence, vocabulary can be defined as a variety of lexical units as referred to by Read (2000), or as a large set of lexical forms (Takač, 2008). Takač (2008, p.6) concluded that:

> 'vocabulary is made up of a variety of forms, such as morphemes, both free and bound (e.g. laugh, or the prefix un-), their combinations, i.e. derivatives (e.g. laughter, unbelievable), compounds (e.g. bus conductor), idioms, i.e. units that cannot be reduced or changed, and whose meaning cannot be retrieved from individual meanings of their components (e.g. to bite the dust), and other fixed expressions, such as binomials and trinomials (e.g. sick and tired; ready, willing and able), catchphrases (e.g. they don't make them like that anymore), prefabricated routines or prefabs (e.g. if I were you), greetings (e.g. How do you do?) and proverbs (e.g. It never rains but it pours).'

Even though this is a wide range of lexical items; it is neither complete nor absolute. Overlaps between its items are inevitable, and lexical items can hardly be viewed in isolation from each other. That is why vocabulary is placed on the boundaries between morphology, syntax, and semantics (Takač, 2008). Thus, word knowledge has different dimensions: orthographic, phonological, morphological, syntactic, and semantic.

3.1.2 Vocabulary Knowledge

Primarily, vocabulary knowledge is more than just a mental lexical collection of individual lexical items. It is not a simple matter of storing lexical items. An integral part of vocabulary knowledge is learners' ability to access stored lexical items and use them accurately and appropriately in a given context in real-time (Dóczi & Kormos, 2016). According to Takač (2008), knowledge of lexical items of a language consists of word knowledge with its different dimensions (orthographic, phonological, morphological, syntactic, and semantic), knowledge of the conceptual foundations (which determines the position of a lexical item in the conceptual system) and the ability of productive use (efficient retrieval of the lexical item for active use).

Although the different kinds of word knowledge are interrelated, meaning was the most obvious kind of word knowledge. According to Schmitt (2000, p. 23), 'meaning consists of the relationship between the word and its referent', but since not all words have a one-to-one relationship with a referent, words' meanings are more attached to a concept rather than a single entity. Semantically speaking, lexical items overlap by entering into various relations in the forms of hyponyms (lexical items within the same semantic field), synonyms (lexical items with the same or a close meaning but different forms), antonyms (lexical items with opposite meanings) and homophones (lexical items with the same forms but different meanings) (Takač, 2008). According to Takač (2008), the meaning of a lexical item can be broken into a set of semantic features i.e. meaning components. In this case, synonymy can be explored by studying the overlaps and differences occurring between features of lexical items from the same semantic field. However, this may result in an infinite number of relevant semantic features of a lexical item. In contrast, Schmitt (2000) argued that a definition or a series of semantic features are not enough to contain

word meaning, and that context has a part in filling the other information necessary to make use of a word. The notion of word meaning is more complex than EFL teachers and learners realize. Understanding semantic features and the nuances of meaning in this case is a must for teachers because usually they are the ones 'defining' new words for learners.

However, knowledge of a lexical item includes more than knowing its semantic aspect (Dóczi & Kormos, 2016). Takač (2008) explained that vocabulary learning involves the memorization of sequences of lexical items, which follow a certain pattern based on which learners can create new sequences. Learners' main mission here is to discover the patterns of the language including phonological categories, morphemes, phonotactic sequences, collocations, and lexical phrases; and analyze them into meaningful units. Language production, in this case, relies on assembling read-made chunks suitable for particular situations and predicting the patterns that will appear in a given situation assures language comprehension.

In other words, knowledge of a lexical item is not an 'all-or-nothing' proposition; even partial knowledge represents a degree of knowing. Vocabulary knowledge has an incremental nature (Dóczi & Kormos, 2016; Takač, 2008). Thus, there are different degrees of knowing a word. Knowledge starts from the initial degree of visually recognizing a lexical item in a context that does not enable a learner to use it yet, to higher degrees of knowledge such as knowing multiple meanings of a lexical item or its collocations, and productive knowledge including interpretation that requires enough information to distinguish a lexical item from other possibilities, and production which requires more information such as contextual clues (Takač, 2008). Simply put, vocabulary knowledge is not linear. Knowing a word has different degrees and dimensions.

One way in attempts to describe the nature of vocabulary knowledge is to identify all what learners need to know about a word in order to fully learn it. Relying on the findings of theoretical and applied linguistics, Richards (1976, p. 83) outlined many assumptions about what is meant by knowing a word:

- Knowing a word means knowing the degree of probability of encountering that word in speech or print.
- Knowing a word implies knowing the limitations on the use of the word according to variations of function and situation.
- Knowing a word means knowing the syntactic behavior associated with the word.
- Knowing a word entails the knowledge of the underlying form of a word and the derivations that can be made from it.
- Knowing a word entails knowledge of the network of associations between that word and the other words in the language.
- Knowing a word means knowing the semantic value of a word.
- Knowing a word means knowing many of the different meanings associated with a word.

This highlights the complex nature of vocabulary knowledge and how it is more than just memorizing word meanings.

Nation (1990) proposed another list of different types of knowledge to master or ‘know’ a word: the meaning/meanings of the word, the written form of the word, the spoken form of the word, the grammatical behavior of the word, the collocations of the word, the register of the word, the associations of the word, and the frequency of the word. Most of these kinds of word knowledge are necessary to use a word in different language situations, yet they are not all instantaneously and simultaneously learned.

They are gradually learned from numerous exposures to the language over a long period of time.

3.1.2.1. Distinctions of Vocabulary Knowledge

Since vocabulary knowledge is more than a storage system of mental representations of words, and is also the ability to use words, what is meant by being able to use a word is important too (Dóczi & Kormos, 2016). Knowing a word and properly and effectively using it in a FLinvolves many types of knowledge, which has led to the existence of different distinctions of vocabulary knowledge.

Drawing from the previous assumptions, which have been taken as a general framework of vocabulary knowledge or lexical competence, and the incorporation of other components, Nation (1990) built an outstanding distinction in vocabulary knowledge, which is the distinction of receptive-productive knowledge. Commonly, word knowledge is divided into receptive knowledge and productive knowledge. Receptive and productive learning apply to many aspects of language knowledge and use including vocabulary. According to Nation (2001), receptive vocabulary knowledge involves perceiving the form of a word through listening or reading and retrieving its meaning. Productive vocabulary knowledge involves expression of meaning through speaking or writing via retrieving and producing the appropriate word form while speaking or writing. The receptive-productive division divides learner's lexicon into words that can be recognized, and words than can be recognized and used (Milton, 2009). Schmitt (2000) added that being able to recognise a word without being able to use it yet, denotes that receptive knowledge of words precedes productive knowledge, and learners generally demonstrate more receptive than productive knowledge.

With regard to this distinction, Nation (2001, p. 41) listed three main areas involved in word knowledge, at a general level: knowledge of ‘form’, knowledge of ‘meaning’, and knowledge of ‘use’.

Table 3. 1

The Three Main Areas Involved in Word Knowledge

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

*Note.*In column 3, R = receptive knowledge, P = productive knowledge) (Nation, 2001, p. 41).

According to this distinction, being able to use a word requires more knowledge in comparison to the knowledge needed to just understand it. However,

this full specification of word knowledge is judged to be an idealized rather than a realistic picture of what native speakers know about the majority of words in their repertoire (Read, 2000). Thus, if this word knowledge does not apply to the total vocabulary of native speakers, it cannot possibly apply to vocabulary knowledge of EFL learners. In addition, it is very difficult to construct suitable measures of all these types of knowledge and 'eliciting evidence of learner's knowledge' (Read, 2000, p. 27), especially in the classroom. Hence, framing mastery of word knowledge into only receptive-prodective knowledge is not enough to solve the complex nature of vocabulary (Schmitt, 2000). In EFL learning, being able to use a word orally does not necessarly mean being able to spell it. This is why more facets of knowing a word need to be considered.

Another distinction of vocabulary knowledge is implicit (or incidental)-explicit learning of language. Generally, incidental learning of vocabulary starts from verbal conversation, when language is being used communicatively, gradually and slowly in comparison with explicit learning. Explicit learning focuses directly on the information to be learned, which gives more chance for its acquisition (Schmitt, 2000). According to Ellis (1994), implicit vocabulary learning includes recognition of the lexical item and production, whereas explicit learning includes learning the meaning and linking aspects, which is a more conscious process. Implicit vocabulary learning revolves around attention to the stimilus and is basically affected by repetion. However, explicit learning involves more conscious operations. It is believed that only few words are retained from direct vocabulary instruction, and most of the FL vocabulary is learned incidentally (Ellis, 1994). However, according to Milton (2009), evidence shows that the amount of vocabulary uptake from incidental EFL learning is negligible in comparison with the large volumes of vocabulary learned explicitly

in the classroom. For EFL learners, both explicit and incidental vocabulary learning are necessary and complementary. For example, most frequent words need more explicit attention, and less frequente words are best left to incidental learning from exposure to language (Schmitt, 2000).

One more distinction of vocabulary knowledge is between 'breadth' of word knowledge (The number of words a learner can recognize and can attach meaning to) and 'depth' of word knowledge (What the learner knows about these words). They were first introduced as two separate types of vocabulary knowledge meaning that the size of vocabulary is separate from the quality of knowledge. And, depth of vocabulary knowledge and how well a word is known and how particular words are learned is way under-researched in comparison with research on breath or the size of the mental lexicons (Dóczi & Kormos, 2016). However, these two aspects of vocabulary are in fact interrelated (Dóczi & Kormos, 2016). Moreover, according to Read (2000), this division does not do justice to the complexity of word knowledge.

Respectively, research on vocabulary knowledge or lexical competence has resulted in many definitions, distinctions, and knowledge components to describe it; however, it is difficult to delineate all these knowledge components. When describing lexical competence, Henriksen (1999) affirmed that all aspects of word knowledge should be included. So, in attempt to establish a unified theoretical construct of lexical competence and a more inclusive model of lexical development, Henriksen (1999) proposed three dimensions of vocabulary knowledge: partial to precise knowledge, depth of knowledge, and receptive productive use ability.

a. Partial-Precise Knowledge: Partial knowledge corresponds with vocabulary breadth or size, which involves word recognition i.e., the ability to recognize formal features of a lexical item without having to reflect on meaning, for example being

able to translate the lexical item into another language. Progression to precise knowledge involves mastery of meaning. Acquiring word meaning gradually develops from mere acknowledgement that a word exists in the target language through different degrees of partial knowledge towards precise comprehension, which is a native like mental representation of a lexical item (Henriksen, 1999).

b. Depth of Knowledge: According to Read (2000), this dimension fits the various types of knowledge identified by Richards (1976). Depth of knowledge is defined by Read (1993) as the 'quality' of the vocabulary knowledge a learner has (As cited in Henriksen, 1999, p. 305). It involves the process of building a network of links between words and other words in a learner's mind (Read, 2000). Henriksen (1999) explained that rich meaning representation of a lexical item goes beyond knowledge of the relationship between the concept and the referent to knowledge of the relationship between lexical items such as paradigmatic and syntagmatic relations, in addition to knowledge of the phonological and syntactic features of a lexical item.

c. Receptive-Productive Knowledge: This distinction is between partial knowledge of a word, including being able to retrieve the meaning of the lexical item, and the ability to use it productively in writing or speech (Read, 2000). Even though the line between receptive and productive vocabulary is not a clear cut, it is a matter of fact that only a limited number of words known receptively can ever become productive, and receptive vocabulary knowledge always precedes the productive one (Henriksen, 1999; Schmitt, 2000). Additionally, in order to measure lexical competence along this dimension, both receptive and productive tasks involving the same lexical items are recommended (Henriksen, 1999; Read 2000).

According to Read (2000), although Henriksen's dimensions succeeded to provide a better basis for conceptualizing vocabulary knowledge, vocabulary

knowledge remains a complex concept. In addition, attempts to provide a model that can explain vocabulary learning development were unsuccessful (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010). Building on the previously discussed dimensions, developing lexical competence is way more complex than it seems. The complexity of vocabulary learning has always been disregarded (Henriksen, 1999). Most vocabulary studies focus on the lexical comptence of a learner at a given point of time, whereas the process of vocabulary learning should be examined at different stages through a longitudenal perspective to be able to establish a model of lexical development (Dóczi & Kormos, 2016; Henriksen, 1999). Thus, it is mendatory to study the interrelationship between the dimensions of lexical competence and the process of vocabulary learning and use (Henriksen, 1999).

Respectively, study of the development of vocabulary knowledge, especially its storing has resulted in several controversial issues such as the role of memory in the development of lexical competence, the mental lexicon, learning burden, motivation, etc. Primarily, concerning memory, there are two types of memory: short-term memory (which is adaptive and fast but has a small storage capacity) and long-term memory (which is slow but has unlimited storage capacity. The objective of vocabulary learning is to transfer lexical information from short-term memory during language manipulation to permanent long-term memory by attaching new lexical information to an element that already exists in the mental lexicon through grouping or imaging techniques(Schmitt, 2000). Naturally new information about any lexical item is forgotten immediately. New learnt items take time and other factors to transfer into the long-term memory. These include multiple encounters at spaced intervals with a lexical item, retrieval and use of the item, cognitive depth, affective depth, personalization, imaging, use of mnemonics (improving and assisting the memory for

example Setting the ABCs to music to memorize the alphabet) and conscious attention necessary to remember a lexical item (Takač, 2008). That is why efficient teaching and learning vocabulary needs to be planned accordingly. Teachers need to develop more structured ways of presenting vocabulary knowledge, and include multiple manipulations of a word in vocabulary instruction for learners to retain more lexical items.

Furthermore, concerning the mental lexicon, although there still are questions about whether it exists and whether it is needed to conceptualize vocabulary knowledge and its development (Elman, 2009, as cited in Dóczi & Kormos, 2016). Early language theories viewed the mental lexicon as a repository of lexical, phonological, and morphological information about words, because they believed language was made up of sentences formed through grammatical rules, and words were just elements that support grammatical structures. Yet, since interest has shifted to vocabulary, the line between lexis and grammar has become increasingly blurry, leading to the expansion of the different types of knowledge the mental lexicon needs to store (Dóczi & Kormos, 2016). The mental lexicon (also called mental dictionary) is a memory system where a large number of words has been stored in the course of time (Takač, 2008). Additionally, Dóczi and Kormos (2016) defined it as the cognitive system responsible for both conscious and unconscious lexical activity. The outstanding ability of language learners to recognize and retrieve the lexical items necessary to express what they want indicates that this system is organized and structured. According to Schmitt (2000) words are not randomly stored in the mind, and the lexicon is organized in the mind of an EFL learner similarly to the organization of a native speakers. In addition, words in the mind are organized and connected into semantic networks. Features of lexical items such as stress or suffixes

play a role in its placement in the mental lexicon. It is also characterized by fluidity and flexibility. These characteristics are reflected in learners' creativity in interpreting and applying vocabulary knowledge into new situations. It is assumed that a word in the mental lexicon is represented by three dimensions: phonological, orthographic and semantic (Takač, 2008).

3.1.3. Size of Vocabulary

Dealing with word count is complex because there are many units of count: tokens or running words (count of the number of separate words in a sentence), types (count of the number of different words in a sentence, repeated words are not counted), lemma, which is the most reliable unit of counting words according to scholars (count of a word and its most frequent inflections without changing the part of speech from that of the head word e.g. only lemma of a verb that are also verbs are counted, inflections that are nouns are not counted), and word family (the count of a wider range of inflections and derivations than that of lemmatization) (Nation, 2001; Schmitt, 2010). The count of vocabulary size in this case is mainly affected by the unit of count. Usually, word family and lemmatized count produce smaller figures for vocabulary size. According to Schmitt (2010), word family corresponds most closely with the notion of headwords used in dictionaries.

It has been reported by different researchers (As cited by Schmitt, 2000), that measuring the size of the English language ranges from over 2 million words (Crystal, 1988), about 1 million (Numberg & Rosenblum, 1977), to 400,000 to 600,000 words (Claiborne, 1983), and 200,000 words in common use (Bryson, 1990). In addition, around 114,000 word families excluding proper names were counted from the Webster's Third International Dictionary, which is the largest non-historical

dictionary of English (Nation , 2001); whereas, Webster's Eleventh New Collegiate Dictionary has about 225,000 entries (Zwier & Boers, 2023). Moreover, the Cambridge Dictionary of American English include more than 40,000 frequently used lexical items (McCarten, 2007).Yet, it is noteworthy to mention that in establishing vocabulary size, there is no one reference source that includes all the lexical items of the language (Schmitt, 2010 ;Zwier & Boers, 2023).

Accordingly, there are several pertinent issues to address in relation to the size of vocabulary and its measurement. As it was previously discussed, research on vocabulary has resulted in different distinctions and types of knowledge, and each type of knowledge is challenging to measure, which makes it hard to come up with reliable estimates.

In measuring the size of vocabulary, there is a distinction between structural vocabulary (most frequent words like prepositions of, in, etc.), auxiliary verbs (is, have), and lexical vocabulary (less frequent words which carry more weight of meaning). Highly frequent and structural vocabulary items are usually excluded in word counts when measuring vocabulary size (Milton, 2009). Common measurements of vocabulary are based on lexical frequency i.e., word frequency count in lexical vocabulary. For example, a typical written text in English comprises the 2.000 most frequent words in English (Dóczi & Kormos, 2016).

Concerning the receptive-productive division, according to Kamil and Hiebert (2005), and Milton (2009), productive vocabulary knowledge is generally estimated to be less than the receptive. And, the measurement of productive knowledge is more challenging because the construct of productive knowledge is not well defined. There is not one commonly accepted standardized method for measuring productive knowledge (Milton, 2009). Attempts to measure the size of productive lexicon

through translation tasks, free production tasks, or word association tasks do not result in figures that give a sense of size in the way receptive vocabulary breadth tests do (Milton, 2009). According to Milton (2009), oral interviews or essay writing may only partially reflect learner's vocabulary knowledge and is hard to interpret. Learners need first to develop a large receptive vocabulary in order to develop productive knowledge that can lead to effective language use in speech and in writing. In addition, the growth of productive lexicon lags behind that of receptive lexicon, which make the relationship between the words learners know and those they will produce very complicated.

Another division in vocabulary measurement is the 'breadth' and 'depth' of word knowledge. In measuring vocabulary breadth or size, check-list tests of passive vocabulary recognition are well researched. They are advantageous in speed and ease compared to other testing methods, yet it is a self-reporting test in which learners can guess or check words they are not sure they know. Great amounts of over-estimation are generally reported in these kinds of tests, e.g., the Eurocentre's Vocabulary Size Test (Milton, 2009). Another widely used method of testing in estimating vocabulary knowledge is 'recognition' and 'recall' tests. Learners are required to demonstrate that they know explanations or translations of FL words. They can be passive where learners are provided with definitions or translations to choose from, or they can be productive, where learners are asked to produce an FL word in response to a native language word. The most known example of recognition test is Nation's Levels Test (1990). The impact of such standardized tests in measuring vocabulary breadth is considerable. It made comparing learning of vocabulary among different groups of learners possible.

In measuring vocabulary ‘depth’, attention shifts away from how many words a learner knows. It is hard to develop a comprehensive metric for depth since it is hard to define it. Vocabulary knowledge is not merely being able to recognize words and attach meaning to them. There are things learners need to know about words and other things they need to be able to do with these words. Depth is how the learner organiseswords in relation to others in a lexicon. Depth includes a wide variety of word characteristics like connotations, collocations, shades of meaning, and all the associations the word creates in the mind of the learner (Milton, 2009). Therefore, it is quite challenging to measure something as broad and as varied as depth.

The main use of language is communication. Hence, if EFL learners want to achieve native like proficiency, they are expected to have a vocabulary size similar to native speakers. Yet, Native speakers themselves do not know all the vocabulary. Research on native speakers’ vocabulary size has resulted in wildly varying figures. According to Schmitt (2010), relibale estimates of vocabulary size for educated native speakers ranges from 16.000 to 20.000 word families.

Counting how many words native English speakers know can help to make an estimate of the number of words EFL learners need to learn to function proficiently in English language. Yet, it is important to note that mastery of the complete vocabulary of English is beyond even native speakers’ capacity. The amount of lexis necessary to maintain various forms of communication is a more realistic goal. McCarten (2007) reported that estimates for native speakers range between 12,000 and 20,000 word families, depending on their level of education. Schmitt (2010) reported that the number of word families used by native speakers in informal daily conversation ranges between 6.000 and 7.000 word families, which is an intimidating number for EFL learners. However, Schmitt (2010) believes that a vocabulary of about 2.000 to

3.000 word families is enough for EFL learners to be conversants in English (without being able to hold in-depth conversations on every topic, of course), and up to 8.000 word families to read a variety of texts.

It is common that knowledge of vocabulary increases with general language level. Advanced level learners have more vocabulary knowledge in comparison with beginner level learners. That is why standard vocabulary size tests can take part as placement tests and ascribe a learner to the right level. However, there is doubt that this single feature of language can be a good indicator of overall language proficiency, given the fact that language level is not merely about language knowledge, but is about how well language learners can perform communicably in different circumstances. Nevertheless, measures of vocabulary knowledge were found to behave dependently with more general measures of language competence (Milton, 2009).

Thus, EFL learners and teachers should rethink the ambition of building native-size vocabulary, and readjust learning objectives and focus on the crucial parts of language like high-frequency words, which are worth explicit teaching, unlike the rest of the words that occur infrequently and does not require explicit attention. In conclusion, setting learning goals for vocabulary growth should focus on bridging the gap between the number of words in a language, the words known by native speakers, and the number of words needed to use the language.

3.1.4. Importance of Vocabulary

Due to the development of structural linguistics, vocabulary in language learning has been sidelined. It received less attention in comparison to other language elements like grammar. Additionally, it was believed that vocabulary cannot be

controlled by language teachers (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010). Structural approaches to language teaching have promoted the idea that learning words is unsystematic. Their main concern was how language rules and systems are acquired, not the words to which these rules and systems apply. According to Schmitt (2000), most language teaching approaches did not know how to handle vocabulary, and systematic research on vocabulary did not really start until the twentieth century. The need for clarity and standardization in describing central processes in vocabulary learning and use, vocabulary learning and teaching research has experienced growing interest in the 1990s (Henriksen, 1999), and vocabulary was recognized as a key component for successful communication (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010). Elman (2009) explained, 'many linguists have come to see words not simply as flesh that gives life to grammatical structures, but as bones that are themselves grammatical rich entities' (As cited in Dóczi & Kormos, 2016, p.11)

According to Laufer (1998), lexical competence is what sets the difference between native speakers and language learners (As cited in Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010). Consequently, vocabulary is not an optional part of EFL that can be sidelined. In fact nothing can be conveyed without words, which are the building blocks of language. According to Wilkins (1972),'without grammar very little can be conveyed, without vocabulary nothing can be conveyed' (As cited in Milton, 2009, p.111). All participants engaged in the learning process including teachers, learners, material designers, and researchers unanimously acknowledge that learning vocabulary is a crucial aspect of becoming proficient in a second language (Schmitt, 2010).

Moreover, deficiency in vocabulary knowledge can negatively affect the development of other aspects of language. According to Schmitt (2010), evidence shows high correlations between vocabulary and measures of language proficiency. For instance, according to Zwier and Boers (2023), substancial vocabulary knowledge is required for good reading and listening skills, and although estimates of how much vocabulary in required for text and speech comprehension vary, it is agreed on that 'the more the better'. And, knowledge of vocabulary significantly contributes to overall language success, because vocabulary has strong relationships with the language skills (Schmitt, 2010). Moreover, deficiency in word learning may affect the development of structural knowledge for example. Successful EFL learners' vocabulary resources indicate that one cannot be a highly accurate communicative language user with a very small vocabulary (Milton, 2009). Vocabulary knowledge and use are crucial in successful communication (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010). According to Read (2000), research on the importance of vocabulary size indicates that 'adequate knowledge of words is a prerequisite for effective language use' (p.83).Although learners cannot meet their FL needs solely by enlarging their vocabulary repertoires, those with a limited vocabulary size struggle to decode the basic elements of language and find it difficult to develop higher understanding of FL content.

3.2. Vocabulary Teaching and Learning

At this point, it is a widely accepted fact among the four vocabulary learning partners (teachers, learners, materials writers, and researchers) that vocabulary knowledge is essential for successful EFL language mastery. The undeniable role vocabulary plays in language learning and the development of new teaching methods

have led to a growing interest in vocabulary in the last thirty years (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010; Dóczi & Kormos, 2016). Yet, vocabulary does not have a defined place, especially in the curriculum (Zwier & Boers, 2023). Moreover, research on vocabulary led to considerable inconsistency in what teachers, learners, and researchers mean by vocabulary learning. This inconsistency extends not only to what it that learners learn but also to how they learn it and when we can determine that they know a word. As a result, there is still a gap between theory and what actually happens in classroom settings (Dóczi & Kormos, 2016; Nation, 2001, Schmitt, 2010). According to Nation (2001), what happens in the classroom does not reflect the full range of findings and suggestions by research. Research on vocabulary size, corpus linguistics, relevance and frequency, and resulting findings and recommendations applied in pedagogical contexts have all contributed to the development of vocabulary teaching. Yet, teaching vocabulary still tends to focus mainly on meaning and form, neglecting other aspects of word knowledge (Dóczi & Kormos, 2016).

3.2.1. Implicit-Explicit Vocabulary Teaching and Learning

With regard to how vocabulary is learned, the two main approaches to teaching and learning vocabulary are implicit (also referred to incidental as or indirect) and explicit (also referred to as intentional or direct) teaching. Concerning the processing of new vocabulary, implicit vocabulary learning is believed to be unconscious and is featured by lack of intentionality, whereas explicit vocabulary learning involves more conscious and planned strategies (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010).

a. Implicit Vocabulary Learning

According to Zwier and Boers (2023), incidental vocabulary learning is the side benefit of learners being exposed to language, where learners pick out lexical items while they are engaged with the content of discourse. Incidental vocabulary acquisition is undeniably important, as it establishes the initial links between form and meaning and picking up certain other aspects of word knowledge (Dóczi & Kormos, 2016). To enhance incidental learning, teachers should create an engaging language-rich environment that fosters learners' vocabulary development through reading, writing, listening, and communication, taking into consideration various crucial points.

Repetition plays a crucial role in incidental vocabulary learning and positively affects vocabulary acquisition (Nation, 2001). According to Zwier and Boers (2023), every encounter is an opportunity for learners be become better familiar with the form of a word and how it is used. Moreover, multiple studies (Chen & Truscott, 2010; Webb, 2007) have shown that repeated encounters with words lead to improved receptive and productive vocabulary knowledge (As cited in Dóczi & Kormos, 2016). Notably, repetition holds a more pivotal role in reading than in listening (Vidal, 2011).

The role of context is also important. Informative contexts facilitate both reading comprehension and incidental vocabulary learning, while uninformative or misleading contexts hinder them. Glossing, which involves providing short definitions of relevant words in a given text, has been reported as a successful strategy (Dóczi & Kormos, 2016; Zwier & Boers, 2023).

Concerning the input, according to Vidal (2011), written input is more effective than oral input for implicit vocabulary learning, although this advantage

diminishes with more advanced learners. Kamil and Hiebert (2005) added that the vocabulary of written language is diverse and more extensive. Recently, audiovisual input such as movies has been found to benefit incidental vocabulary learning (Zwier & Boers, 2023).

Moreover, an implicit approach to vocabulary learning, based on extensive reading tasks, has proven to be effective (Kamil & Hiebert, 2005; Laufer, 2010). This method engages an unconscious and automatic cognitive process in which hypotheses about the meaning of new words are formed and checked (Huckin & Coady, 1999, as cited in Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010). Additionally, while the importance of reading is well-established, there has been a growing interest in the roles of listening, speaking, and writing in incidental vocabulary learning (Dóczi & Kormos, 2016; Zwier & Boers, 2023). For instance, reading while listening was found to promote the acquisition of new vocabulary (Zwier & Boers, 2023).

Yet, the complexity and volume of the information necessary for complete knowledge and use of a word cannot be learned incidentally. Vocabulary learning involves various forms and levels of cognitive processing, which cannot be achieved solely through incidental and occasional exposure to language (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010; Nagy, 2005).

b. Explicit Vocabulary Learning

If the aim is to enlarge the vocabulary repertoire in order to develop productive skills, vocabulary learned incidentally is not enough on its own for efficient communication. According to Nation (1990), after a certain amount of basic vocabulary, the implicit approach becomes an unproductive way to learn vocabulary. Thus, vocabulary also needs to be taught explicitly. Accordingly, explicit vocabulary teaching demonstrated that it can significantly boost learners' vocabulary growth by

using different strategies, such as varied contexts, definitions, repeated exposure, and opportunities for active engagement (Dóczi & Kormos, 2016). Moreover, enhanced instruction techniques, like bolding, underlining, color coding, and glossing are proven to be effective for EFL learners. This emphasizes the importance of careful presentation of vocabulary by teachers and materials designers (Dóczi & Kormos, 2016) because to trigger a learning process, learners need to at least notice the new lexical item (Zwier & Boers, 2023). Additionally, modality has a crucial role in vocabulary learning outcomes, as written input enhances word recognition. This underscores the multifaceted nature of vocabulary learning (Dóczi & Kormos, 2016).

However, neither implicit nor explicit teaching alone can ensure effective vocabulary learning. A combination of both is suggested to maximize the vocabulary repertoire (Dóczi & Kormos, 2016). As far as FL is concerned, several researchers agree that a combination of implicit and explicit vocabulary teaching is necessary (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010; Dóczi & Kormos, 2016; Schmitt, 2000). Yet, according to Chacón-Beltrán, et al. (2010), more research is still needed to explore how this combination can be optimally implemented in the classroom, taking into account the constraints and available classroom resources.

According to Nation (2001), the goal of the vocabulary component of a course is to expand 'learners' usable vocabulary size and to help them gain effective control of a range of vocabulary learning and coping strategies' (p. 618). Respectively, in vocabulary learning and expanding vocabulary repertoires, researchers explored different strategies to promote effective learning. For instance, the use of glossing and highlighting strategies, coupled with vocabulary-focused activities can encourage rich engagement with the language (Dóczi & Kormos, 2016). Additionally, researchers investigated how incidental vocabulary learning could be improved by pairing it with

explicit tasks. Sonbul and Schmitt (2010) conducted a study comparing completely incidental learning with a mix of exposure strategies for vocabulary learning among EFL participants. These participants read texts and were subsequently tested after either incidental (read-only) exposure or explicit (read-plus) learning accompanied by exercises. The study also explored how word form and word meaning interact, by evaluating how receptive vocabulary knowledge (recognition of meaning) and two productive aspects (recall of meaning and recall of form) develop. The findings confirmed previous research, revealing that while incidental learning mainly improves receptive vocabulary, explicit vocabulary teaching significantly enhances both recognition and recall of words. Notably, word form appeared to be a more challenging aspect, indicating that more emphasis on teaching it is needed. As a result, the combination of incidental and explicit vocabulary teaching, while focusing on word form and reinforcement by follow-up reading tasks, seems to be a promising strategy for enlarging the vocabulary repertoire (Sonbul & Schmitt, 2010).

In a related study, Huang, et al. (2012) investigated the impact of output tasks, including fill-in-the-blank exercises, sentence writing, and composition writing, on FL incidental vocabulary learning. The investigation demonstrated that output tasks had a positive impact on vocabulary learning. Furthermore, the study identified key factors that influence incidental vocabulary development, including task selection, allocated time, and the text genre. Tasks that require more engagement, like writing exercises, resulted in more improvement compared to gap-filling exercises, especially when more time was dedicated to them, (Huang, Willson, & Eslami, 2012).

Central to these different strategies is the important role of repetition in learning vocabulary (Dóczi & Kormos, 2016; Kamil and Hiebert, 2005; Nation, 2001). A single exposure to a word is widely known to be insufficient to ensure

complete understanding and deep familiarity with the lexical items is needed for easier access and use. As Zwier and Boers (2023) confirmed that familiarity grows with each encounter. In this context, repetition does not only improve the breadth of vocabulary knowledge but also enhances its depth (Nation, 2001). Through the integration of these diverse strategies, teachers can foster a more dynamic and comprehensive vocabulary learning experience.

3.6.2. Vocabulary Instruction

Vocabulary instruction is defined as the methods and practices aimed at enhancing learners' knowledge of words (Webb & Webb, 2020) for both receptive and productive purposes (Nation, 2001), including comprehensive approaches that combine intentional and incidental learning through exposure (Schmitt & Rodgers, 2002). To date, despite the increase of interest in vocabulary, how to build vocabulary instruction is still intricate for teachers and curriculum developers (Zwier & Boers, 2023). To bridge the gap between what the vocabulary learners know and the vocabulary they should ideally know, more effective vocabulary instruction is needed. Commonly, it is believed that most lexical items are learned through exposure to language input and that the number of words to be learned cannot all be covered through instruction. Yet, research on the vocabulary size of EFL learners indicates that it cannot possibly be the result of exposure to input, solely. According to Laufer (2010), the average number of words learned per one hour of instruction is 2 to 3 words, which is an average manageable to learn. Thus, the vocabulary size of EFL learners is the result of both exposure to input and explicit instruction (Laufer, 2010). Additionally, as opposed to the common assumption that learners' vocabulary repertoire is too large that it remains unaffected by the small number of words taught

directly, the National Reading Panel (2000) demonstrated that learners' vocabulary is positively affected by direct vocabulary instruction. Consequently, a clear perspective on effective vocabulary instruction is needed. Traditionally, vocabulary instruction involves directing learners to learn the meanings of new words by looking them up in the dictionary (Bishop, Yopp, & Yopp, 2009). Yet, according to Kamil and Hiebert (2005), the report of the National Reading Panel (2000) succeeded in directing attention to vocabulary instruction and providing a clear perspective on the components of effective vocabulary instruction.

The National Reading Panel (2000) emphasized five main instruction methods (Pp. 3-4):

1. Explicit Instruction: Students are given definitions or other attributes of words to be learned.
2. Implicit Instruction: Students are exposed to words or given opportunities to do a great deal of reading.
3. Multimedia Methods: Vocabulary is taught by going beyond text to include other media such as graphic representations, hypertext, or American Sign Language.
4. Capacity Methods: Practice is emphasized to increase capacity by making reading automatic.
5. Association Methods: Learners are encouraged to draw connections between what they do know and words they encounter that they do not know.

Drawing on the findings of instructional vocabulary research from 50 studies, the National Reading Panel (2000) concluded that in classrooms where the vocabulary repertoire of students is subject to expansion, relying solely on one method of

vocabulary instruction cannot result in optimal learning (Kamil & Hiebert, 2005). Respectively, educators must create multi-faceted and diverse classroom experiences to help learners learn new words and increase the depth of their vocabulary repertoire. The National Reading Panel (2000) summarized eight scientifically grounded findings for educators to draw on in order to design rich and multifaceted vocabulary instruction.

1. Direct instruction is crucial for specific text-related vocabulary.
2. Repetition and multiple exposures to words are essential, especially those likely to appear frequently.
3. Learning within rich contexts enhances vocabulary acquisition and practical usage across contexts.
4. Restructuring vocabulary tasks to ensure comprehension within the reading context benefits low-achieving students.
5. Active engagement in learning tasks boosts vocabulary learning.
6. Computer technology can be a valuable tool for vocabulary instruction.
7. Vocabulary can be incidentally acquired through repeated exposure, rich contexts, and motivation.
8. A diverse approach to vocabulary instruction, including multimedia and contextual richness, is vital for optimal vocabulary learning.

The National Reading Panel (2000) indicated that vocabulary instruction should be characterized by richness and variety. Learners in the classroom should be given the opportunity to learn and interact with words. Additionally, according to Nagy (2005), commitment to vocabulary instruction is integral to learning, and effective vocabulary instruction must be 'multifaceted, encompassing: teaching individual words; extensive exposure to rich language, both oral and written; and building

generative word knowledge.' (p.28). According to Nagy (2005), an effective approach to vocabulary instruction should address the following components:

- **Teaching Individual Words:** Rich vocabulary instruction should give learners definitions and contextual information i.e., information about the meaning of the word and how it is used, to foster creativity and making connections with existing knowledge. Yet, only a limited number of words can be covered through this instruction.
- **Exposure to Rich Language:** Exposure to written and oral language is crucial to effective instruction. Exposure to written rich language through reading is more useful for older learners and learners with limited vocabulary. Yet, for younger learners, exposure to rich oral language is mandatory for vocabulary growth. In this case, teachers should make use of activities such as reading aloud, pretend play, storytelling, and classroom conversations to promote vocabulary growth.
- **Generative Word Knowledge:** Effective vocabulary learning encompasses not only their meaning, but also awareness of various aspects of words like their histories, their relationship with other words, word parts, and how they are effectively used in communication.

According to Nagy (2005), a successful approach to vocabulary instruction should encompass all three elements. Thus, allowing learners to acquire words and learn about words through exposure to rich language should be promoted in the classroom. Bishop et al. (2009) also suggested a combination of four elements approach to vocabulary instruction: providing extensive experiences with language, fostering word consciousness, teaching individual words, and teaching word-learning strategies.

Commonly, vocabulary knowledge is researched in relation to reading, and there is no doubt that vocabulary plays a crucial role in developing comprehension (Kamil & Hiebert, 2005; Nagy, 2005), yet Bishop, et al. (2009) assured that vocabulary knowledge contributes to overall academic success, because words are necessary for communication, learners' vocabulary repertoire affects their achievement in all areas of the curriculum. Moreover, research affirms that vocabulary instruction actually 'makes a difference'(Bishop, Yopp, & Yopp, 2009, p.17).

Accordingly, relying on Ur's tips (2022), based on the suggestions of Bishop, et al. (2009), and the recommendations of Zwier and Boers (2023) vocabulary instruction in the classroom should encompass:

- Introducing keywords in rich contexts and comprehensible input.
- Drawing attention to the forms and meanings of new vocabulary items.
- Encouraging learners to write down new items and review them.
- Promoting active engagement with words by the learners in and outside the classroom.
- Repeated exposure and multiple opportunities to use the new words orally and in writing.

Thus, a balanced and systematic approach to vocabulary can be achieved through the implementation of different strategies and recommendations:

- For more contextual support and to enhance comprehension, Zwier and Boers (2023) suggested the use of multimodal input and audiovisual materials like reading while listening, or watching video with captions.

- Making learners notice target vocabulary can be done through enhanced typographic means, such as bolding, underlining, color coding, and glossing (Zwier & Boers, 2023).

- To establish meaning, teachers can either instruct learners to use a dictionary or they can directly use ‘student-friendly explanations’ using familiar terminology and providing examples using everyday language (Bishop, Yopp, & Yopp, 2009).

- 'Semantic Maps' that include knowledge associated with a lexical item can also be used to teach new words or to review already introduced words (Bishop, Yopp, & Yopp, 2009).

- 'Know and New' chart where learners can keep track of the vocabulary they know, and want to know and the new vocabulary they have learned is effective (Bishop, Yopp, & Yopp, 2009).

- To aid learners review and reflect on newly learned items, Zwier and Boers (2023) suggested asking learners questions like: ‘Is this new word use related to a meaning you already know?’, ‘In what way is its meaning different from...?’, ‘Where might this expression come from?’ etc.

- Teachers should encourage oral and written presentations as good opportunities to use new vocabulary (Bishop, Yopp, & Yopp, 2009).

- Learners should be encouraged to learn vocabulary outside the classroom through vocabulary self-collection strategies (Bishop, Yopp, & Yopp, 2009).

Nonetheless, intensive and direct vocabulary instruction is heavily criticized. There are a lot of words to teach and a lot to learn about each word, all of which require considerable effort and class time. Additionally, according to Zwier and Boers (2023), although deliberate vocabulary teaching can accelerate learning, it is not sufficient to

make learners proficient communicators. Nation (2001) recommended that since direct vocabulary instruction can only deal with limited aspects of word knowledge, and mainly works with high-frequency words, it should occupy only a small part of the course. According to Nation (2001), even though there is a place for both direct and indirect vocabulary learning, more emphasis should be given to indirect vocabulary acquisition opportunities. Hence, contact with language in use should be given more time in language learning courses instead of direct or intensive vocabulary teaching. When language learning conditions apply, indirect vocabulary learning will definitely take place (Nation, 2001). Zwier and Boers (2023) recommended focusing on improving the likelihood that learners will learn words from a sample of L2 (second language) discourse while they are interested in the content of what is being said.

The ultimate goal of vocabulary knowledge is effective communication, which requires learners to not only understand words in isolation but also to apply them within real-life contexts. Thus, providing learners with opportunities to engage with the language in use becomes paramount. Language comes alive through interactions, conversations, reading, and listening, enabling learners to grasp the nuances of word usage, idiomatic expressions, and contextual appropriateness. By immersing learners in authentic language situations, we bridge the gap between formal vocabulary instruction and practical communication. Learners should be given the opportunity to appreciate the multifaceted nature of language, enhancing their ability to use words accurately and effectively in diverse communicative situations.

3.3. Assessment of Vocabulary

Since words are the building blocks of language from which larger structures such as sentences, paragraphs, and texts are formed, it is necessary to assess vocabulary knowledge. The need to assess and monitor learners' progress took over ever since vocabulary learning was recognized as a priority in FL teaching. However, the assessment of vocabulary knowledge is highly intricate.

According to Read (2000), the history of vocabulary assessment evolved alongside objective testing in the twentieth century. Traditional tests that use matching and multiple-choice items feature specified correct answers, thereby removing the need for scorer judgment. However, doubts persisted regarding the tests' validity in reflecting learners' vocabulary learning progress. Considering that vocabulary knowledge is ‘multifarious’, its assessment should be a multifarious enterprise as well (Zwier & Boers, 2023). Accordingly, Read (2000) explored two contrasting perspectives on vocabulary assessment. One perspective advocates for a straightforward approach, selecting target words and assessing learners' knowledge through methods like gap-filling, multiple-choice, or translation. In this case, well-designed tests using commonly available word lists are believed to be highly reliable and efficient in measuring learners' lexical ability. The other perspective classifies these former conventional vocabulary tests as part of the discrete-point approach, assessing specific language elements like word meanings and forms, which are criticized for their limited ability to reflect learners' overall language proficiency, as impressive scores may not translate to practical language use (Read, 2000). Vocabulary assessment, especially concerning vocabulary use, is complex and better suited for language testers and researchers, going beyond the capacity of classroom teachers. The two perspectives serve different assessment purposes.

Conventional vocabulary tests are mostly used by EFL teachers to check progress in vocabulary learning because they are more convenient in terms of scoring, time, reliability, and having the capacity to tell about how learners are developing their knowledge of target language words. Assessing vocabulary use is way more complex, especially with elementary levels where learners are not able yet to demonstrate an understanding of vocabulary beyond showing familiarity with target words. Language use testing provides separate ratings for different components of language ability, which are needed for several analytic scales, that require the involvement of qualified language testers and vocabulary acquisition researchers (Read, 2000). In other words, this kind of assessment is beyond the capacity of teachers within the classroom. Ultimately, both perspectives serve different assessment purposes, with conventional tests being more convenient for EFL teachers, while language use testing requires specialized expertise and consideration of multiple language components.

Moreover, research on vocabulary has resulted in different dimensions of knowledge. Thus, it is important to identify the dimension of knowledge being tested, first. Read (2000) implied that it is necessary to identify the lexical unit being assessed, and that vocabulary assessment applies to content rather than function words. Generally, to test vocabulary knowledge is to test knowledge of content words, which can modify meaning and provide links within sentences, such as full nouns, verbs, adjectives, and adverbs, because function words such as articles, prepositions, pronouns, etc. belong more to the grammar of language (Read, 2000)

3.3.1. Vocabulary Tests

Since the nature of vocabulary knowledge has many dimensions, it is crucial to identify the dimension of the knowledge being tested. In other words, to validate a test

of vocabulary knowledge, what is exactly being measured has to be precise first. Read (2000), Schmitt (2010), and Dóczi and Kormos (2016) divided vocabulary tests into two dimensions: tests that assess vocabulary size (also referred to as breadth of vocabulary), and tests that assess the quality of vocabulary knowledge (depth of vocabulary). Vocabulary size tests answer the question of how many words learners know, whereas, tests of the quality of vocabulary knowledge should answer the question of how well learners know a word.

3.3.1.1. Vocabulary Size (Breadth) Testing

According to Read (2000),the main issues to be addressed in vocabulary size assessment are summarized in three questions:

a. What counts as a word? As previously discussed, the unit to be counted must be identified first since there are many units of count: types, lemmas, word families, etc. (Read, 2000; Schmitt, 2010). According to Schmitt (2010), although word family count is difficult in comparison to the other units and can result in overestimated numbers; it is the most reasonable measure to reduce redundancy.

b. How to choose the words to test? It is quite impossible to test all the words that native speakers know. Yet, testing the vocabulary size of EFL learners is less complicated since they know fewer words than native speakers do, which are likely to be high-frequency words, too. In this case, choosing which words to test involves choosing from lists of high-frequency words. Words can be chosen from an established list like the '*teacher's word book'* (Read, 2000), or sampling from dictionaries like the '*Oxford English Dictionary'* (Schmitt, 2010). In a classroom setting, words can be collected from the glossaries found in EFL course books. According to Dóczi and Kormos (2016), and Zwier and Boers (2023), the majority of tests of breadth are based on word frequency concepts i.e., the words that are most

commonly encountered by learners and applied in everyday communication contexts.

c. How to identify if the chosen words are 'known'? Since there are many types of knowledge (as discussed previously), the vocabulary test has to find out by some means if the selected words to test are 'known'.

This is where conventional vocabulary tests come into play, for example, multi-choice items, matching, translations, and the check-list test. This type of testing was criticized to be time-consuming to construct, and incapable of indicating whether learners will understand the word when they encounter it in use (Read, 2000). Well-known tests of this type are: Lexical Frequency Profile (by Laufer and Nation, 1995), Vocabulary Levels Test (developed by Nation, 1983, 1990; Beglar & Hunt, 1999; Schmitt et al., 2001), X-Lex test (by Meara & Milton, 2003), Computer Adaptive Test of Size and Strength (by Laufer & Goldstein, 2004), Vocabulary Size Test **(**by Nation and Beglar, 2007), P_Lex (by Meara, 2008), V_Size (by Meara &Miralpeix, 2008), etc.

The most widely and frequently used vocabulary size tests, especially practicable in the classroom setting are the following (Dóczi & Kormos, 2016; Schmitt, 2010):

- **Vocabulary Levels Test:** According to Dóczi and Kormos (2016) and Schmitt (2010), the most widely used test to assess vocabulary size is the Vocabulary Levels Test (by Nation, 1990). It is described by Meara (1996) as 'the nearest thing we have to a standard test in vocabulary' (Cited in Schmitt, 2010, p.197). It focuses on vocabulary at four frequency levels: 2.000, 3.000, 5.000, and 10.000 word families. The test uses a form-recognition matching format, with three stems and six options per item cluster. The stems represent definitions, and the

options correspond to the target words. The test is designed to assess the early stages of form-meaning linkage (Schmitt, 2010). Moreover, it specifically measures receptive knowledge or word-meaning relationships (Zwier & Boers, 2023). According to Dóczi and Kormos (2016), the test describes learners' ability to recognize the meaning of words at different frequency levels, but it does not provide an exact measure of their vocabulary size. The test is suitable for providing a profile of a learner's vocabulary, especially beneficial for placement and diagnostic purposes (Zwier & Boers, 2023). Validation studies of the test have reported appropriate statistical properties (Dóczi & Kormos, 2016). Another version of the test designed to measure recall vocabulary size is the well-known Productive Vocabulary Levels Test (by Laufer & Nation, 1999). The test necessitates students to produce specific words within sentence contexts. Sentences are designed to allow inference of the required word, and students are aided by being provided with the initial letter of the word (Dóczi & Kormos, 2016).

- **Vocabulary Size Test: (**by Nation & Beglar, 2007) It is a multiple-choice meaning-recognition format test that is also frequently used to measure vocabulary size. In this test, students are tasked with selecting the correct word definition from a list of four options that match the target word within a sentence. The test includes eight to ten items for each of the fourteen frequency levels, identified, based on the British National Corpus (Dóczi & Kormos, 2016). It is intended as a test for overall vocabulary size and has the capacity to measure learners' progress in vocabulary learning (Schmitt, 2010).

However, the vocabulary size tests mentioned above assess knowledge of vocabulary in a decontextualized way and focus on single words rather than lexical

units. Also, only a small number of words for each frequency band, which overestimates the size of vocabulary (Dóczi & Kormos, 2016).

3.3.1.2. Quality of Vocabulary Knowledge (depth) Testing

The main focus of vocabulary depth tests is ‘how well’ lexical items are known. According to Zwier and Boers (2023), depth assessment examines how well a word is integrated into a learner's mental lexicon. To test the quality of vocabulary knowledge, Read (2000) identified two steps:

a. To Conceptualize Vocabulary Knowledge: Read (2000) identified two predominant approaches to the conceptualization of depth of vocabulary knowledge, the developmental approach (It describes the incremental nature of word knowledge on a scale ranging from complete lack of knowledge to full mastery of the lexical item), and the dimensions approach (It specifies the types of information a learner can have about lexical items).

Given the different dimensions of vocabulary knowledge, the vocabulary test in this case has to define the quality of knowledge being measured. One way to define the quality of knowledge is ‘precision’ (knowing the specific meaning of each target word and not just having a vague idea about it), in addition to the ‘range’ of meaning (knowing all the different meanings of each target word). And, since vocabulary knowledge is more than just knowing word meanings, all the components of word knowledge should be tested somehow (pronunciation, spelling, grammatical form, collocations, etc), which all adds to the complexity of conceptualization (Read, 2000).

b. To Measure it (Vocabulary Knowledge Depth): Given the complexity of vocabulary knowledge and how much information one can learn about a lexical item,

measuring vocabulary depth is under-researched compared to breadth testing (Schmitt, 2010; Read, 2000; Zwier & Boers, 2023).

Vocabulary tests set out to assess the quality of knowledge of lexical items (Dóczi & Kormos, 2016). Assessing the quality of vocabulary knowledge involves specifying different types of word knowledge and assessing learners' mastery of those types (Schmitt, 2010). In this context, information is collected on various domains of word knowledge, which can only be achieved through the application of different assessment tools like word association tests and free production tasks (Dóczi & Kormos, 2016). However, such measurements are challenging to contrast and analyze, are time-consuming, and limit the number of lexical items that could be tested (Schmitt, 2010), which makes it impracticable in a classroom setting. Some tests in this realm are Word Associates Format (by Read 1993, 1998, 2000), which measures word associations, and Test of English Derivatives (by Schmitt and Zimmerman, 2002), which measures knowledge of the different derivative forms within a word family, etc.

Moreover, even though how vocabulary knowledge develops is still vague (Schmitt, 2010; Read, 2000), its incremental nature is undeniable (Dóczi & Kormos, 2016; Schmitt, 2010; Read, 2000). Hence, testing vocabulary through a developmental scale seems sensible. Yet, the current understanding of vocabulary knowledge is not advanced enough to provide clear guidance for creating a well-grounded scale (Schmitt, 2010). Consequently, existing developmental scales are often derived from practical teaching considerations, proving useful for learning purposes but resulting in some inherent problems. Relatively, one of the most well-known and widely used scales is the Vocabulary Knowledge Scale (developed by Paribakht & Wesche, 1996), which is the measurement mean of our research. Schmitt

(2010) also mentioned the Schmitt and Zimmerman Scale (developed by Schmitt & Zimmerman, 2002), which asks learners to self-evaluate their knowledge of a word knowledge (for example, I know this word and can use it in my own speaking and writing) without actual demonstration of that knowledge (learners are not asked to actually use the word).

Regarding classroom vocabulary assessment, Zwier and Boers (2023) favoured another type of vocabulary test, which is 'integrative' (assessing integrated vocabulary use). According to Zwier and Boers (2023), since the primary goal of vocabulary is to facilitate communication, it is more effective to assess vocabulary ‘in action’, i.e., integrated into discourse. In this case, productive vocabulary can be tested through speaking and writing tasks, while receptive knowledge is assessed through listening and reading comprehension tasks. For instance, integrated proficiency tests like TOEFL and IELTS gauge learners' ability to use vocabulary in purposeful communication, while orchestrating various other elements and facets of linguistic and non-linguistic knowledge that one relies on during communication. In this sense, integrated or contextualized vocabulary use is a valid measure of how learners deploy their vocabulary knowledge in purposeful communication.

Due to the complex behaviour of vocabulary knowledge, it is important to note that pedagogical classroom vocabulary assessment cannot possibly comply with all the problematic considerations. English vocabulary proficiency tests done by professional language test developers and vocabulary acquisition researchers are more appropriate for relatively advanced learners in EFL taking language proficiency tests for placement or diagnostic purposes (Zwier & Boers, 2023) like a university entrance exam or else. The content and objectives of vocabulary classroom tests are different from those of proficiency tests. Commonly, vocabulary classroom tests aim to evaluate the

effectiveness of the course by looking into whether learners improve their FL mastery of vocabulary according to the course objectives (Zwier & Boers, 2023). They also aim to assess progress in vocabulary learning where building vocabulary size in EFL requires more of a systematic study of words individually and through class work. Classroom tests have to comply with practical considerations in terms of how easy they are to construct, mark, and analyse. For these reasons, Schmitt (2000) urged teachers to stick to traditional test formats. A standard vocabulary test, in this case, is unsuitable for its inability to possibly cover the particular words learned in the course. In this context, the teacher is in the best position to know the words learners should have mastered. Hence, according to Schmitt (2000), in a classroom setting, if learners' vocabulary achievement is to be tested, the words to be tested should be selected from the covered ones in the course. Moreover, it is quite impossible to design a test that captures all of a learner's lexical knowledge. Practically, one vocabulary test is unable to capture every type of word knowledge. Consequently, to capture the various facets of word knowledge, it is advisable to use a range of different measures (Zwier & Boers, 2023). Accordingly, it is more practical to address vocabulary size in the sense of how many words are known to some partial extent, especially with less advanced EFL learners as in the case of our study. Also, a classroom vocabulary test should minimize the difficulty of reading, writing, speaking, and listening involved in the test so that any limitations in these skills do not hinder learners' ability to demonstrate their vocabulary knowledge.

3.4. Vocabulary Teaching with Multiple Intelligences

Vocabulary knowledge is an essential component of EFL that is significant in overall language mastery. It is widely acknowledged that learners' language

proficiency is highly dependent on their vocabulary repertoire (Nation, 2001; Schmitt, 2000; Webb & Chang, 2012; Webb & Webb, 2020). Additionally, the amount of vocabulary that EFL learners are expected to master is challenging. This is why educators are looking for effective ways to promote vocabulary knowledge (Chacón-Beltrán et al., 2010; Dóczi & Kormos, 2016; Zwier & Boers, 2023).

It is widely accepted that traditional vocabulary teaching strategies are limited and are unable to meet the varied needs of learners (Dóczi & Kormos, 2016; Webb & Webb, 2020). In recent years, how learners with different needs and preferences acquire new vocabulary received more attention. The diversity in learners' cognitive abilities calls for more diverse and varied vocabulary instruction to meet their individual learning styles.

In this regard, the MI theory (Gardner, 1999) can provide a viable framework for vocabulary teaching. The theory recognizes learners' individuality and emphasizes that each learner has unique types of intelligences that influence their learning processes. Teachers can develop a variety of instructional strategies that address learners' varied intelligences, by integrating MI theory into vocabulary teaching.

Nation (2001) argued that for more effective language learning a more systematic and varied approach to vocabulary teaching is needed. The MI theory aligns with this since teaching with the MI promotes a variety of instructional strategies that cater for different types of intelligences. To engage MI, teachers could use visuals, kinesthetic activities, musical elements, or logical reasoning in order to meet the varied needs of learners and make vocabulary learning more engaging and effective for all learners.

However, the impact of MI-based instruction on vocabulary knowledge is not deeply explored. We faced a gap in the literature concerning research linking the MI theory with vocabulary instruction. A study conducted with 11th-grade students in a Turkish high school revealed that MI-based teaching significantly improved students' acquisition and retention of vocabulary, in comparison with traditional instruction (Akcin, 2009). According to Akcin (2009), students who received MI-based instructions showed better performance in both the post-test and the retention test, compared to students who followed conventional vocabulary teaching. Yet, is it important to note that despite the study's positive outcome, students were solely tested on their receptive vocabulary knowledge (vocabulary size) rather than their productive knowledge. In this study, MI-based teaching (to teach seasons, for example) went through different stages. In the first stage, pictures, newspaper articles, posters, etc., were used to appeal to learners' different senses. Then, on worksheets, students did a vocabulary activity where they had to guess seasons-related words based on the description given by their partners. In the second stage, the teacher read the text using body language and voice modulation to ensure students are engaged. After that, students were asked to identify the seasons and fill in missing words, by asking their peers questions about the seasons. In the final stage, students were asked to orally describe a season, and for homework, they were given a project to describe a season of their choice, either in groups or individually. As for students who received traditional instruction, the teacher read a text about seasons before assigning them to individual reading. Later, students were asked to underline unknown words and find their meanings before repeating them after the teacher. While we find the lesson plans provided by Akcin (2009) lacking in detail, we find it remarkable to cater for all the

intelligences in each lesson, especially since they resulted in positive outcomes on vocabulary learning.

Armstrong (2000) pointed out that the teaching with MI strategies he suggested can be adapted to course demands and learners' levels. This means that the suggested MI strategies (refer to section 2.2.5.) can also be adapted to teach vocabulary, whether through implicit or explicit instructions.

Moreover, Nicholson-Nelson (19998) suggested the following MI activities that involve the use of varied materials and strategies to target the different intelligences. The suggested activities originally aimed to teach sight words, but they can be adapted to teach vocabulary of any other subject (Nicholson-Nelson, 1998). They can also help teachers broaden their teaching techniques. The teacher can choose to deal with one intelligence at a time, depending on the MI profile of the class.

- **Verbal-Linguistic Activities**

Introducing Words: The teacher writes the target words on paper strips. After introducing the words to learners, he hangs the strips on the wall where learners can see them. Whenever one of the target words appears in the book or someone says it, learners walk to the wall chart and point to the word.

Student Writing: Learners underline the target words whenever they use them in their writing assignments. They can keep a special word dictionary when they can keep these words.

- **Logical-Mathematical Activities**

Counting Letters: The teacher helps students who need a mathematical connection to memorize the target words by having them count, for example counting the letters of each word or counting the vowels and consonants to better remember them.

Categorizing Words: Categorizing similar words can help students memorize word families. The teacher gives groups of students each a set of 20 index cards with the target words written one each category and asks them to categorize them. They may categorize them according to the number of letters or the number of vowels in each word. This activity can help build and strengthen vocabulary and increase students' awareness of phonetic similarities.

- **Visual-Spatial Activities**

Word Pictures: Students write the target words in large letters and decorate the paper with drawings and pictures according to the meaning of each word.

Words Search: Students read a text or a story with the target vocabulary included then they are asked to search for the special words and underline them.

- **Bodily-Kinesthetic Activities**

Playground Ball Catch: The teacher writes all the target words on each ball. Students form groups and toss the ball the each other. Whenever a student catches a ball he words the word closest to his thumb aloud.

Stand Up/Sit Down: The teacher reads a text or a story that contains the target words and then asks students to stand up whenever they hear the special words until the whole class gets to get up.

Body Letters: Groups of students come to the board and try to form the shape of the letters of the target words with their bodies. Their classmates try to guess the word.

- **Musical Activities**

Singing Songs: The teacher uses songs with lyrics that contain the target words, then has the students sing along and point out the words. Or, he can have the students sing the words following the rhythms of a song.

Consonant-Vowel Spelling: Students spell each word out loud to a partner. They can say the consonants out loud and whisper the vowels. This can help students recognize individual letters and memorize a rhythm as they are spelling. They can categorize and remember words that start with a vowel, words that have a vowel wedged in between, or words that end with a vowel.

- **Interpersonal Activities**

Group Spelling: The teacher asks several students to come to the board and pronounce one of the target words out loud, and has other students spell the word, one letter per student, until all learners get to spell at least one letter. Students can work in groups later and whisper the words to each other.

Buddy Spell: Students work in pairs. The teacher gives each pair a set of index cards with one letter on each card. One student says the words and the other student uses the cards to arrange the letters of that word in the correct order. Students change places until they have spelled all the target words.

- **Intrapersonal Activities**

Study Time: The teacher makes a list of the target words and has students tape it to their desks. At the beginning of the class, the teacher gives them some time to study the words on their own.

Journal Writing: The teacher gives students the chance to copy one or two words into their journal and use them in sentences related to themselves or what they enjoy doing.

Overall, the potential of the MI theory lies in its flexible nature that offers a range of instructional strategies to target vocabulary through the different intelligences. This can result in more successful vocabulary learning. Integrating the MI theory into vocabulary teaching can make it more effective, by making it engaging and relevant to all types of learners.

Conclusion

As discussed throughout this chapter, the size and depth of a vocabulary repertoire is highly related to EFL learners' language proficiency. However, both teachers and learners are faced with daunting numbers of words to teach and learn. The sheer volume and complexity of vocabulary present a significant challenge for both teachers and students. The question of how to effectively target and enhance a vocabulary repertoire remains a complex matter that demands careful consideration. Moreover, investigating vocabulary involves addressing a number of highly complex issues and key constructs. In the classroom context, the MI theory can serve as a viable framework for teaching vocabulary, as it offers a variety of strategies to address all types of learners and enhances vocabulary learning by making it more engaging and relevant to their needs and preferences.

Chapter Four: Research Methodology

Chapter Four: Research Methodology

Introduction

The present chapter provides an in-depth look into the methodology used in this study. It covers the design of the study, details about the population and sample, and the measurement instrument used. Additionally, it describes the pilot study, the implemented treatment, and the applied data analysis methods. The main aim is to put the hypothesis to test and ensure an efficient answer for the research questions.

4.1. Design of the Study

To answer the research questions and put the hypotheses into test, a quasi-experimental design was carried out. The Quasi-experimental design is suitable when trying to understand the effect of an educational intervention by looking into whether the intervention being done causes a significant change in an observed outcome or not (Gopalan, Rosinger, & Bin, 2020). Precisely, this design examines whether there is a causal relationship between dependent and independent variables (Rogers & Révész, 2020). In the case of this study, it tests the existence of a causal relationship between the expansion of vocabulary repertoire (dependent variable) and the use of MI-inspired instruction (independent variable).

Out of many existing quasi-experimental designs, this study is a nonequivalent-groups pretest-posttest design in which existing and appearing to be similar groups are chosen and are pretested and post-tested, while only one of the groups experiences the treatment (the EG). The question, then, is not just whether the group which receives the treatment demonstrates significant change but whether this change is significantly different in comparison with the group which does not receive

the treatment. Groups are nonequivalent in the sense that they were pre-existing groups that could not be randomly formed by the researcher due to administrative constraints. The pre-test is used to ensure the comparability of the two groups prior the treatment, and the post-test is to determine the effect of the treatment on the outcome variable (Rogers & Révész, 2020), i.e., the vocabulary repertoire.

Accordingly, two pre-existing groups of learners, which were already assigned to the researcher by the school administration before the study took place, participated in this study, one as the EG and the other as the CG. Before the treatment phase, the EG received a Multiple Intelligences Inventory to identify the predominant intelligences and the overall MI profile of the class, to design classroom MI-inspired instruction (the treatment) accordingly. Both groups were pre-tested and post-tested using the VKS test at the same time, to minimize time related confounds (Rogers & Révész, 2020). Only the EG received the treatment (MI-inspired instruction) through the course of 4 months.

In attempts to minimize threats of reliability and validity to the study, the researcher opted for a widely used standardized inventory and test developed by outstanding researchers in the field (McKenzie, 2017; Wesch & Paribakht, 1996). She, also, implemented the treatment for four months, duration long enough for any improvement in the outcome to occur (Nation, 2001). In addition, she opted for a single-blinded measure. Learners were not informed about the aim of the study at any stage, and they did not know which group they were in. This was to avoid any changed or improved behavior as a result of being studied, and so that their beliefs about the experiment are less likely to influence the outcome. Moreover, to avoid any form of bias, the researcher opted for a different teacher (other than herself) to score the pretests and post tests, who was also not aware of which group she was scoring.

It is also worth mentioning that the researcher carrying out this quaz-experiment herself. In a relatively small secondary school like Azri Mohamed with only four teachers of the English language (the researcher included), two of which were novice teachers, the researcher found herself obliged to carry out the research herself. Implementing the treatment needed background knowledge about the MI theory and its implementation in the classroom and careful planning. The researcher tried to stick to objectivity throughout the study and chose not to score the tests herself, to eliminate any personal biases.

4.2. Population and Sample

According to Miyahara (2000), sampling can have significant implications on the research process and the outcome of the study. The main concern is to select a set of population that is representative of the entire population, which will allow the researcher to generalize research findings from the sample to the population. How accurately the sample represents the population can be ameliorated by sample size and randomization. However, as previously explained, randomization was not possible, since participants in the study could not randomly be assigned to groups by the researcher. They were pre-existent before the study took place.

The target population for this study was 2AS learners of the literary and philosophy stream at Azri Mohamed Secondary School, in a small rural town, Hanchir Toumghani, in Oum El Bouaghi province. It is important to note that in small rural towns, the total number of learners attending school is not as high as in bigger towns. As a result, the number of classes in the present school is reduced to only six first year classes, five second year classes, and five third year classes. Additionally, by the end of the first year, many male learners generally drop out of school, mostly

to join the army or work, so we are left with classes of female majority. The researcher has been a teacher at the present secondary school for four consecutive years.

The choice of level and stream was made in regard to several reasons. First, given that the study was concerned with vocabulary and since the textbook was closely followed as the main tool of instruction, the amount of vocabulary the learners get to meet and are expected to learn was important. According to Torki (2012), the textbook of 2AS (Getting Through) contains 2503 word families, which is outstanding in comparison with 1AS (At the Crossroads) which contains 2203, and 3AS (New Prospects) which contains 2243 word families. Additionaly, second year learners get to encounter 646 new lexical items that they did not encounter before in any of the previous textbooks, including middle school ones, which is a considerable number (Torki, 2012). Hence, there was plenty of room and opportunity to foster vocabulary learning and aid learners learn new vocabulary, whether implicitly or explicitly. Second, given the precautionary measures taken by the ministry during the COVID-19 pandemic, literary streams were allocated three hours of English per week, in comparison with scientific streams which were allocated only two hours. Moreover, less than three treatment sessions per week did not seem enough. Third, although the content to be dealt with in the class has been shortened for all the streams, based on our experience as a teacher, the syllabus of EFL of the second-year literary stream is rich, diverse and not too long. Besides, it is well distributed throughout the school year, so there is enough time to implement MI-inspired teaching. Fourth, in comparison with first year learners, second year learners have a whole rubric dedicated to vocabulary (Working with Words) where they are expected to put the new vocabulary they learn into use.

Additionally, third year learners are known to focus on test taking strategies rather than improving their language proficiency, so it would not have been appropriate to opt for them. Therefore, second year learners in the literary and philosophy stream were well-suited for the study.

Accordingly, our study sample was made up of 44 second year literary stream learners, divided into two groups, with 22 learners per group: one was randomly chosen to be the CG, and the other as the EG. Originally, the two groups were part of the same class of 44 learners, but due to the COVID-19 pandemic precautionary measures taken by the Ministry of Education, all the classes were divided into two groups that were balanced in terms of gender and grades. Both groups study under the same circumstances, and have the same teachers. The majority of the participants were females (65.91 %), whereas 34.09 % were males. Their age ranged from 16 to 18, with the majority (68.18 %) falling in the age category of 17 years old, followed by 18 years old (25 %), and 16 years old (6.82 %). The profile of this sample is detailed in the following table:

Table 4. 1

Sample Participants' Profile

		N	**%**
Gender	Male	15	34.09 %
	Female	29	65.91 %
Age	16	3	6.82 %
	17	30	68.18 %
	18	11	25 %

4.3. Instrumentation

In order to answer the research questions, two main instruments were used. The researcher opted for well-researched and widely used standardized tools designed by professionals in the field, namely the Multiple Intelligences Inventory (Mckenzie, 2017) and the VKS (Wesche & Paribakht, 1996).

4.3.1. Multiple Intelligences Inventory

Inventories are self report instruments in which the subject gives an introspective report of their feelings, preferences, attitudes, interests, or abilities concerning certain situations and phenomena, which are then interpreted according to different theories (Sidhu, 2013). Inventories have been used in educational research to obtain trait descriptions of certain defined groups such as underachievers, dropouts, members of minority groups, etc. They have also been used in research concerned with interrelationships between personality traits and such variables as intelligence, achievement and attitudes. They are widely used for their economy, simplicity, and objectivity. In terms of MI, a person's thoughts, attitudes, and preferences, in relation to the way one perceives learning, how one learns something and how one would like to be taught are sorted into various areas. The area where a person's scores are relatively higher is considered to be the area of his greatest intelligence.

To help learners channel their mind capacities towards their EFL learning goals, specifically expanding their vocabulary repertoire in this study, teachers need to properly assess learners' intelligences and create their MI profiles. Even though there is not a one standardized instrument to measure the MI, self-reported inventories are widely used for their practicality, feasibility, and accessibility. They report how a person perceives oneself in a given shot of time. Self-reported inventories which reflect

learners' perceptions and beliefs about themselves as learners are reported to be an empowering tool because they are closely related to a person's self-esteem and confidence(Tirri, Nokelainen, & Komulainen, 2013). The instrument used to identify the class MI profile in this study was the widely used, among educators, Multiple Intelligences Inventory designed by Walter Mckenzie (2017). It is a non-copyrighted measure that has been reported to be applicable and useful in the classroom (McKenzie, 2005).

Mckenzie (2005) stressed that the MI inventory is not a test rather a snapshot in time of one's perceived MI inclinations. According to Herman, Kordinak, and Bruce (2009), this disclaimer particularly lent more validity to this self-report measure. The inventory was reported having a reliability coefficient of 0.86 by DeVillis (1991), and of 0.85 by Al-Balhan (2006) (As cited in Fariba & Akbar, 2019, p.79), and an overall internal consistency in the range of 0.85 and 0.90 (Hajhashemi & Wong, 2010), which is considered acceptable for many evaluations and studies (Fariba & Akbar, 2019).

The inventory mainly aims at creating individuals' MI profiles by identifying the predominant intelligence, from which the MI profile of the class was created, which is an average profile generated from all learners. It was based on the observable actions related to each type of intelligence presented by Gardner (1993). It mainly consists of four parts. Part one consists of nine sections corresponding to the nine intelligences, in the following order: naturalist, musical, logical, existential, interpersonal, kinesthetic, linguistic, intrapersonal, and visual. Each section comprises 10 statements corresponding to one type of intelligence. For each statement, learners enter number zero (0) if they do not agree (e.g. I easily pick up on patterns) and one (1) if they agree with the statement (e.g. I learn by doing) or enjoy the activity being described (e.g. I

enjoy working in a garden), and then they count the total they get under each section. The following is a sample from the inventory. Section 2 stands for musical intelligence.

Table 4. 2

A Sample from Multiple Intelligences Inventory

Section 2
_____ I easily pick up on patterns
_____ I focus in on noise and sounds
_____ Moving to a beat is easy for me
_____ I enjoy making music
_____ I respond to the cadence of poetry
_____ I remember things by putting them in a rhyme
_____ Concentration is difficult for me if there is background noise
_____ Listening to sounds in nature can be very relaxing
_____ Musicals are more engaging to me than dramatic plays
_____ Remembering song lyrics is easy for me
_____ TOTAL for Section 2

(Mckenzie, 2017).

In part two, learners are asked to place the totals into a table and multiply it by 10 to get a score for each section. In part three, they are asked to plot the scores they get from part two on a bar graph, to finally find the keys of what intelligence each section represents and see in which intelligence they scored the highest, which is their predominant intelligence.

McKenzie (2005) emphasized that it is important for the teacher to remember:

- Every learner has all the intelligences.

- Any intelligence can be strengthened.

- The MI Inventory is meant as a snapshot in time. Intelligence preferences can change.

-The MI theory is meant to empower learners, not label them.

A printed version downloaded from the Surfaquarium website was used (Appendix 1).

4.3.2. Vocabulary Knowledge Scale

The VKS (Developped by Wesche and Paribakht, 1993, 1996) is the most widely used insturement to assess the quality (depth) of knowledge of vocabulary items (Dóczi & Kormos, 2016; Schmitt, 2010;Webb & Webb, 2020). It differs from other vocabulary tests because it requires verifiable evidence of productive knowledge (Schmitt, 2010).

It is a generic instrument, which can be used with any set of words. It distinguishes between receptive and productive knowledge as a way of assessing different degrees of word knowledge (Zwier & Boers, 2023). It is designed to test the developmental nature of word knowledge, by tracking small changes in vocabulary knowledge (Webb & Webb, 2020). Moreover, it combines self-report with demonstrated knowledge. It has also been proved to be sensitive to both implicit and incidental vocabulary knowledge (Wesche & Paribakht, 1996). According to Dóczi and Kormos (2016), the VKS is suitable to quickly and efficiently assess recognition and recall of vocabulary after specific teaching interventions. The test was reported to be reliable (Wesche & Paribakht, 1996). Noteworthely, the realiability of the test was determined through testing a word list of thirty two words (N=32) (Syeda & Syeda, 2017).

This is why the present study opted to test a word list of thirty two words, so as not to threaten the reliability of the test.

The original VKS is a five-point scale with five categories on the basis of which learners can rate their knowledge of a given word. The scale ranges from total unfamiliarity i.e., having no memory of encountering the word to being able to use it in a sentence. It measures progressive degrees of word knowledge. Level 1 reflects what the subject does not know. Levels 2, 3 and 4 are measures of recognition, and Level 5 is a measure of productive vocabulary (Warning, 2002; Webb & Webb, 2020).

Table 4. 3

Vocabulary Knowledge Scale

1. I don't remember having seen this word before.
2. I have seen this word before, but I don't know what it means.
3. I have seen this word before. I think it means _____ [synonym or translation]
4. I know this word. It means _____ [synonym or translation]
5. I can use this word in a sentence: _____

(Wesche & Paribakht, 1996, p.25).

The first two categories rely on self-reporting:

Category 1 (*I don't remember having seen this word before)*: the word is not recognised at all.

Category 2 (*I have seen this word before but I don't know what it means)*: the word is recognised but the meaning is unkown

For the theree remaining categoris, learners are asked to demonstrate verifiable evidence of their responses.

Category 3 *(I have seen this word before. I think it means__)* and Category 4 *(I know this word. It means__)* involve an element of judgment to how sure is the student of what the word means with demonstration of understanding by means of a synonym or a translation.

Category 5*(I can use this word in a sentence__)* moves from receptive knowledge to productive. Learners have to demonstrate knowledge of the word by using it in a sentence.

When piloting the test, there was a great confusion among learners between category 3 *(I have seen this word before. I think it means__)* and category 4 *(I know this word. It means__)*. Learners did not seem to understand the distinction between the two and insisted that they were the same. As a result, since 'simplifications of the test format are possible' (Zwier & Boers, 2023, p.144), and to avoid any ambiguity, category 3 was eliminated and a four-point scale was used instead, which was similarly done by a previous study for encountering the same problem (Arab, 2015). Besides, 'such metalinguistic judgments can be difficult for some learners to make' (schmitt, 2010, p.220). Additionally, a combination of category 3 and 4 was recommanded by Zwier and Boers (2023), especially if the researcher is not interested in assessing learners' confidence about their answers.

Furthermore, we were repeatedly asked by learners wether they can use another form of the same word when producing the sentences. Thus, a note was added at the end of the table stating that any other form of the target word is accepted. In fact, the aim of the study was to focus on vocabulary and not to over load learners with

grammatical correctness. For example, other forms of the word ‘recycling’ like ‘recycle’ and ‘recycled’ were accepted and scored correct.

The form of the test was, thus, changed to a more practical one, which was more convinient than the original one to answer and to score. Each category was also translated into Arabic to avoid all misunderstanding and wasted time in translatingas happened in the piloting phase. Remarkably, answering this form took less time than it did in the pilot study. The VKSused in the study (See Appendix 2) looks as follows:

Table 4. 4

Modified Version of the Vocabulary Knowledge Scale

Words الكلمات	1. I don’t remember having seen this word before لا اذكر أنني رأيت هذه الكلمة من قبل Use (✓)	2. I have seen this word before but I don’t know what it means رأيت هذه الكلمة من قبل لكن لا اعرف ماذا تعني Use (✓)	3. I know this word. It means…….. (Synonym or translation) انا اعرف هذه الكلمة. مرادفتها هي..... او ترجمتها بالعربية .....هي	4. I can use this word in a sentence. E.g.…… استطيع استعمال هذه الكلمة في جملة مفيدة. مثال.....
Target Word				

As for scroing, given that we omitted one category, an adapted versionwas used.The resultswere scored as follows instead:

Table 4. 5

VKS Scoring

	Scores	Meaning of Scores
Category 1	1	The word is not familiar at all.
Category 2	2	The word is familiar but its meaning is unkown
Category 3	3	A correct synonym or translation is given
Category 4	4	The word used in a sentence is semantically appropriate but is grammatically incorrect.
	5	The word is used both with semantic appropriateness and grammatical accuracy in a sentence

(Adapted from Wesche & Paribakht, 1996).

4.4. The Pilot Study

A pilot study is a small-scale study carried out before the full-scale study, which should be an integral part of research designs**.** It aims to test how likely the research is to work in reality, based on which the researcher can refine the research design (Ismail, Kinchin, & Edwards, 2018)**.** Potential obstacles in sampling, instrumentation, the intervention, and data collection are put into test to make necessary adjustments in order to improve the design of the actual study.

Accordingly, in order to assess the practicality and feasibility of our research, a pilot study was conducted during the first term of the 2020-2021 school year. This pilot study lasted for four weeks, beginning in third week of September. During this period, both the intervention and the instruments were piloted. Initially, to align with the sample of the main study, the researcher opted for a group of 23 second

year learners from the literary stream, maintaining consistency with the target sample of the main research.

Next, following the same procedure intended for the main study, the pilot group first took the MI inventory. After a brief presentation of the inventory and its purpose, the teacher distributed the inventory and gave learners the free will and time to answer it, then collected the papers at the end of the session (which took 45 minutes). The teacher noticed that learners filled out the inventory neglectfully, without asking any questions. After reviewing the responses, it was found that the majority of learners did not answer seriously, leaving most of the items unanswered. This is why the teacher decided to administer the inventory in a more guided and directive manner in the main study: the teacher led the learners through each section step-by-step, ensuring that all learners completed one section before moving to the next. She also emphasized that learners should stop her and ask for clarification or translation if needed. This conduct took more time requiring two consecutive sessions, but it helped ensure the accuracy and reliability of the responses.

After that, the VKS test was piloted. The original version of the VKS was used. The main concern when administering any kind of assessment to learners is test anxiety. In the pilot study, the test was administered without informing the learners pre-hand. The teacher noticed that the learners were stressed and repeatedly asked questions like, ‘what is the purpose of this?’ and ‘will this affect our course grades?’ Consequently, in the main study, the teacher made sure to inform the learners the test a session in advance. She also clarified that their performance on the test would have no impact on their course grades. Other inconveniences were faced concerning the length and the content of the test, which also needed revision. This point was discussed in details in the instrumentation section (Section 4.3.2.).

In piloting the treatment, over a period of four weeks, the first concern was managing time constrains. Originally, the researcher planned to devote one hour per session, with four sessions per week to implement the treatment. However, due to COVID-19 precautionary measures, the English session duration was reduced to 45 minutes, and the number of sessions per week for the literary stream was reduced to three. As we piloted the treatment, we concluded that the shortened 45-minute sessions were insufficient for the teacher to effectively integrate the MI-inspired instruction. Moreover, the official syllabus was condensed, with much content omitted and most production activities assigned as homework. This left little opportunity for targeting vocabulary learning through the MI.

Additionally, the risk of school closures due to the pandemic meant that the treatment could be interrupted and left incomplete at any time. Given these constraints, we decided to postpone the main study to the following school year (2021-2022).

4.5. The Treatment

4.5.1. Word List

According to Bishop, et al. (2009), one of the difficult tasks EFL teachers are faced with is to determine which words to target for instruction and assessment. The most obvious answer to the question of ‘given time constraints, which words to prioritize for teaching and assessment?’ is: ‘the most frequent ones that are repeatedly encountered and used in daily communication’. However, the most frequent words in English are function words and common words like: I, be, have, people, and good, etc. (McCarten, 2007), which are not good candidates for instruction (Bishop, Yopp, & Yopp, 2009). Learners at the 2AS level should already be familiar with a good

estimate of them, given that English is introduced at the middle school in Algeria. Moreover, According to Schmitt (2000), in a classroom setting , the words to be tested should be selected from those covered in the course. Thus, the teacher is in best position to know the words learners should master (Zwier & Boers, 2023).

Accordingly, choice of the target word list to be dealt with in the study was made with regard to several considerations. According to Torki (2012), the target sample gets to encounter 646 new lexical items, if solely relying on the textbook. Additionally, some themes needed extra materials that were not included in the textbook. This number is challeging to teach and assess. Moreover, unlike the first-year textbook, the second-year textbook did not include pre-made glossaries to rely on. Consequently, the teacher had to compile her own word list with assistance from colleagues at the same school. The choice of the word list was mainly based on the key lexical items needed to understand the themes of each unit and that were essential to comprehend texts, audios, and videos, as advised by Ur (2022).

Accordingly, the teacher first reviewed the materials to be used throughout the treatment and created a word list of about 40 items. These words were specifically selected because they necessitated explicit focus, as they were essential for understanding the themes of each unit and for performing the associated tasks. The remaining three teachers at the same school were asked to compile their own lists. The researcher then analysed the four lists to identify 32 common key words (eight words from each of the four units included in the treatment). The researcher specifically did not want the number of words to be intimidating to learners. However, any less number than that would hinder the reliability of the vocabulary test (Nation, 2001). The following, is an illustration of the target word list.

Table 4. 6

List of Target Words

Unit 2: Make Peace **Theme:** Peace and conflict resolution	Peace - Conflict - Human rights - Duty - Manifestation - Racism - Dream- Bullying
Unit 3: Waste not, Want not **Theme:** Poverty and world resources	Waste - Pollution - Deforestation - Renewable energy - Recycling - Sustainable development - Conservation - Natural resources
Unit 4: Science or Fiction **Theme:** Fiction of reality	Film-maker - Speculation - Biography - Scenario - Science-fiction - Futuristic - Discovery - Imagination
Unit 5: No Man is an Island **Theme:** Disasters and safety	Pandemic - Catastrophe - Donation - Natural disaster - Charity - Emergency - Solidarity - Safety

4.5.2. Multiple Intelligences-Based Instruction

According to Zwier and Boers (2023), the most common aim of avocabulary intervention study is to determine how effectivedifferent strategies are for teaching new lexical items to a specific group of learners. Relatively, the present study investigated the sensitivity of learners' vocabulary repertoire to the MI theory in particular. It did not focus on intensive vocabulary teaching at the expense of other aspects of language. The researcher kept faithful to the curricular objectives as a whole. Hence, language use was given more time in the course instead of intensive explicit vocabulary teaching. We primarily focused on promoting implicit vocabulary learning through creating opportunities inspired by the MI theory to meet words in

reading and listening, and using them in speaking and writing. Explicit vocabulary instruction was directed towards target key words that were essential to understanding the themes of each unit and the used materials, and which were essential to carrying out the tasks.

As discussed in the previous chapter (Section 3.6.1.), the main two approaches to vocabulary teaching are the implicit and the explicit approaches. For effective vocabulary learning a combination of both approaches is recommended (Chacón-Beltrán, Abello-Contesse, & Torreblanca-López, 2010; Dóczi & Kormos, 2016; National Reading Panel, 2000; Schmitt, 2000). However, with respect to Nation's (2001) view that more emphasis should be given to implicit vocabulary learning, and that explicit vocabulary teaching should occupy only a small part of the course and Zwier and Boers's (2023)affirmation that deliberate vocabulary teaching does not suffice to make proficient communicators, the present study combined both implicit and explicit teaching of vocabulary with more emphasis on the former. Only target key words received explicit attention because, given time constraints, only a small number of words can be taught explicitly.

Based on Ur's tips (2022), the suggestions of Bishop, et al. (2009), and the conclusions of the the National Reading Panel (2000), vocabulary instruction in the present classroom encompassed the following strategies:

- **Introducing the target words in rich contexts:** For example, learners got to meet the target word 'recycling' in a video about recycling clothes, in a text about recycling plastic, and in representative pictures.
- **Drawing attention to the forms and meanings of new lexical items encountered in texts, audios, and videos, attending to the different intelligences:** The teacher often asked learners to raise one finger when they

see or hear a word they do not know, specifically key words, to stimulate bodily-kinesthetic intelligence; wrote the new word on the board, or used 'Semantic Maps' to elicit related knowledge to the target word to awaken visually and logically intelligent learners; and asked learners to look up the word in the dictionary to cater for linguistic intelligence. On other occasions, the teacher directly provided 'student-friendly explanations' by using familiar terminology to provide a definition, a synonym, a translation, or an example of its use.

- **Encouraging learners to write down new items and review them:** All learners were instructed to keep a 'KWL Chart' (Bishop, Yopp, & Yopp, 2009) at the back of their copybooks (Know- Want to know- Learned) to keep track of the vocabulary they are learning. They were asked to reflect on them occasionally, and they were asked to share their charts with other learners, all of which target several intelligences at a time.
- **Repeated exposure and multiple opoortunities to use the new words orally and in writing:** Learners were always instructed to use the new lexical items they learn during the course in dialogues, compositions, acting scenes, etc.

Furthermore, based on Gardner's (1983, 1999) definitions of the nine intelligences, the teaching strategies suggested by Fleetham (2006), and Armstrong's (2000) summary of the eight ways of teaching with the intelligences, a table of instructions was set. The aim was to promote vocabulary learning both implicitly and explicitly via all the intelligences with emphasis on the predominant intelligences from the class's MI profile. As evident, the following table of MI-inspired instruction does not focus solely on vocabulary. It addresses all aspects of language and does not deal

with vocabulary in separation. The integration of this table and its application according to the lesson's objectives is demonstrated in the provided lesson plan (Appendix 3)

Table 4. 7

Summary of the Used Materials and Instructions

Intelligences	**Materials**	**Instructions**
Linguistic	-Crosswords -Worksheets -Dictionaries -Texts	-Read -Write -Discuss -Use the dictionary *(to look up new words) (to look up a certain word)* -Tell a story *(using the new vocabulary you have learned)*
Spatial	-Pictures -Videos -Diagrams & graphs -Graphic organizers -Posters	-Look closely -Watch -Draw/sketch *(of a word)* -Imagine -Observe
interpersonal	-Dialogues -Group work -Pair work -Peer review	-Collaborate -Interact *(using the new vocabulary you have learned)* -Work in pairs/groups

	-Group brainstorming	-Share ideas/ new vocabulary you've learned.
Logical-mathematical	-Mind maps *(semantic maps)* -Tables -Charts *(KWL)*	-Classify *(words)* -Categorize -Reorder -Deduce *(deduce the meaning of a word from context)*
intrapersonal	- Personal note books - Self checking tables - Independent study time	-Take notes *(of new words you have learned using the KWL chart)* -Choose -Reflect on your own answer/production, new words you have learned...
Musical	-Songs worksheets -Audio scripts	-Sing along -Listen to a dialogue / a song -Mark stress/intonation *(on key words)*
Bodily-kinesthetic	-Role plays -Oral presentations	-Act out/perform -Hands-on/Fingers-on when... *(meeting a new word you do not understand, etc.)* -Make/recycle...
Naturalist	-Outdoor class	-Debate natural issues *(using the new vocabulary you have learned)* -Perform outdoors -Recycle

Existential	-Think about -Reflect on

It is also important to mention that the CG was only exposed to instruction and materials included in the textbook. According to Hadj Said (2021), a content analysis revealed that the 2AS textbook is predominantly focused on verbal-linguistic intelligence (64.65%), followed by interpersonal intelligence (10.87%), visual intelligence (5.47%), logical-mathematical and naturalistic intelligence (5.43%), intrapersonal and bodily-kinesthetic intelligence (3.92%), with no emphasis on musical intelligence (0%). The findings indicated that the predominance of linguistic intelligence reflects a notable absence of consideration for the MI theory in the design of the textbook and its instruction (Hadj Said, 2021).

4.6. Means of Data Analysis

To answer the research questions and test their corresponding hypotheses, the researcher opted for different statistical methods of data analysis using Excel and SPSS. Statistical analysis was undertaken through both descriptive and inferential statistics. Fundamental statistics like the mean, average percent, standard deviation and standard error mean were ran through descriptive statistics, in addition to Boxplots used to summarize the distribution and the potential outliers of data. In terms of inferential statistics, normality tests were used to determine if the data set was well-modeled by a normal distribution and, consequently, if data-derived inferences could reliably use techniques assuming normality. Paired and independent sample t-tests, which provide insights that help infer properties about the population based on sample data, were used

to determine whether there was a statistically significant difference between the means of the target groups, and to measure improvement prior and post the treatment.

4.7. Procedure

The study covers four units from the official syllabus over a period of four months (18 weeks), with three hours of instruction per week. It started in January 2022 and extended through the 2021/2022 academic year. Before any intervention, the EG completed the MI inventory on December 6th, 2021, to gauge their MI profile and identify the predominant intelligences. The inventory was distributed and explained in both English and Arabic as needed, taking two sessions (Two hours) to complete. The focus of the treatment was on the three most predominant intelligences to address the majority of learners, but the rest of the intelligences were not neglected. It was unnecessary for the CG to take the inventory since there was no planned MI intervention for this group. Later on the same day, the teacher answered the MI inventory herself. As discussed in the theoretical part, it is essential for teachers to develop self-awareness about the intelligences they tend to use in their teaching and those they tend to avoid, so they can adjust their teaching accordingly.

On January 5th, 2022, the experimental and the CG undertook an adapted version of the VKS pre-test, A whole session (One hour) was dedicated for each group. There were a total of 32 key words in the test.

The CG received traditional instruction following the textbook and the official syllabus. Instructions received by the EG were based on the MI theory, respecting the results from the Multiple Intelligence Inventory.

Both groups were post-tested at the end of the study to check whether there is improvement in their performance, and whether there is a significant difference between the scores of the experimental and the CG. The collected data was analyzed using descriptive and inferential statistics and SPSS.

The following table details the procedure:

Table 4. 8

Procedure's Timeline

Dates	**CG**	**EG**
December 6th, 2021	//	MI inventory
January 5th, 2022.	VKS pre-test	VKS pre-test
From January 6th, 2022 To May 4th, 2022	Instruction following the textbook	Treatment: MI inspired instruction
May 5th, 2022	VKS post-test	VKS post-test

Conclusion

The current chapter presented an overview of the methodology implemented in this study. It provided a description of the design of the study, the population and sample, the instrumentation, the pilot study, the implemented treatment, data analysis tools, and the procedure followed in aims to put the hypotheses into test and effectively answer the research questions.

Chapter Five: Vocabulary Repertoire and MI-Inspired Instruction: Field Work

Chapter Five: Vocabulary Repertoire and MI-Inspired Instruction: Field Work

Introduction

This chapter presents and analyses the findings from the different measures of analysis undertaken in order to answer the research questions and put into test the corresponding hypotheses. The first section is dedicated to statistical findings from the MI inventory. The second section describes date gathered from the VKS test prior and post the treatment. The third section is a detailed discussion and interpretation of the results.

5.1. Multiple Intelligences Profile

As previously mentioned, the Multiple Intelligences Inventory was used to gauge both the EG's and the teacher's MI profile. To test the hypotheses related to the MI profile, both the teacher and the learners have answered the inventory.

5.1.1. Multiple Intelligences Profile of the Class

The following table displays the predominant intelligence(s) identified from each learner's inventory. A total of 22 learners completed the inventory, generating 22 distinct MI profiles. Of these 22 profiles, eight were characterized by a combination of two predominant intelligences identified across the EG, as some learners exhibit strong tendencies in more than one intelligence. The results were generated using SPSS.

Table 5. 1

Predominant intelligence(s) of the Class

Student	Predominant Intelligence(s)	Student	Predominant Intelligence(s)
1.	Scl	**12.**	Ntr-lng
2.	Vis	**13.**	Lng
3.	Intra-lng	**14.**	Lng
4.	Kns -Vis	**15.**	Lng-vis
5.	Lng-scl	**16.**	Intra
6.	Log	**17.**	Vis
7.	Mus	**18.**	Scl
8.	Intra-log	**19.**	Lng
9.	Vis	**20.**	Lng
10.	Scl-mus	**21.**	Log
11.	Scl	**22.**	Kns -Vis

Each intelligence is abbreviated as follows: naturalist (**Ntr**), musical-rhythmic (**Mus**), logical-mathematical (**Log**), existential (**Ext**), social-interpersonal,(**Scl**), kinesthetic-bodily (**Kns**), linguistic-verbal (**Lng**), intrapersonal (**Intra**), and visual-spatial (**Vis**)

Table 5. 2

Summary of Statistics of the Class MI Scores

Metrics	Ntr	Mus	Log	Exst	Scl	Kns	Lng	Intra	Vis
Percentage	6.39%	8.10%	12.42%	5.55%	15.35%	7.55%	18.64%	8.40%	17.60%
Mean	2.39	3.02	4.57	2.14	5.73	2.82	6.95	3.14	6.57
Std. Deviation	1.29	1.53	1.38	1.08	1.95	1.63	1.40	2.31	1.34

First, the percentage represents the proportion of learners who scored predominantly in each of the nine intelligences. It helps to understand how many learners (out of the total 22) predominantly display each type of intelligence. Second, the mean, or the average score, is a central tendency measure that provides an overall idea of the typical score in each of the nine intelligence categories. It indicates where the majority of scores lie and serves as a reference point for comparing the scores of different intelligence categories. Third, the standard deviation indicates the extent to which the scores in the data set deviate from the mean (average) value. It helps to understand the variability or dispersion of the learners' scores across the nine intelligence categories (Kaufhold & Kaufhold, 2013).

As presented in table 5.2., linguistic (18.64%), visual (17.60%), and social (15.35%) intelligences have the highest percentages, followed by logical (12.42%), intrapersonal (8.40%), musical (8.10%), kinesthetic (7.55%), and naturalist (6.39%) intelligences. Existential intelligence has the lowest percentage (5.55%). It is also noted that, on the one hand, intrapersonal intelligence has the largest standard deviation

(2.31). This indicates that there is a wide variation in learners' levels of intrapersonal intelligence, reflecting a wide range of abilities in this particular intelligence. Some learners have very high scores, while others have very low scores resulting in a greater spread of data points around the mean. On the other hand, existential intelligence has the lowest standard deviation (1.08). This suggests that the learners' existential levels are relatively similar, reflecting less variation in their abilities in this particular intelligence, meaning that most learners scored around the same range.

Figure 5. 1

Distribution of the Class MI Percentages

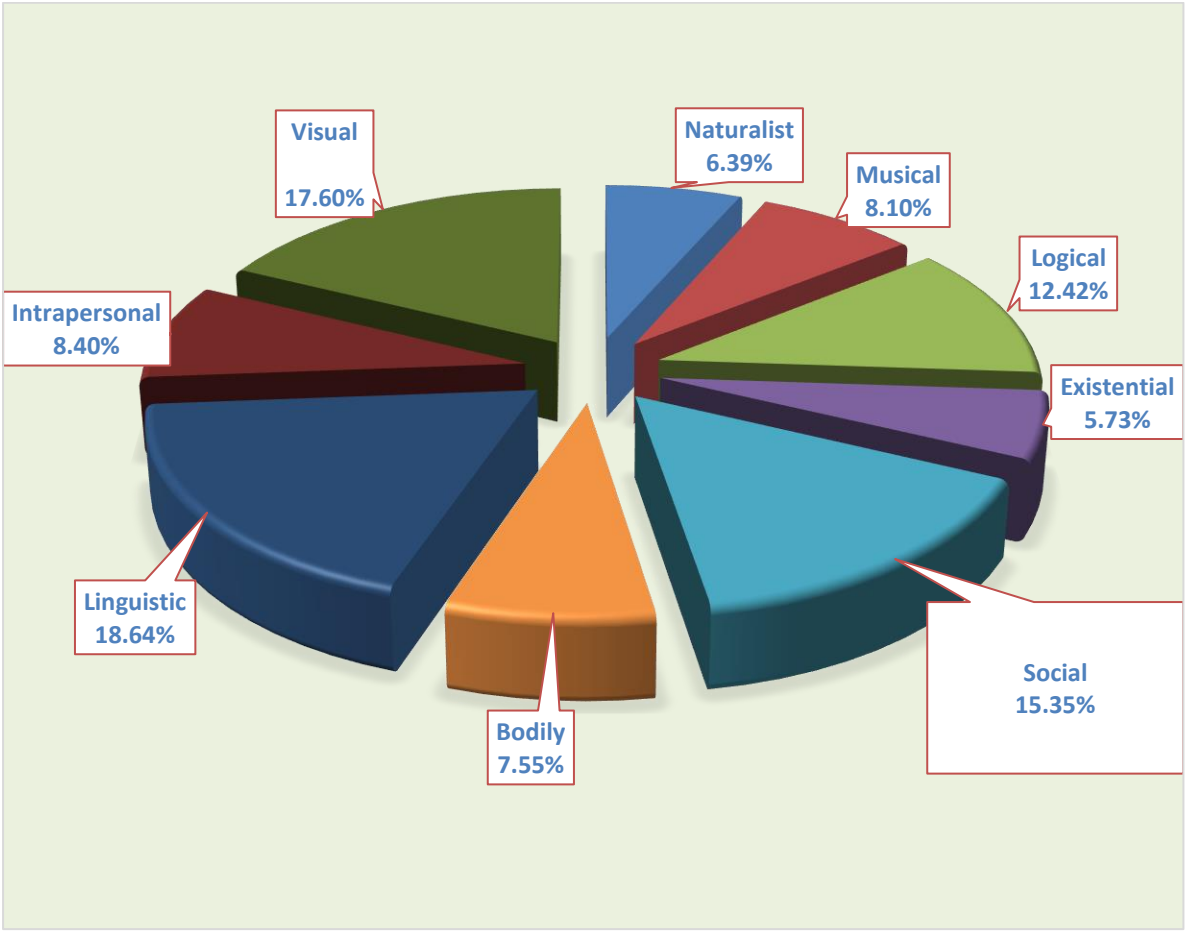


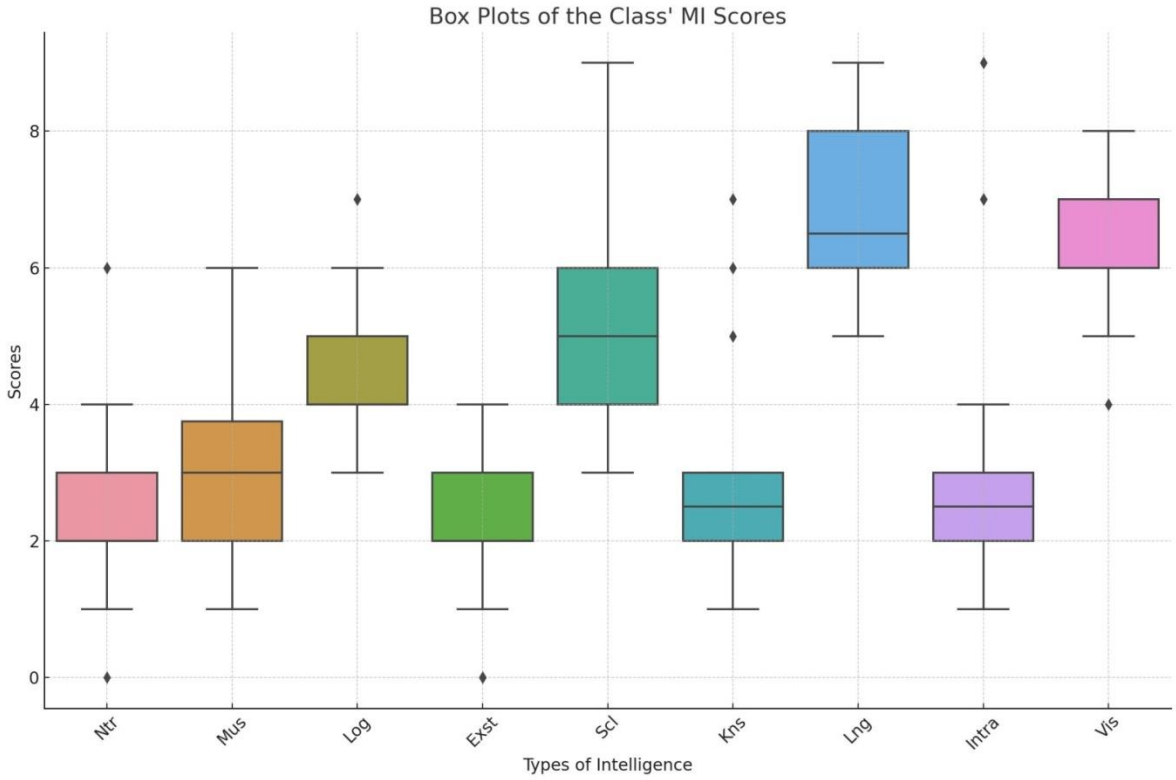
Figure 5.1 shows a spectrum of MI in the class, ranging from 5.73% to 18.64%. This indicates that the class MI profile is predominated by linguistic-verbal

(18.64%), visual-special (17.60%), and social-interpersonal (15.35%) intelligences, followed by logical-mathematical (12.42%), intrapersonal (8.40%), musical-rhythmic (8.10%), and kinesthetic-bodily (7.55%). The least pronounced intelligences are naturalist (6.39%) and existential (5.73%) intelligences. As evident, linguistic intelligence is the most predominant (18.64%), reflecting learners' ability to successfully learn via language and speech. Meanwhile, existential intelligence is the least pronounced (5.73%), revealing that learners are less proficient in thinking about existential themes.

It is important to note that the calculated percentages represent the distribution of scores across different intelligence types for the entire class, not the predominance of a particular type of intelligence in individual profiles. Each percentage reflects the presence of the intelligence across the class as a whole, even when it is not the predominant intelligence for any individual MI profile. For instance, none of the learners' profiles predominantly featured existential intelligence but the intelligence itself still received scores in the inventory, which means that learners had some level of existential intelligence, but it was not the highest or most defining trait in any single student's MI profile. The percentage here reflects the presence of this intelligence across the class as a whole, even if it is not the predominant intelligence for any individual learner.

Figure 5. 2

Box Plots of the class MI Scores



The Box plot is a type of statistical chart used to represent the distribution of quantitative numerical data in a way that illustrates different probability values, dispersion, and outliers in the data. Box plots are calculated to identify the central tendency, variability, and potential extremes in data, which can detect any anomalies or outliers in the scores, resulted from measurement errors or unique individual characteristics that might necessitate further investigation (Dawson, 2011). The box plots displayed in Figure 5.2 demonstrate the distribution of multiple intelligence scores obtained from the inventory across different types of intelligence for a class of 22 learners. Each box plot provides a visual summary of one type of intelligence, showing the median, the interquartile range, and potential outliers. These plots give a clear and concise overview of how scores are spread out, where they tend to cluster, and how they vary from one type of intelligence to another.

The plots demonstrate significant variability in the obtained scores across all types of intelligence, showing a diverse set of strengths and weaknesses within the class. For instance, some intelligence types like social and linguistic have higher median scores compared to others such as kinesthetic, which might indicate a general preference for social and verbal activities among the learners. The outliers in several intelligence types like naturalistic and intrapersonal refer to learners who score exceptionally low in these areas compared to their peers. Moreover, some intelligences show a skewed distribution; particularly, kinesthetic and intrapersonal scores are skewed towards the lower end, suggesting fewer learners excel in these intelligences

5.1.2.Multiple Intelligences Profileof the Teacher

As previously discussed, it is important for teachers to be aware of their own strengths and weaknesses when it comes to teaching with the different intelligences. By recognizing which intelligences they naturally focus on and which ones they might neglect, teachers can have a better understanding of their teaching tendencies. This awareness helps them make the necessary adjustments to address a broader range of learning needs, leading to more effective teaching practices. Results gathered from the teacher's response to the same Multiple Intelligences Inventory that the learners answered are used to create her MI profile which is presented as follows:

Table 5. 3

MI Profile of the Teacher

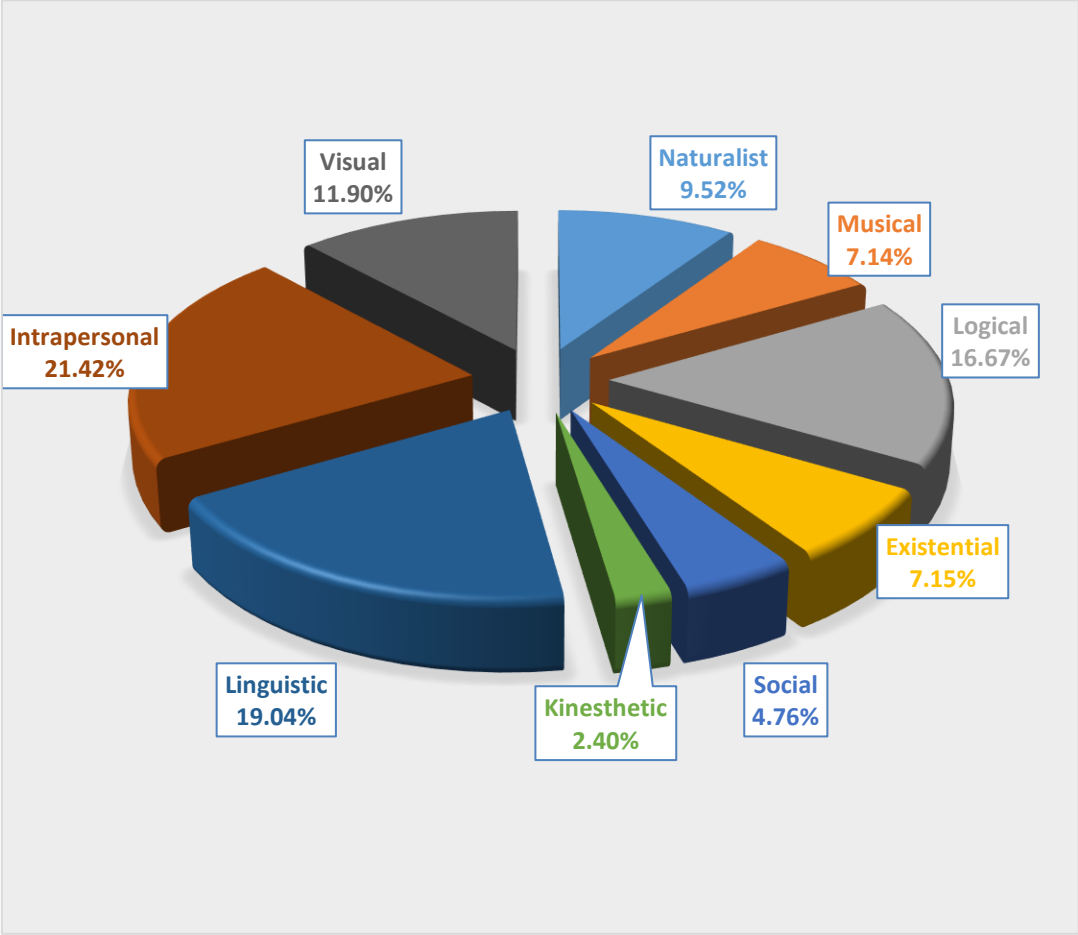
Intelligence	**Score**	**Percentage**
Naturalist	4	9.52%
Musical-Rhythmic	3	7.14%
Logical-Mathematical	7	16.67%
Existential	3	7.15%
Social-Interpersonal	2	4.76%
Kinesthetic-Bodily	1	2.40%
Linguistic-Verbal	8	19.04%
Intrapersonal	**9**	**21.42%**
Visual-Spatial	5	11.90%

Table 5.3 shows a predominance of the intrapersonal intelligence (21%) followed by the linguistic (19.04%), and logical (16.67%) intelligences. Visual

(11.90%),naturalist(9.52%), existential (7.15%),musical (7.14%), social (4.76%), and kinesthetic (2.40%) intelligences scored lower, indicating that the teacher shows less strength in these areas. Notably, all the intelligences are present in this MI profile.

Figure 5. 3

Distribution of the Teacher MI Percentages

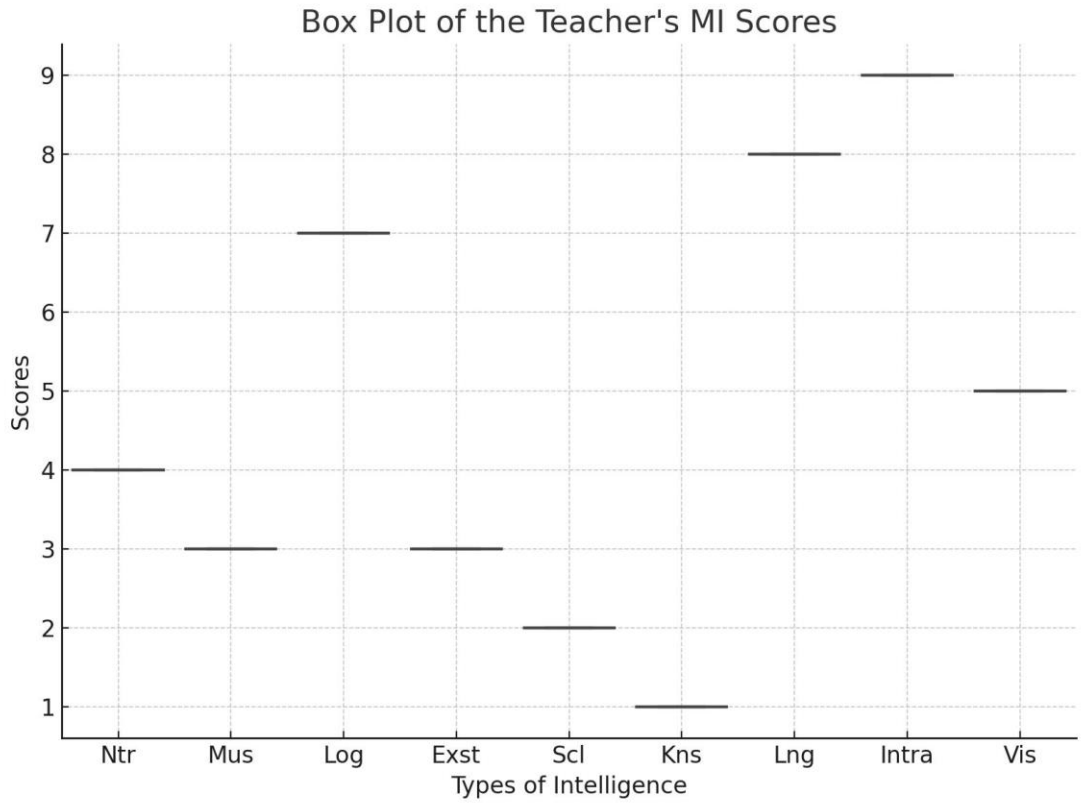


According to the results outlining the teacher's strengths and weakness across different intelligences, it is evident that she has diverse preferences towards the MI. The teacher has notable intrapersonal (21.42%) and linguistic-verbal (19.04%) intelligences, which are substantially higher compared to the other intelligences, followed by logical-mathematical (16.67%) intelligence. Additionally, there is tendency towards visual-spatial (11.90%) and naturalist intelligence (9.52%), and equally modest preferences for existential and musical-rhythmic (7.14%)intelligences,

whereas, social-interpersonal (4.76%) and kinesthetic-bodily (2.38%) intelligences demonstrate the least preference, indicating lesser inclination in these two intelligences. These percentages reflect a strong self-awareness and verbal communication skill set, essential traits for effective teaching and personal reflection. The lower scores in areas like kinesthetic (2.38%) and social (4.76%) might indicate lesser developed skills in these domains, suggesting potential areas for professional growth or development.

Figure 5. 4

Boxplot of the Teacher MI Scores



Given the nature of the data set of the teacher's MI scores, which includes only one individual's scores, the typical spread like quartiles and median cannot be displayed. Instead, the plot shows a single line at each score across the types of intelligence, reflecting the teacher's preferences in each intelligence. According to the plot,

the teacher excels in intrapersonal and linguistic intelligences with scores of 9 and 8 respectively, indicating high emphasis on oneself, and a proficiency in language-related skills. These are important traits for a teacher, as they enable effective communication and personal reflection, crucial in educational settings. Lower scores in Kinesthetic and Social intelligences, at 1 and 2 respectively, indicate areas where there might be room for growth or less natural inclination.

5.1.3. Comparison between the Teacher and the Class MI Profile

Given the nature of the data and since the teacher's data consists of the scores of only one individual, statistical comparison of the two profiles like the t-test, which is designed for samples with multiple data points, is inapplicable in this case. Accordingly, to handle the data limitations, descriptive statistics was used to compare the MI percentages of the teacher against the class percentages directly.

Table 5. 4

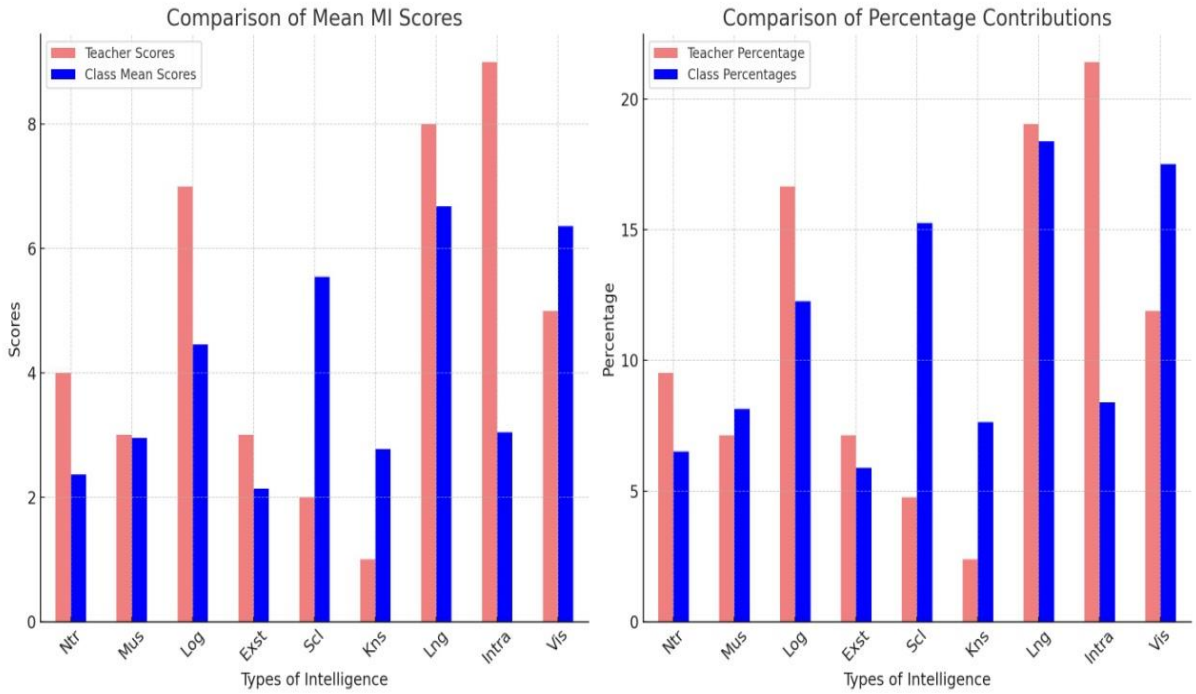
Percentage Differencebetween the MI Profile of the Students and the Teacher

Intelligence	Difference in percentage
Naturalist	3.13
Musical/Rhythmic	-0.96
Logical /Mathematical	4.25
Existential	1.60
Social/Interpersonal	-10.59
Kinesthetic/Bodily	-5.15
Linguistic/Verbal	0.40
Intrapersonal	13.02
Visual/Spatial	-5.70

The comparison of percentages of the two MI profiles is displayed in the table 5.5. As indicated, the teacher demonstrates a significantly higher percentage in intrapersonal intelligence (13.02%) than the class average, reflecting strong personal and reflective capacities. In contrast, social intelligence is notably lower in the teacher's profile compared to the class, with difference of -10.59%, indicating less development in her social skills. Visual and kinesthetic intelligences of the teacher are also lower than those of the class with difference of -5.70 and -5.15 respectively, indicating that the class is more picture and body smart. Notably, both profiles scored the least percentage difference in linguistic intelligence (0.40), suggesting that both the teacher and the class have strong similar verbal strengths.

Figure 5. 5

Representation of the Teacher Versus the Class MI Profiles



The graphs illustrate a comparison between the mean scores and the percentage contributions of each type of intelligence for both the class and the teacher. They highlight the areas where the teacher's strengths stand out compared to the class average. As shown, the teacher is significantly more intrapersonally and logically intelligent, whereas the class is more socially and visually intelligent. Both the teacher and the class have a significantly high and approximate level of linguistic intelligence and a similarly low level of musical intelligence. In comparison with the class MI profile, the teacher has to overcome his intrapersonal tendencies to match the dominant social energy of the class.

5.2. Vocabulary Knowledge Scale

The VKS was used as a testing tool to assess whether MI-inspired instruction has a positive outcome on the learners' vocabulary repertoire. Both groups, the experimental and the control one, took the VKS test, prior and post a four-month treatment period, noting that the CG did not receive the treatment in question. A word list of 32 items was used (N=32). Before running any statistical analysis, Box Plots and Normality Tests were conducted to verify the normal distribution of scores and identify any outliers. Then, data was analyzed quantitatively by calculating the mean, standard deviation, and standard error of the mean. After that, the paired and independent sample t-test were used to identify and measure improvement in the mean scores of both groups (Kaufhold & Kaufhold, 2013), prior and post the treatment.

5.2.1. Normality Tests and Boxplots

Statistically, with respect to the general assumption that the dataset follows a normal distribution, it was necessary to assess the distribution of the present data

gathered from both the pretest and the post-test through the calculation of normality tests and boxplots. Boxplots provide visual representations of the distribution of data, including measures such as median, quartiles, and potential outliers. These analyses are important for understanding the characteristics of the data and ensuring the validity of statistical analyses (Kaufhold & Kaufhold, 2013).

Figure 5. 6

Boxplots of VKS Scores of the CG *(Pre-test and Post-test)*

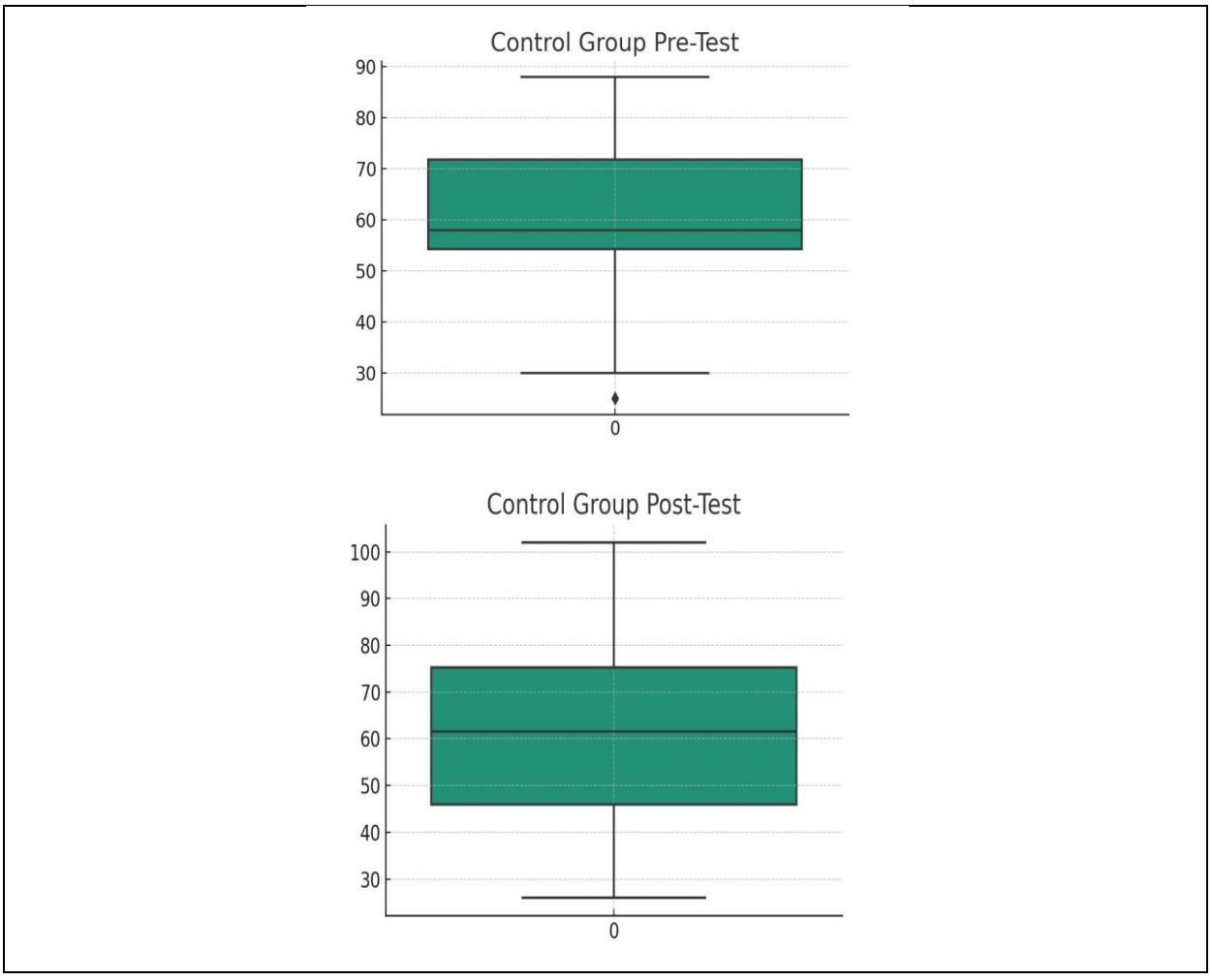
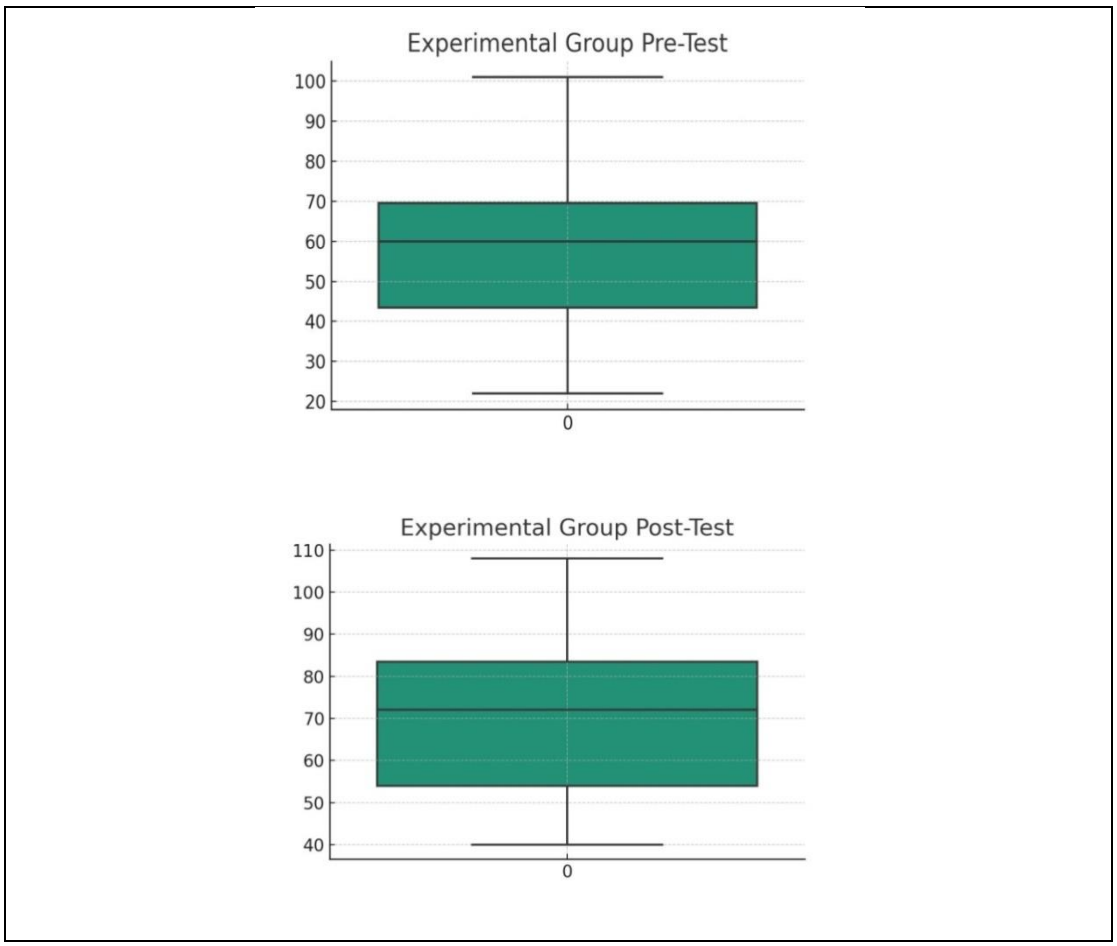


Figure 5. 7

Boxplots of VKS Scores of the EG *(Pre-test and Post-test)*



From the boxplots in Figure 5.6 and Figure 5.7, we see the various probability values, dispersion, and any outliers for both groups in the pre-test and the post test. Since the boxplots show no significant anomalies or exceptions in the study sample, there is no need to exclude any participants. This indicates that the entire sample of 22 learners is retained for analysis. In other words, because the data does not reveal any unusual or problematic values that would necessitate removing any participants, the complete set of data from all 22 learners in our study is used.

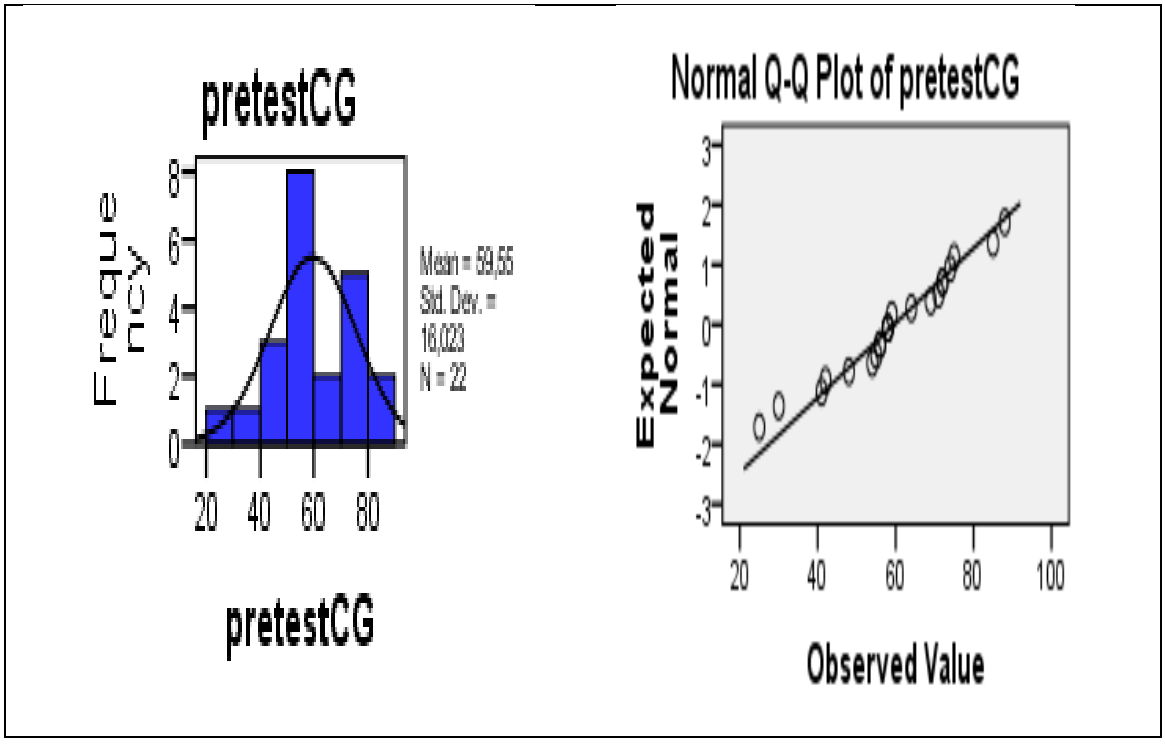
Table 5. 5

Normality Tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Pre-testCG	.137	22	,200*	.967	22	**.639**
Post-testCG	.087	22	,200*	.975	22	**.832**
Pre-testEG	.073	22	,200*	.978	22	**.888**
Post-testEG	.121	22	,200*	.951	22	**.324**

Figure 5. 8

Normality Histogram and Q-Q Plot of the CG *(Pre-test and Post-test)*



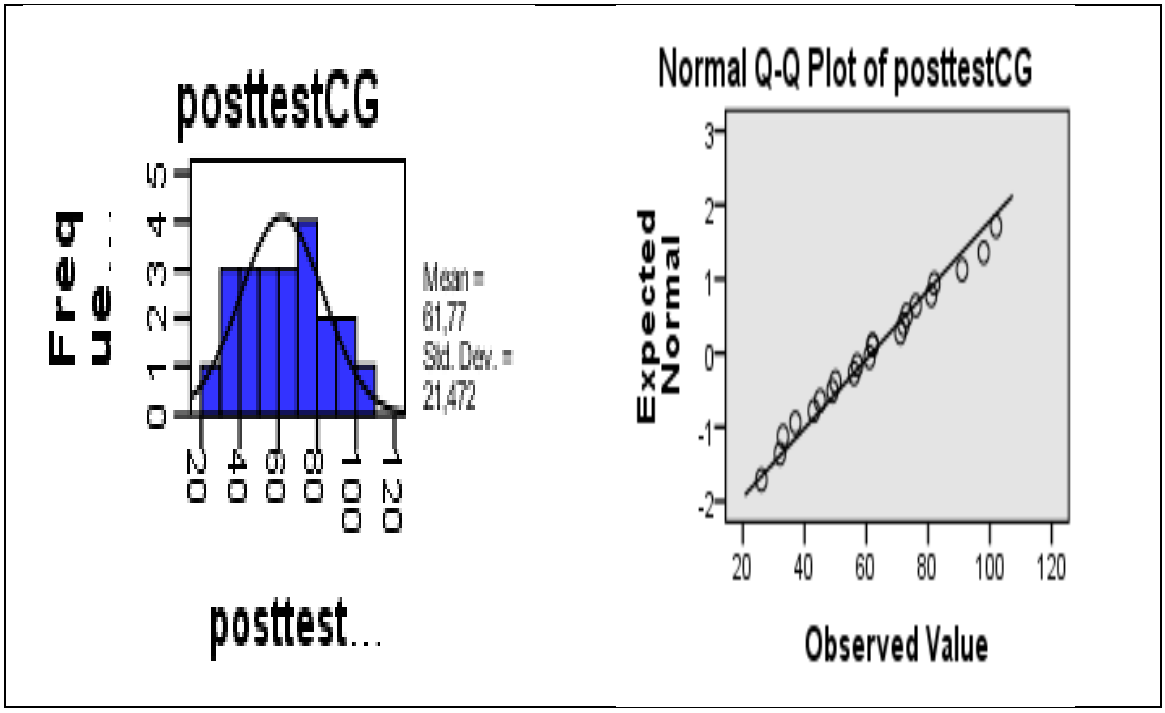
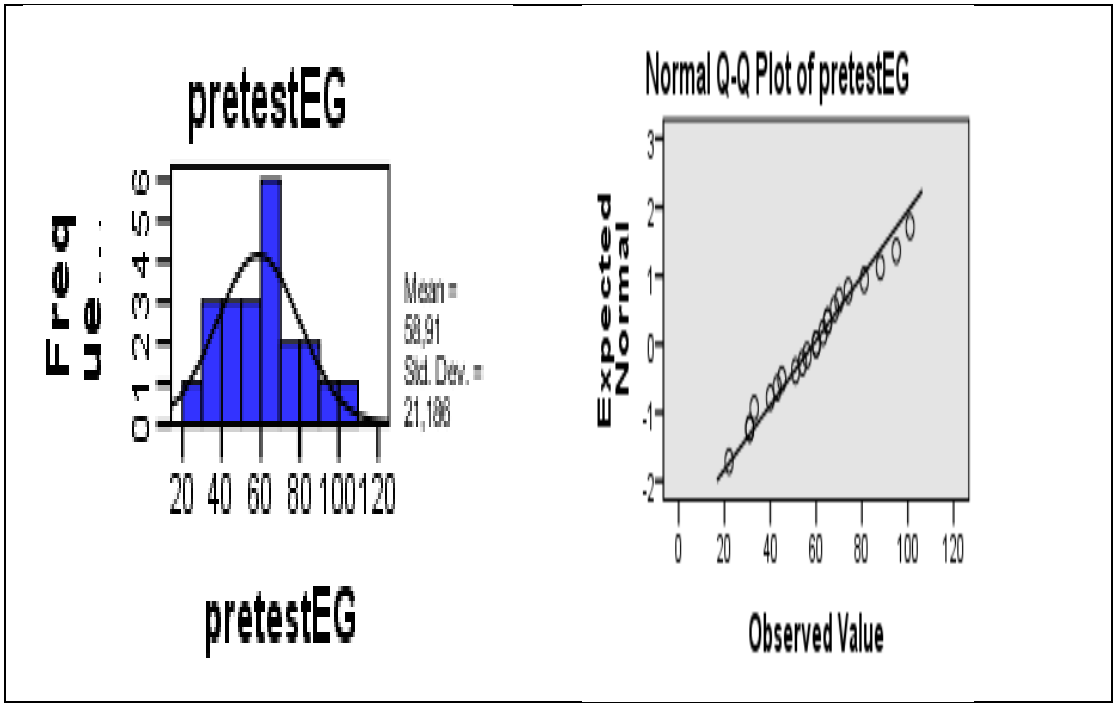
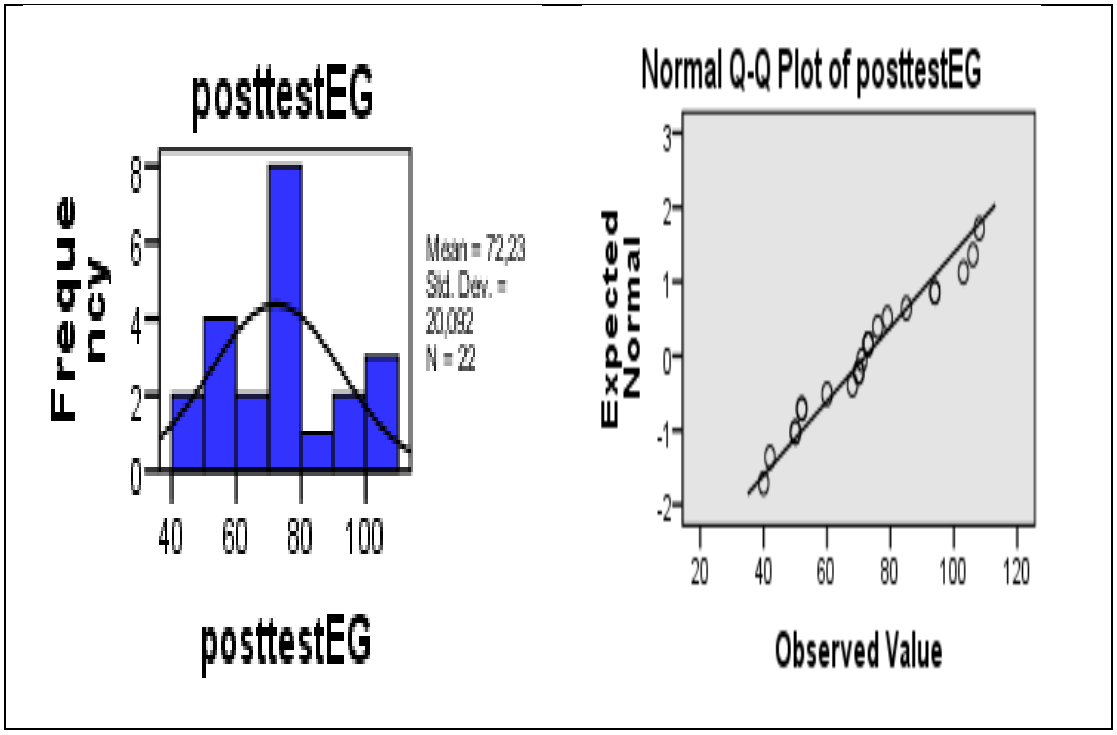


Figure 5. 9

Normality Histogram and Q-Q Plot of the EG *(Pre-test and Post-test)*





Normality tests, along with Normality Histograms and Q-Q Plots, were performed to ensure that the data meets the assumption of a normal distribution, which is crucial for the validity of t-tests used in our analysis. This assumption is important because t-tests rely on the data being normally distributed to provide accurate results.

The results, as detailed in Table 5.7 and illustrated in Figures 5.8 and 5.9, confirm that the data from both the experimental and the CG, both before and after treatment, follow a normal distribution (with p-values greater than 0.05). This finding supports the use of parametric tests for analyzing the data, as these tests assume and require normality to produce valid and reliable results.

5.2.2.Vocabulary Knowledge Scale Pre-Test Results

As previously mentioned, the used VKS test consists of four categories. Category one stands for (I don't remember having seen this word before.). Category two stands for (I have seen this word before, but I don't know what it means.).

Category three stands for (I know this word. It means ____ [synonym or translation]).

Category four stands for (I can use this word in a sentence: _____)

Table 5. 6

Pretest Results of the EG

Metric	Category 1	Category 2	Category 3	Category 4	Total
Mean	17.18	7.45	20.41	13.86	58.91
Std	5.74	5.13	10.27	9.03	21.19
Std error	1.22	1.09	2.19	1.93	4.52

Before the treatment, the EG scored a mean of 17.18 in the first category, reflecting a high level of unfamiliarity with the target words. Learners scored a mean of 7.45 in the second category, indicating low familiarity with the form of the target words and an inability to recognize their meanings. They also scored a mean of 20.41 in the third category, reflecting a significant lack of understanding and an inability to provide synonyms or translations for the target words. Finally, the learners scored a mean of 58.91 in the fourth category, meaning that they were unable to use the target words productively. In total, learners scored a mean of 58.91 in the VKS.

Table 5. 7

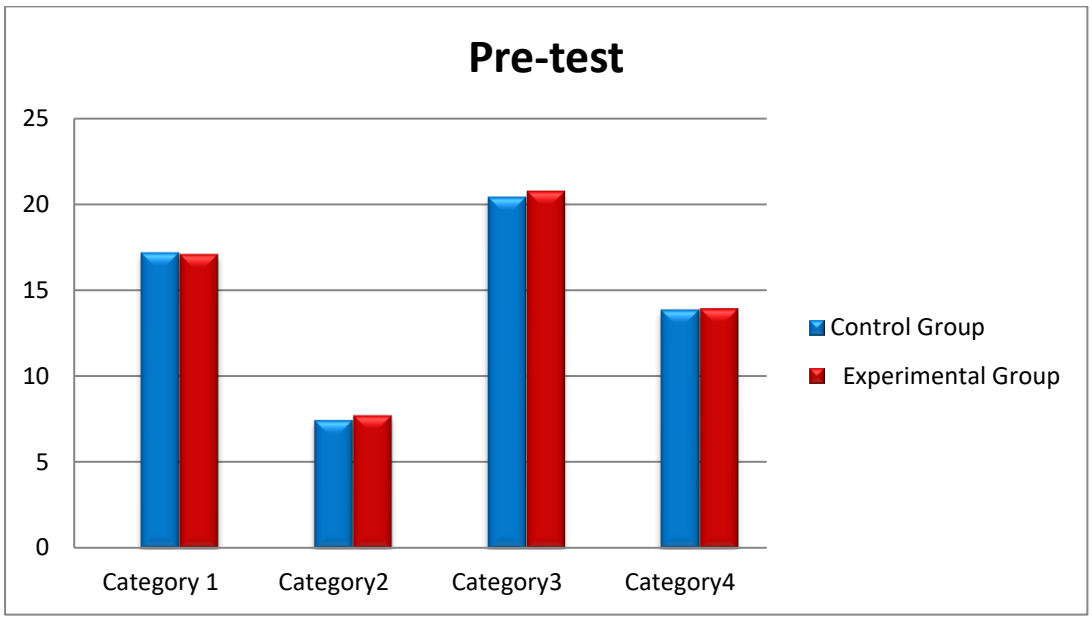
Pretest Results of the CG

Metric	Category 1	Category 2	Category 3	Category 4	Total
Mean	17.09	7.73	20.77	13.95	59.55
Std	5.14	5.17	8.70	7.54	16.02
Std error	1.10	1.10	1.85	1.61	3.42

Similarly, for the CG, learners scored a mean of 17.09 in the first category, reflecting a high level of unfamiliarity with the form of the target words. Learners scored a mean of 7.73 in the second category, indicating low familiarity with the target wordsand an inability to recognize their meaning. In the third category, they scored a mean of 20.77, reflecting a significant inability to provide synonyms or translations for the target words. Finally, learners scored a mean of 13.95 in the fourth category, meaning that they were unable to use the target words productively. Overall, the learners scored a mean of 59.55 on the VKS pre-test.

Figure 5. 10

Representation of Pretest Results for the Experimental and the CG



From the mean calculation of both groups' scores in the pre-test, we notice high proximity in results in all the categories, including the total scores. The CG scored (59.55) while the EG scored (58.91), which indicates absence of significant difference in the scores of the two groups prior the treatment.

5.2.3.Vocabulary Knowledge Scale Post-Test Results

Table 5. 8

Post-Test Results of the EG

Metric	Category 1	Category 2	Category 3	Category 4	Total
Mean	7.77	12.09	33.50	18.86	72.23
Std	3.56	10.23	15.77	12.99	20.09
Std error	0.76	2.18	3.36	2.77	4.28

After the treatment, the EG scored a mean of 7.77 in the first category, reflecting a relatively low unfamiliarity with the form of the target words. Learners scored a mean of 12.09 in the second category, indicating improved familiarity with the form of the target words. They also scored a mean of 33.50 in the third category, reflecting an improvement in providing synonyms or translations for the target words. Finally, the learners scored a mean of 18.26 in the fourth category, meaning that their ability to use the target words productively had improved compared to the mean score obtained before the treatment (13.86). In total, the students scored a mean of 72.23 in the VKS, showing an improvement in the total mean score compared to the score obtained before the treatment (58.91).

Table 5. 9

Post-Test Results of the CG

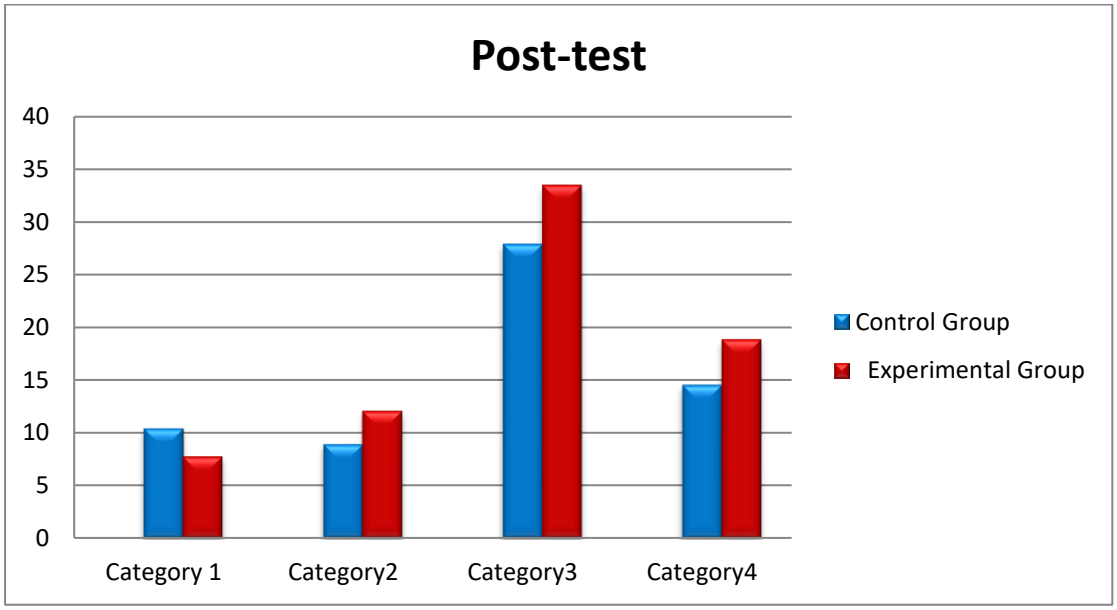
Metric	Category 1	Category 2	Category 3	Category 4	Total
Mean	10.41	8.91	27.91	14.55	61.77
Std	4.09	6.38	14.64	11.44	21.47
Std error	0.87	1.36	3.12	2.44	4.58

In the CG, learners scored a mean of 10.09 in the first category, reflecting a slightly improved familiarity with the form of the target words, compared to the pre-test results (17.09). Learners scored a mean of 8.91 in the second category, which remains low compared to the pre-test (7.73), indicating a limited understanding of the meaning of the target words. In the third category, they scored a mean of 27.91, which is close to the mean obtained in the pre-test (20.77), suggesting a continued lack of ability to

provide synonyms or translations for the target words. Finally, learners scored a mean of 14.55 in the fourth category, which is similarly low to the mean scored in the pre-test (13.95),meaning that they were still unable to use the target words productively. In total, learners scored a mean of 61.77 in the VKS post-test, which is very close to the score obtained in the pre-test (59.55).

Figure 5. 11

Representation of Post-Test Results for the Experimental and the CG



Post the treatment period, comparing the mean scores of the CG (61.77), and that of the EG (72.23), a mean score difference (10.46) is noticed which indicates a disparity in results between them. Moreover, difference in the minimum and maximum values between the two groups suggests a variance in the distribution of data between the two. This translates into the fact that there is a significant difference in the scores of both groups, suggesting improvement in the scores of the EG.

5.2.4. Total Scores of the VKS Pre and Post Test

Table 5. 10

Total Scores of the VKS Pre- and Post-Test

	Total Scores of VKS			
	Pre-test		**Post-test**	
	CG	**EG**	**CG**	**EG**
Mean	59.55	58.91	61.77	72.23
Std	16.02	21.19	21.47	20.09
Std error mean	3.42	4.52	4.58	4.28
Minimum	25	22	26	40
Maximum	88	101	102	108

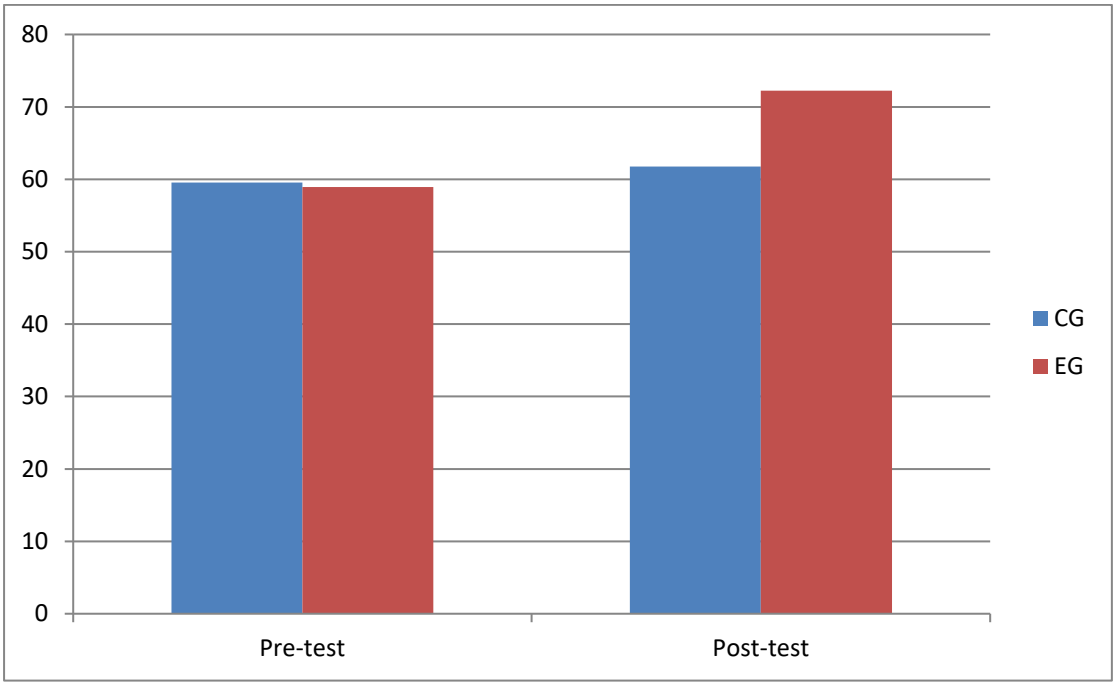
We observe that the EG and the CG had similar mean scores in the pre-test (58.91 and 59.55), reflecting comparable vocabulary repertoires. However, in the post-test, the EG (72.23) scored relatively higher compared to the CG (61.77) who did not show a remarkable improvement in the vocabulary repertoire.

It is imperative to highlight that the VKS test, taken by 22 learners, has a maximum possible score of 256 points (with a maximum of 8 points per word).A student can only achieve this score by providing correct synonyms or translations for all 32 target words and producing semantically and grammatically correct sentences using each of the 32 words. For instance, in the pre-test, the EG achieved a mean score of 58.91 out of 256, which is approximately 23.01% of the total possible score. This low percentage shows that, on average, learners scored much lower than the maximum, meaning that the test was quite challenging and highlighting areas of

weakness where additional instruction may be beneficial. In the post-test, the EG scored a mean of 72.23, which is approximately 28.21% of the total possible score. This shows an improvement of 5.2%, which is statistically significant. However, the obtained total mean scores remain very low reflecting the target sample's limited vocabulary repertoires.

Figure 5. 12

Representation of Total Scores of the VKS Pre- and Post-Test



As depicted, in the pre-test, scores of both the CG and the EG are narrowly spaced. However, improvement in the EG's VKS scores in the pos-test is clear.

5.2.3.1.T-Tests

To provide an analysis of the MI-inspired instruction's (the treatment)impact on the EGcompared to the CG, which did not receive the treatment, we used the paired samples t-test to measure within-group changes, and we used the independent samples t-test to compare between-group changes (Gerald, 2018). First, the paired

sample t-test is used to compare the mean scores of the same group at two different points in time: before and after the treatment. For the EG, we compared their pre-test and post-test scores to see if there is a significant improvement within this group due to the treatment. For the CG, we compared their pre-test and post-test scores to check if there is any change in their performance without the treatment. Second, we conducted an independent samples t-test to compare the post-test results of both the experimental and the CG, in order to determine if there is a statistically significant difference in performance between the two groups after the treatment to determine the effectiveness of the MI-inspired instruction.

Table 5. 11

Paired Samples Testof the total Scores of the VKS for Each Group

	Mean	**Std. Deviation**	**Std. ErrorMean**	**95% Confidence Interval of the Difference**		**t**	**df**	**Sig. (2-tailed)**
				Lower	**Upper**			
Pre-test CG - Post-test CG	-2.227	28.730	6.125	-14.966	10.511	-0.364	21	.720
Pre-test EG - Post-test EG	-13.318	25.843	5.510	-24.776	-1.860	-2.417	21	.025

Based on the displayed paired samples t-test results of the pre-test (Table 5.11), there is a statistically significant difference in the performance of the EG between the VKS pre-test and post-test ($t = -2.417$, $p = 0.025$, where $0.025 < 0.05$), reflecting an

improvement in the performance due MI-inspired treatment. In contrast, no statistically significant difference is found in the performance of the CG between the VKS pre-test and post-test ($t = -0.364$, $p = 0.720 > 0.05$), suggesting that their performance remained unchanged, as they did not receive the treatment.

Table 5. 12

Independent Samples T-test for both Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Equal variances assumed	1.681	.202	.112	42	.911	.636	5.663	-10.792	12.065
	Equal variances not assumed			.112	39.101	.911	.636	5.663	-10.818	12.090
Post-test	Equal variances assumed	.266	.609	-1.668	42	.013	-10.455	6.270	-23.107	2.198
	Equal variances not assumed			-1.668	41.816	.013	-10.455	6.270	-23.109	2.199

As Table 5.12 shows, the pre-test results indicate that there is no statistically significant difference between the performance of the CG and the EG in the VKS test, before the treatment period.The t-test shows an F value of 1.681 with a significance level of 0.202, indicating equal variances. This means that the distribution of scores in each group is similar. The t-value is 0.112, and the p-value is 0.911 ($p = 0.911 > 0.05$), which further confirms the insignificant difference in the pre-test performance between the two

groups. This suggests that before the treatment, both groups performed similarly in the pre-test, reflecting similar vocabulary repertoires.

In the post-test, the t-value is -1.668 and the p-value is 0.013 ($p = 0.013<0.05$), indicating a statistically significant difference between the performances of the two groups after the treatment period. The EG outperformed the CG in the VKS post-test. This reflects the improvement in the vocabulary repertoire of the EG.

Overall, the t-test results suggest that the MI-inspired instruction treatment had a positive impact on the EG, as their performance in the VKS test improved significantly compared to the CG, which did not receive the treatment.

5.2.3.2 Vocabulary Knowledge Scale Results for Each Category

Regarding the results obtained in relation to each category, we recorded what follows:

- Category One:

Table 5. 13

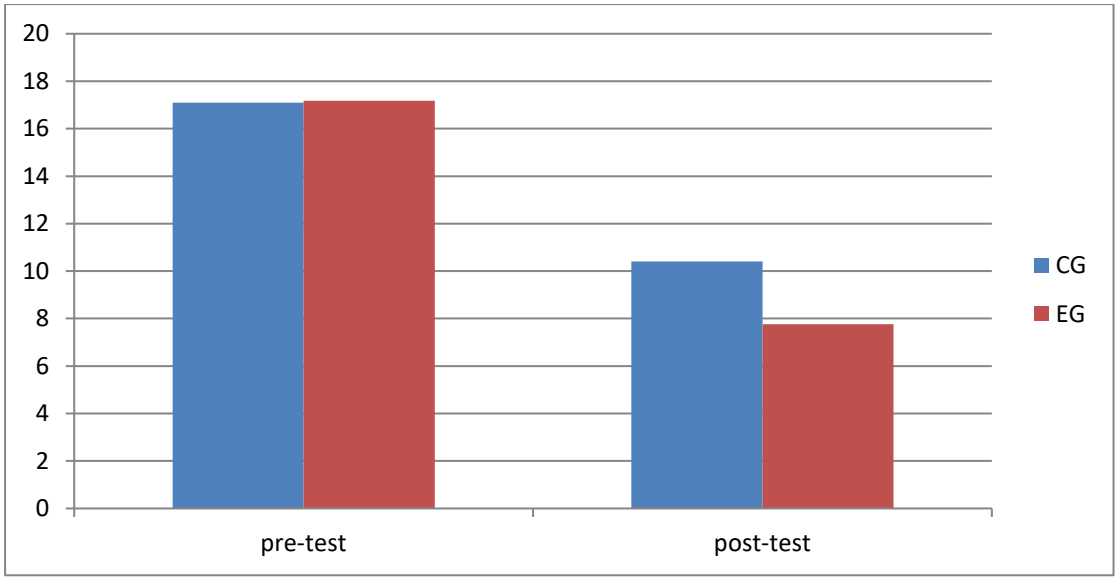
Category One Results

	Category 1			
	Pre-test		**Post-test**	
	CG	**EG**	**CG**	**EG**
Mean	17.09	17.18	10.41	7.77
Std	5.14	5.74	4.09	3.56
Std errormean	1.10	1.22	0.87	0.76

Category one represents the statement *(I don't remember having seen this word before).*When ticked, it means that the student does not recognize the word at all. Unlike the other categories, in this particular category learners are reporting what they do not know. Here, learners were asked to report all the words they are not familiar with, and each unfamiliar word is scored as one point. If a student is not familiar with all the words, he can score up to 32 points in this category.

Figure 5. 13

Category One Results



As shown in Table 5.13 and Figure 5.13in the pre-test, both the CG and the EG reported high unfamiliarity with the target words, with the means of 17.09 and 17.18, respectively. Given that word recognition can be visual, auditory, and semantic, this response reflects non-recognition, meaning that the student has no knowledge of the word, not even its form or sound, let alone its meaning or use.

In the post-test, the CG scored a mean of 10.41, and the EG scored a mean of 7.77. Both groups scored lower, i.e., they reported being less unfamiliar with words. The EG encountered the target words several times throughout each unit during the

treatment period. Notably, the EG (which received MI- inspired instruction) reported less unfamiliarity with target words compared to the CG.

Table 5. 14

Category One Independent T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Equal variances assumed	.152	.699	-.055	42.000	.956	-.091	1.643	-3.407	3.225
	Equal variances not assumed			-.055	41.510	.956	-.091	1.643	-3.408	3.226
Post-test	Equal variances assumed	.212	.648	2.281	42	.028	2.636	1.156	.304	4.969
	Equal variances not assumed			2.281	41.210	.028	2.636	1.156	.303	4.970

According to the t-test results, the t-value for the pre-test is -0.055 with a p-value of 0.956, suggesting no significant difference between the two groups before the treatment. Both groups similarly reported unfamiliarity with the target words. However, in the post-test, the t-value is 2.281 with a p-value of 0.028, indicating a statistically significant difference between the two groups in their reports of unfamiliarity. Based on the mean scores, it can be concluded that the CG reported higher levels of unfamiliarity, whereas the EG showed a significant improvement in familiarity with the target words.

- Category Two Results:

Table 5. 15

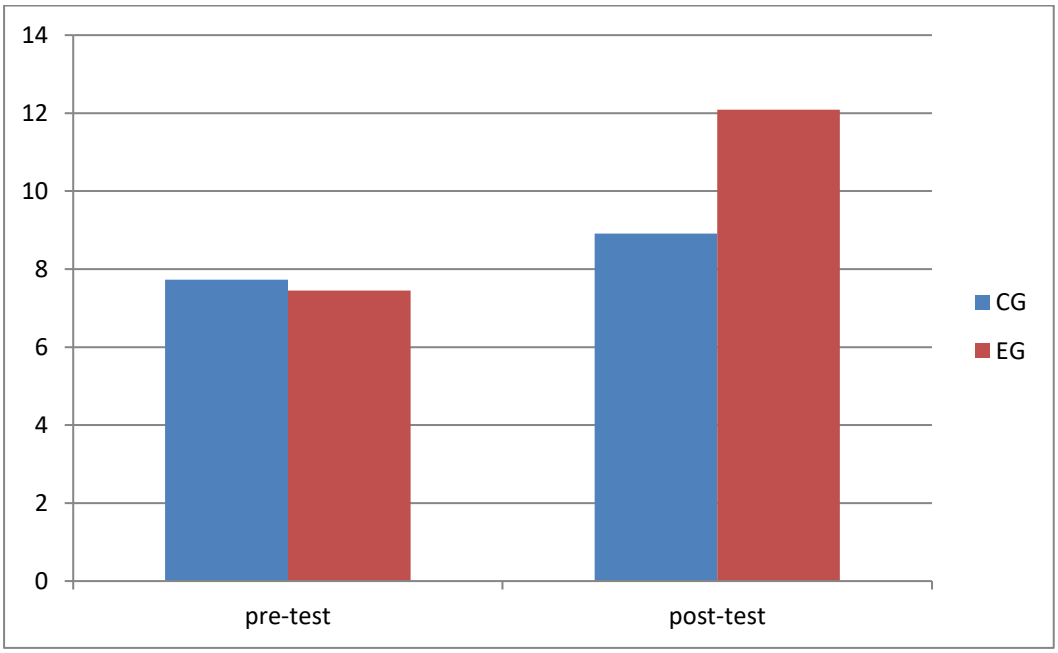
Category Two Results

	Category 2			
	Pre-test		Post-test	
	CG	EG	CG	EG
Mean	7.73	7.45	8.91	12.09
Std	5.17	5.13	6.38	10.23
Std errormean	1.10	1.09	1.36	2.18

Category two stands for the statement *(I have seen this word before but I don't know what it means).* When selected, it means that the student recognizes the word but does not know its meaning. In this category, learners were asked to report all the words they are familiar with, even without knowing their meanings. Each familiar word is scored as two points. A student can score a total of 64 if they report having seen of all 32 target words without knowing their meanings.

Figure 5. 14

Category Two Results



As Table 5.15 and Figure 5.14 show, in the pre-test, both the CG and the EG reported similarly low familiarity with the target words, with mean scores of 7.73 and 7.45, respectively. Learners from both groups who reported being familiar with the word failed to recognize its meaning, reflecting the little knowledge they had of the words. Thus, even if they could recognize some of the words, they did not know their meanings.

In the post-test, the EG scored a mean of 12.09, compared to the CG, which scored a mean of only 8.91. While the CG reported a mean difference of 1.18, the EG reported a difference of 4.64. Although there is a slight improvement in word recognition for the CG, likely due to the repeated encounters with these words in the course content, we notice a significant difference in the scores of the EG. This suggests that MI-inspired instruction helped draw learners' attention to the target words and enabled them to recognize these words, even if they were not able to associate them with their meanings.

Table 5. 16

Category Two Independent T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Equal variances assumed	.178	.675	.176	42	.861	.273	1.553	-2.861	3.406
	Equal variances not assumed			.176	41.998	.861	.273	1.553	-2.861	3.406
Post-test	Equal variances assumed	5.793	.021	-1.238	42	.022	-3.182	2.569	-8.367	2.003
	Equal variances not assumed			-1.238	35.186	.022	-3.182	2.569	-8.397	2.033

According to the t-test results, the t-value for the pre-test is 0.176 with a p-value of 0.861, suggesting no significant difference between the two groups before the treatment. This means that, before the treatment, both the EG and the CG struggled similarly to identify the meanings of the target words. For the post-test, the t-value is -1.238 with a p-value of 0.022, demonstrating a statistically significant difference between the two groups after the treatment period.

- Category Three Results:

Table 5. 17

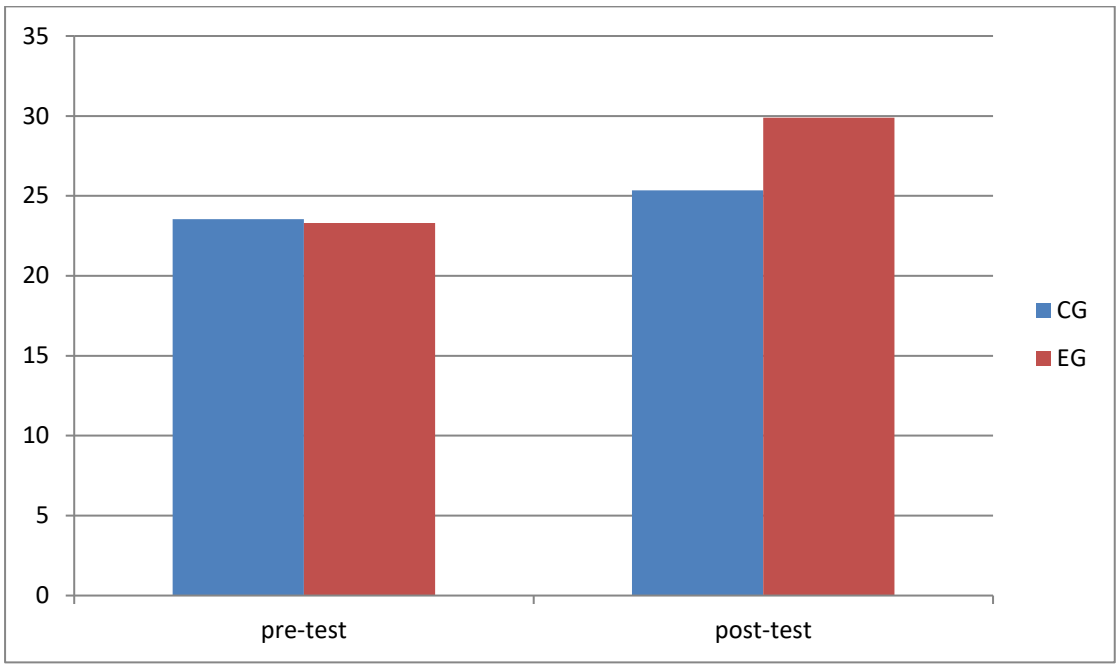
Category Three Results

	Category 3			
	Pre-test		**Post-test**	
	CG	**EG**	**CG**	**EG**
Mean	20.77	20.41	27.91	33.50
Std	8.70	10.27	14.64	15.77
Std errormean	1.85	2.19	3.12	3.36

Category three represents the statement *(I know this word. It means (synonym or translation)).* In this category, learners were asked to demonstrate knowledge of the target words by providing a translation or a synonym. Each correct synonym or translation is scored three points. A student can score up to 96 points in this category if they provide correct synonyms or translations for all 32 target words.

Figure 5. 15

Category Three Results



As displayed in Table5.17 and Figure 5.15, in the pre-test, both the CG and the EG scored low in this category, respectively, 20.77 and 20.41 mean scores. Even though learners may recognize some of the words they have seen before, they were required to show evidence of actual knowledge by providing the synonyms or translations. These results align with the scores from the previous two categories, indicating that learners struggled to provide synonyms or translations for words they were not familiar with. Additionally, even if they could recognize some of the words, they lacked sufficient knowledge to provide accurate synonyms or translations.

In the post-test, on the one hand, the experimental group scored a notably higher mean of 33.50, compared to 20.41in the pre-test, showing a mean difference of 13.09. On the other hand, while the CG also showed improvement with a mean difference of 7.14, their score remains relatively low, indicating that most learners in this group still struggled to provide synonyms or translations for the target words.

Table 5. 18

Category Three Independent T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
pre_test	Equal variances assumed	.905	.347	.127	42	.900	.364	2.868	-5.425	6.152
	Equal variances not assumed			.127	40.893	.900	.364	2.868	-5.430	6.157
post_test	Equal variances assumed	.156	.695	-1.219	42	.003	-5.591	4.588	-14.849	3.667
	Equal variances not assumed			-1.219	41.769	.003	-5.591	4.588	-14.851	3.669

According to the t-test results, the t-value for the pre-test is 0.127 with a p-value of 0.900, suggesting no significant difference between the two groups before the treatment. This means that, before the treatment, both the EG and the CG struggled similarly to provide synonyms or translations for the target words. For the post-test, the t-value is -1.219 with a p-value of 0.003, demonstrating a statistically significant difference between the two groups after the treatment period. These results indicate that the MI-inspired treatment had a significant effect on the EG, leading to improvement in providing synonyms or translations for the target words compared to the CG.

- Category Four Results:

Table 5. 19

Category Four Results

	Category 4			
	Pre-test		**Post-test**	
	CG	**EG**	**CG**	**EG**
Mean	13.95	13.86	14.55	18.86
Std	7.54	9.03	11.44	12.99
Std errormean	1.61	1.93	2.44	2.77

In category four, learners were asked to use the target words in full grammatically correct, and semantically appropriate sentences. Semantic appropriateness of the sentence is scored as four points, while a sentence that is both semantically appropriate and grammatically correct receives five points. In this category, learners move from receptive to productive knowledge. They are expected to show evidence of productive knowledge, i.e., the ability to correctly use the words in written sentences. A student can score up to 160 points if they write semantically and grammatically correct sentences using all 32 target words.

Figure 5. 16

Category Four Results

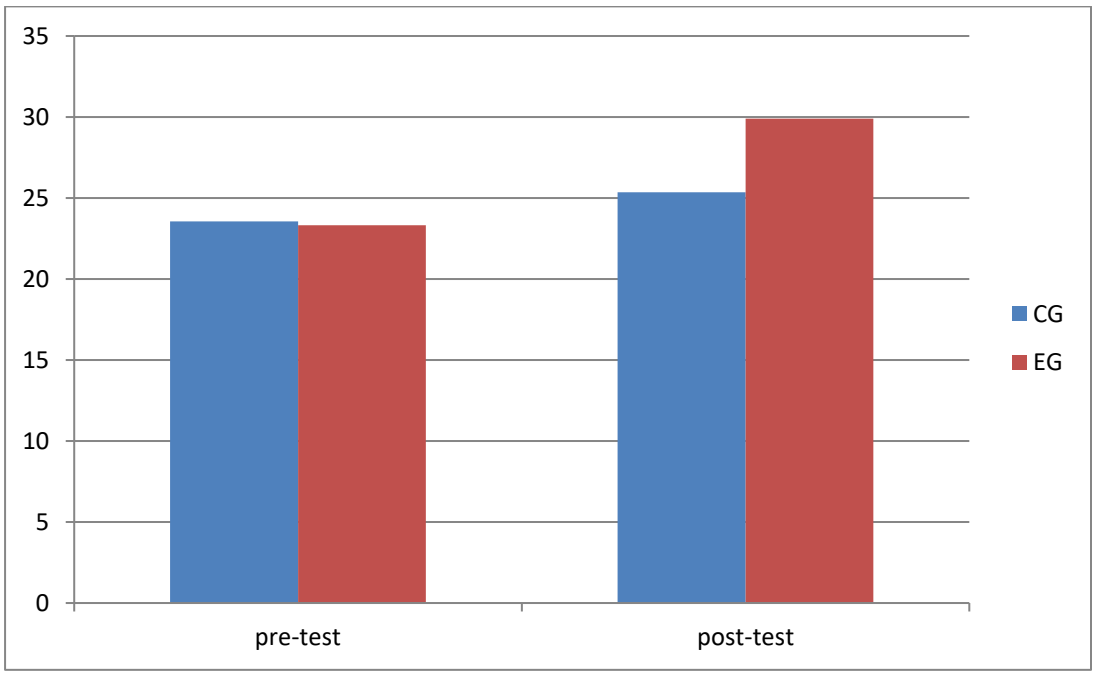


Table 5.19 and Figure 5.16 show that, in the pre-test, both the CG and the EG scored significantly low in this category, with mean scores of 13.95 and 13.86, respectively. These results align with the scores from the previous categories, suggesting that learners struggled to use the words in meaningful sentences. This expected, as they either did not recognize the words at all or were familiar with them but could not identify their meaning or provide their synonyms or translations.

In the post-test, the EG scored a higher mean 18.86compared to the pre-test (13.86), showing an improvement. However, the mean difference is still relatively low (5), indicating only modest improvement compared to the enhancement seen in the previous categories. In contrast, the CG scored even lower in the post-test, with a mean of 14.55 and a mean difference of 0.6, reflecting ongoing struggle in producing sentences using the target words.

Table 5. 20

Category Four Independent T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
pre_test	Equal variances assumed	.917	.344	.036	42	.971	.091	2.508	-4.970	5.152
	Equal variances not assumed			.036	40.698	.971	.091	2.508	-4.975	5.157
post_test	Equal variances assumed	.166	.686	-1.170	42	.249	-4.318	3.690	-11.766	3.129
	Equal variances not assumed			-1.170	41.337	.249	-4.318	3.690	-11.769	3.133

As demonstrated in Table 5.20, the t-value for the pre-test is 0.036 with a p-value of 0.971, demonstrating no significant difference between the two groups before the treatment. This means that both groups struggled to use the target words productively.

In the pos-test, despite the numerical difference in the mean scores, according to the t-test results (t-value = -1.170, p-value = 0.249), both the EG and the CG did not show statistically significant difference in the scores before and post the treatment period. This suggests that the neither the MI-inspired instruction received by the EG nor the instruction received by the CG had a significant effect on the productive dimension of their vocabulary repertoires.

5.3. Discussion of the Results

The main aim of this study was to examine whether MI-inspired instruction has a positive effect on the learners' vocabulary repertoire. A quasi-experimental design was carried out to achieve this aim. To start, the researcher used the Multiple Intelligences Inventory to determine the main intelligences of the EG and customize the treatment plan based on these findings. Both groups took a pre-treatment Vocabulary Knowledge Scale test to measure vocabulary competence. In the treatment phase, the EG received teaching inspired by MI for four months, while the CG stuck to traditional textbook lessons. Following the treatment period, both groups underwent post-treatment assessment using the same vocabulary test. Later, data was collected and statistically analyzed.

In this respect, the following main research question was adopted:

Q. Can MI-inspired instruction improve learners' vocabulary repertoire?

In addition, we set out to answer the following sub-questions:

1- How does the distribution of the MI profiles vary among learners in the class?

2- What are the dominant intelligences among the MI profile of the present EFL classroom?

3- Is the MI profile of the teacher different from that of the class?

Accordingly, the researcher adopted the following corresponding hypotheses:

Null Hypothesis (H_0): MI-inspired instruction has no effect on improving the learners' vocabulary repertoire.

Alternative Hypothesis (H_1): MI-inspired instruction does enhance the learners' vocabulary repertoire.

We also hypothesized that:

- The distribution of the MI profiles among learners in the class is diverse, reflecting a range of dominant and secondary intelligences.

- The dominant energy within the MI profile of the class is linguistic.

- The MI profile of the teacher is different from that of the class.

To answer the first and second sub-questions, the researcher used a Multiple Intelligences Inventory to gauge the target group's MI and to develop an MI profile representing the distribution and predominance of the different intelligences. Then, to answer the third sub-question, and, in order to compare the energy of the class's MI profile with the teacher's, the teacher also answered the same inventory. Two MI profiles (The teacher and the class) were created, analyzed, and compared.

To address the first sub-question, the results from the class MI profile, reveal a 'jagged' type of profile, which is the most common type of profile (Moran, Kornhaber, & Gardner, 2006). Jagged profiles exhibit considerable discrepancies among their predominant intelligences (as shown in Table 5.2 and Figure 5.1), which confirms the corresponding hypothesis that the distribution of the MI profiles among learners in the class reflects a range of dominant and secondary intelligences. This suggests that learners process certain types of information more effectively than others. In this case, the prevalence of linguistic-verbal (18.64%), visual-spatial (17.60%), and social-interpersonal (15.35%) intelligences signifies that this class is more inclined towards language-based, visual, and socially interactive learning. The target learners

predominantly engage in activities that favour verbal learning, such as reading, as well as visual and spatial learning, alongside collaborative interactions. However, this does not imply that other activities should be disregarded. Within the same group, some learners are logic-smart, self-smart, and body-smart. Therefore, teaching should accommodate the diverse range of intelligences, nurturing areas of strength while training areas of weakness. Thus, it is the responsibility of the teacher to cultivate and nurture all the intelligences. It is worth noting that the learners' MI profiles predominantly feature all the intelligences to varying degrees, except for existential intelligence. Additionally, several learners' MI profiles (eight out of 22) feature the predominance of more than one intelligence (Table 5.1.).

As suggested by the findings, and to answer the second sub-question, the predominant energy of this class is linguistic (18.64%), which confirms the corresponding hypothesis. Learners mainly show strengths in verbal intelligence. This translates into the fact that they think in words and enjoy reading, writing, playing word games, telling stories, etc. And, they are more likely to respond to books, writing tools, diaries, stories, etc (Armstrong, 2000; Fleetham, 2006). This primarily matches the energy of the used EFL course books in general. A content analysis of the 2AS course book indicated that the predominant intelligence is verbal-linguistic (64.65%) (Hadj Said, 2021). However, the presence of all the intelligences in the current MI profile is not compatible with the textbook's energy. The findings of the study unveiled that the pronounced predominance of linguistic intelligence indicates a notable absence of consideration for the MI theory in the design of the textbook and its instruction (Hadj Said, 2021).

Moreover, the second-ranked intelligence in the class profile is visual-spatial (17.60%). Visually intelligent learners think in pictures, enjoy designing, drawing,

visualizing, etc., and respond positively to art, videos, slides, etc. However, according to Hadj Said (2021), only 5.47% of the activities of the textbook engaged visual intelligence. Additionally, only 10.87% of its activities are interpersonal (Hadj Said, 2021), whereas 15.35% of learners' intelligence in the target group is social, referring to learners who function through collaborative ideation, who enjoy group interactions, group games, apprenticeships, etc. Furthermore, while musical-rhythmic intelligence scored 8.10%, its learners being characterized by thinking in rhythms and enjoying listening, singing, musical instruments, etc, it marked 0 appearance in all the activities (Hadj Said, 2021). This prompts the inference that solely relying on the textbook and failure to use additional materials and instruction would consequently lead to neglecting the diverse range of learners' intelligences. Hence, if we are to promote any MI-inspired teaching, the sole reliance on textbook-based instruction is insufficient to adequately address all the intelligences. However, as previously explained, it is essential to highlight that throughout the treatment phase, the researcher primarily focused on the first three predominant intelligences, while still addressing the remaining intelligences. This was necessitated by the practical limits of the four-month study period, as well as the need to stick to the syllabus and complete the annual program.

It is also worth noting that only 6.39% of the class was nature-smart. Learners who are naturalists are characterized by thinking through nature and enjoying investigating nature, caring for the planet, playing with pets, etc. They positively respond to opportunities that allow them access to nature and interaction with animals, etc. (Armstrong, 2000; Fleetham, 2006). This is despite the fact that the learners in question, who are in rural areas, have more direct contact with nature. Generally, conventional teaching does not make room for opportunities for outdoor

study and field trips, thereby failing to nurture naturalist energy among learners, and hindering understanding and exploration of ecological systems and living organisms. Teachers should understand how crucial contact with nature and outdoor education is in nurturing naturalist intelligences. Outdoor activities should be incorporated into the curriculum to help learners better understand and appreciate the natural world.

Furthermore, it is important to highlight that none of the learner's profiles was predominated by existential intelligence, and only 5.55% of the overall MI profile's energy was existential. This prompts reflection on learners' understanding of 'the intelligence of big questions' (Gardner, 1999, p.60). However, it is conceivable at this developmental stage of their life that learners may not have a fully matured capacity to engage with deep philosophical ideas and spiritual encounters. Nonetheless, since each individual has all the intelligences to varying degrees, and each intelligence can be nurtured and trained (Armstrong, 2000; Gardner, 1999); educators are encouraged to foster its cultivation through the creating opportunities that promote contemplation on existential topics like human nature and human culture.

By further looking at the results (Figure 5.1.), the target class' intelligences are ranked, from the most dominant to the least, as follows: linguistic, visual, social, logical, intrapersonal, musical, bodily, naturalist, and existential. This raises questions about the limited energy of the instruction and materials these learners have been exposed to throughout their school years. Since the intelligences can be subject to development, it is possible to say that Algerian EFL learners excel primarily in the intelligences they have received specific attention to, namely linguistic, visual, and social. Consequently, it seems that the other intelligences are not receiving adequate attention and stimulation.

Concerning the MI profile of the teacher, before the implementation of MI-inspired teaching, it was mandatory for the teacher to answer the MI Inventory herself to ensure a balanced approach to classroom instruction. Proficiency in certain intelligences, or deficiencies in others, can significantly impact teaching effectiveness (Armstrong, 2000). Typically, teachers often prefer using their strongest intelligences while avoiding their weakest ones (Nicholson-Nelson, 1998). As a result, developing self-awareness of intelligences used, as well as those ignored, is critical for effective instruction. Results (Table 5.3, Figure 5.3) imply that the teacher in question is mostly self-smart (21.42%), followed by 19.04% of linguistic energy, which reflects strong self-awareness and verbal skill set, essential traits for effective teaching. Individuals with high intrapersonal intelligence tend to engage in introspective thinking and are highly reflective of their own needs, feelings, and goals. They are characterized by traits such as reflection, planning, goal setting, etc. They positively respond to time alone, self-paced work, introspection, and opportunities to work independently (Armstrong, 2000; Fleetham, 2006). Yet, the teacher marked traits of intelligence in all nine intelligences. This profile not only provides insight into the teacher's dominant and weaker intelligences but also underscores the importance of balancing personal development and instructional methods to optimize strengths while addressing less dominant areas. Such insights are crucial for self-improvement and tailoring teaching strategies to foster a more inclusive educational approach.

To answer the third sub-question, descriptive statistics was used to compare the teacher's MI profile and the profile of the class (Table 5.4. and Figure 5.7.). Findings indicate that both the teacher and the class have strong similar linguistic strengths, which stresses the fact that this is the particular intelligence that has been nurtured through their teaching and learning experiences in the past. Moreover, the

teacher shows higher intelligence than the learners in some of the intelligences, particularly intrapersonal, and is less intelligent in others, particularly social, which reflects the class' preference for collaborative learning in contrast to the teacher's preference for individual learning. This puts in the front the particular weakness the teacher had to overcome in order to respond to the class' energy. It is also important to note that this difference is natural due to variations in experiences, backgrounds, and personal goals between learners and the teacher. However, this information can be used to adapt and improve teaching and assessment methods to better meet learners' needs. These differences can inform personalized professional development for the teacher, focusing on enhancing areas of relative weakness and leveraging strengths to improve educational delivery and personal growth.

To answer the main research question, a pre-test, treatment, and post-test procedure was followed. Before the treatment, the mean scores show that both the control (59.55) and the EG (58.91) did not score a remarkable difference in the pre-test results. (Table 5.6, Table 5.7, and Figure 5.10). This was further confirmed through the independent t-test (Table 5.12). According to the t-test results ($t= 0.112$, $p= 0.911 > 0.05$), there was no significant difference in the performance of both groups on the VKS pre-test, reflecting similar deficiencies in their vocabulary repertoires. Proximity in the mean scores in all the categories is also noted. Generally, learners are sorted into classes considering different criteria including the overall level of achievement, among other criteria. The distribution of learners is always balanced. Besides, all participants were subject to the same syllabus and instruction in the previous school years. This is why there is no noticeable difference between the scores of both groups, suggesting that participants had the same level of vocabulary repertoire. Concerning the first category, learners scored particularly high in it

(CG=17.09, EG=17.18), suggesting that the selected target words they will be encountering in the treatment phase are unfamiliar to them. Participants of the target sample meet 646 new lexical items throughout the whole course of English if solely exposed to the textbook (Torki, 2012), let alone being exposed to supplementary materials. Consequently, it cannot be claimed that words about conflict resolution, science-fiction, sustainable development, etc. are commonly encountered by learners in their daily lives. This also justifies the low scores (CG=7.73, EG= 7.45) reported in the second category indicating that only a small number of learners have seen the target words but never had the chance to go beyond that stage. Concerning the third category, both groups scored low (CG=20.77, EG=20.41). Even if learners recognize some of the words that they could have seen before, here they are asked to show evidence of actual knowledge by providing the synonym or the translation of the words. All the target words are theme-specific to each unit. Providing synonyms or translations is improbable if learners did not encounter these words in context and gathered some kind of information about the words, which is evident from the scores of the previous two categories. This reflects the complex nature of vocabulary knowledge (refer to section 3.1.), suggesting that even if learners have encountered the target words, they might have been unable to store or have access to them, as the process of generating meaning is so sophisticated and complicated skill that less advanced EFL learners often struggle with (Nation, 2001). Noteworthy, when examining learners' responses, the majority who responded to this category opted for the option of providing an L1 translation, which might suggest a reconsideration of the place of L1 in vocabulary teaching, especially the recent shift of research which indicates that the use of the mother tongue in the EFL class is not as negative as it is used to be believed, especially in explaining complex concepts (Khelalfa & Kellil, 2023).

Concerning the fourth category, learners scored the lowest in this particular category (CG=59.55, EG= 58.91), given that they were asked to use the target word in a sentence. Looking at scores from the previous three categories, it is obvious that most learners were not able to use in a full sentence a word they do not even recognize, a word they only recognize but do know its meaning, or a word they can barely provide a synonym or a translation to. For a learner to properly use a word in a sentence with semantic and grammatical correctness, s/he must have enough productive knowledge, including the ability to express the range of meanings it conveys, knowing its synonyms and antonyms and other associated words with it, to modify it, and use it across different contexts, etc. (Nation, 2001), which is not possible at this stage, especially with a high rate of absolute unfamiliarity.

In a study that aimed to measure secondary school learners' vocabulary repertoire, Boucherfa (2021) confirmed that secondary school learners come to class with considerable vocabulary deficiency, in addition to being exposed to very limited vocabulary instruction, given that a significant majority (65%) of instruction our learners receive is form focused, which can justify the overall low score of participants in the pre-test. Moreover, as previously discussed in the literature review, lack of emphasis on the vocabulary component of the EFL course, as well as deficiency of learners' vocabulary (Arab, 2015; Bemmoussat & Bouyakoub, 2019; Boucherfa, 2021), and the limited MI content (Boulmaiz, 2017; Hadj Said, 2021) in the Algerian context can all justify participants' deficient vocabulary repertoire.

Post the treatment, statistical analysis detected a significant statistical difference between the total scores of the VKS test of the EG and the CG. First, the paired samples t-test (Table 5.11) revealed a statistically significant difference in the performance of the EG between the VKS pre-test and post-test ($t = -2.417$, $p = 0.025$, where $0.025 <$

0.05), reflecting an improvement in the vocabulary repertoire due MI-inspired instruction. In contrast, no statistically significant difference was found in the CG's performance between the VKS pre-test and post-test ($t = -0.364$, $p = 0.720 > 0.05$), suggesting that their vocabulary repertoire remained unchanged, as they did not receive the treatment. Second, the independent samples t-test (Table 5.12) confirmed that the EG, after receiving the MI-inspired instruction, statistically outperformed the CG in a significant way $t = -1.668$, $p = 0.013$ ($p = 0.013 < 0.05$).

This indicates that MI-inspired instruction succeeded in enhancing the vocabulary repertoire of learners. This confirms the alternative hypothesis (H_1) stating that MI-inspired instruction does enhance the learners' vocabulary repertoire. Respectively, the null hypothesis (H_0) stating that MI-inspired instruction has no effect on improving the learners' vocabulary repertoire is not accepted.

In the first category (Table 5.13, Figure 5.13, and Table 5.14), the CG scored a mean of 10.41, and the EG scored a mean of 7.77. Both groups scored lower in comparison with the pre-test (17.09 and 17.18), i.e., learners reported fewer unfamiliar words from the list. Respectively, reports of absolute non-recognition or unfamiliarity have diminished in both groups, with a mean difference of 2.64 in favour of the EG (t-test), suggesting that learners in the EG remember better having encountered the target words on several occasions throughout the treatment period, which justifies the augmented scores in the second category where more learners reported having seen the words, even if they do not know their meaning. Next, in the second category, (Table 5.15, Figure 5.14, and Table 5.16), the EG scored a mean of 12.09, in comparison with the CG which scored a mean of only 8.91 with a mean difference of 3.18. There is indeed a slight improvement in word recognition for the CG, which is obviously due to the encounter of these words in the content of the

course, but we notice a significant difference in the scores of the EG. MI-inspired instruction helped in drawing learners' attention to the frequently encountered words and their recognition. This confirms the belief that learners are sensitive to the frequency of occurrence of words they encounter (Takač, 2008). Therefore, it is evident that the MI had a direct positive effect on learners' passive vocabulary knowledge and word recognition. In the third category (Table 5.17, Figure 5.15, and Table 5.18), the EG scored particularly higher in providing synonyms or translations, which means that they succeeded in developing partial knowledge of the target words, gradually, from numerous exposures over a certain period of time. (t-test) This translates into the positive impact the MI treatment had on the breadth (words a learner can recognize and attach meaning to) of their vocabulary repertoire. This also suggests that learners with bodily intelligence, for example, were better able to recognise words and provide their meanings or translations when they moved around the class or put their hands up while encountering these words, and highly linguistically intelligent learners better remembered words they have encountered in crosswords or other word games, etc.

Surprisingly, in the fourth category where learners were asked to use the target words in sentence writing, statistical analysis (Table 5.19, Figure 5.16, and Table 5.20) revealed that both groups did not show a significant difference in the pos-test, with a mean difference of 5 in favor of the EG which showed a slight numerical improvement but an insignificant one, according to the t-test ($t = -1.170$, $p = 0.249 > 0.05$). This translates into the fact that while MI-inspired instruction had a direct positive impact on learners' breadth of vocabulary repertoire, it did not have the same impact on the depth of their vocabulary knowledge. Accordingly, this raises questions about whether MI-inspired instruction had a significant positive effect on productive

vocabulary knowledge, in the same way it had on receptive vocabulary. This is mainly due to the complexity of the task of producing sentences itself. According to Coxhead (2007), the knowledge required to produce a word in writing encompasses knowledge of form and meaning, concepts and referents, associations, grammatical function, collocations, and constraints of use like register and frequency, in addition to the comprehensive list of aspects comprising vocabulary knowledge in general (Nation, 2001). Moreover, the implemented MI-inspired instruction could not possibly target all these aspects equally. Consequently, the fourth category is not as easy as it may seem. Obviously, this is a sizable amount of knowledge for all learners at this level to master. Besides, receptive knowledge precedes the productive one and takes time to turn into productive, given that the gap between the two is often considerable (Nation, 2001). Accordingly, the implied MI theory demonstrated enhancement in receptive vocabulary knowledge while resulting in a comparatively limited improvement in productive vocabulary proficiency. In addition, while it helped improve the breadth of learners' vocabulary repertoire, it did not significantly affect its depth.

In brief, to answer the fourth research question, findings indicate that MI-inspired instruction had a significant positive impact on learners' overall vocabulary knowledge, particularly the breadth of their vocabulary repertoire, which confirms the alternative hypothesis. Indeed, the group subjected to pedagogical interventions inspired by the MI theory over a period of four months demonstrated significant improvement in their vocabulary repertoire. However, given the incremental and complex nature of word knowledge, the implied MI intervention did not impact all aspects of vocabulary proficiency, particularly the ability for productive use (efficient retrieval of the lexical item for active use).

Chapter Six: Pedagogical Implications, Limitations, and Suggestions for Further Research

Chapter Six: Pedagogical Implications, Limitations, and Suggestions for Further Research

Introduction

The present chapter provides a set of pedagogical implications of the study's findings, with the aim of providing useful insights for improving learners' learning experiences. In addition, a reference to the research limitations is made, with the aim of stressing potential areas for improvement in future research.

6.1. Pedagogical Implications

This study examined whether MI-inspired instruction could enhance learners' vocabulary repertoires by first exploring individual MI profiles of the EG and the teacher using the Multiple Intelligences Inventory (McKenzie, 2017). Before and after an intervention designed to foster MI-inspired teaching, particularly targeting vocabulary, the vocabulary repertoire was assessed using the Vocabulary Knowledge Scale (Wesche & Paribakht, 1996). Most importantly, it established a relationship between the vocabulary repertoire and the MI theory. The study mainly addressed one main research question in addition to sub-questions, and it validated the corresponding hypotheses. In this account, there are several pedagogical implications worth considering.

First, teachers should not miss a chance to assess EFL learners' MI. Measures like generating MI profiles should be carried out more frequently before using any instructional approaches. Gardner (1993) believed that it is better to identify an MI profile early on to enhance the learner's educational chances. If the EFL teacher is to cater to diverse intelligences, an MI profile can serve as a road map for addressing

learners' uniqueness by employing a variety of language instructions and materials to make EFL learning more appealing. In this sense, MI inventories and questionnaires are effective tools that should be encouraged among both teachers and learners. Teachers can also rely on data from learners' performance, talk to learners or parents, or observe learners to gauge their class MI profile.

Second, the potential existence of 'jagged' MI profiles in EFL classes, meaning that learners have varied predominant intelligences, highlights EFL teachers' need to acknowledge and address the different intelligences present in their classes. Since learners come to class with unique strengths and preferences, this can encourage teachers to create more inclusive teaching practices. Teachers can better respond to learners' different learning needs and preferences only if they recognize and cater for the different intelligences. This stresses the need for more flexible and adaptive teaching strategies, in which learners' individual qualities are celebrated. However, since it is impossible for the teacher to equally address all the intelligences all the time throughout the whole course, due to practical constraints and several limitations, it is advisable to identify and target the class' most predominant intelligences, while also addressing the other intelligences. This is to ensure a balanced approach to EFL teaching and learning. Additionally, it is important to take into account that intelligences can be subject to change and development. This is why it is advisable to assess learners' MI over different periods of time.

Third, the identified mismatch between learners' predominant intelligences and the MI energy of the English textbook should remind teachers that it is crucial to align the used instructional materials with learners' different intelligences. To target all the intelligences and foster a more effective learning environment, additional materials should be used, particularly to positively enhance learners' engagement.

Thus, for a more effective and empowering learning experience, teachers are invited to work towards matching instructional materials with learners' intelligences and not only rely on the designed textbooks.

Fourth, it is mandatory for teachers to first examine their personal MI profiles and to identify their strengths and weaknesses before engaging in implementing MI teaching. Developing awareness of their qualities and deficiencies can serve as a guide to better implement instructional practices and improve the effectiveness of their teaching.

Moreover, several pedagogical implications can be drawn concerning the effect of MI-based instruction on the vocabulary repertoire. First, the findings indicate that MI-based instruction can significantly enhance learners' vocabulary repertoire, particularly its breadth. This suggests that integrating MI principles into teaching strategies may lead to more effective vocabulary learning, especially in recognizing and understanding new words. The post-test results, showing improvement, particularly in the EG, highlight the potential of MI-based instruction to make students more familiar with target vocabulary, thereby enhancing their ability to recognize and understand these words.

Additionally, the study highlights the importance of focusing instructional strategies on both the form and meaning of words. The improvement in learners' ability to recognize words but their struggle with using them in sentences suggests that while their receptive vocabulary improved, their productive vocabulary still needs work. This gap highlights the need for teaching strategies that focus not only on recognizing new vocabulary but also on using it in context to build a deeper understanding and knowledge. The limited improvement in the productive use of vocabulary

(as evidenced by the challenges learners faced in using words in sentences) reflects the complexity of acquiring productive vocabulary skills. This suggests that while MI-based teaching can help in the early stages of vocabulary learning (recognition and understanding), additional strategies may be needed to help learners use this knowledge effectively in their own writing and speaking. Moreover, since receptive knowledge often precedes productive knowledge and there is often a considerable gap between the two, it is important to use long-term instructional strategies to close this gap. This might involve giving learners more focused exposure to target vocabulary and providing opportunities to practice using that vocabulary effectively in different contexts to enhance the depth as well as

the breadth of their vocabulary

repertoire. The findings also suggest that integrating the MI theory into curriculum design can be beneficial, especially in situations where learners show significant vocabulary deficiencies. A curriculum that takes into consideration different intelligences not only helps improve vocabulary but also meets various learning needs, which can lead to more language development.

These implications suggest that vocabulary instruction should be more nuanced. It should balance the introduction of new words with strategies that can foster both recognition and deeper, more productive use. The MI theory can be applied to enhance both the breadth and depth of learners' vocabulary repertoire, making learning more engaging and effective.

6.2. Limitations

Like in any research, it is critical to address limitations identified during the course of the study. Problems and restrictions encountered during the current research are discussed, to assess the study and highlight areas for possible improvement. While guiding future research, we also want to improve the credibility of the study's findings, by acknowledging the following limitations.

The main limitation was the sample size. As previously explained, the number of learners per group was reduced to the minimum, due to the precautionary measures taken against COVID-19 (Refer to Section 4.2.), and the researcher was left out with 22 present learners. This seemed to have an effect on the results. For instance, even though the class' MI profile is mainly word smart this means that only eight learners out of 22 are word smart. Only one student scored predominance of naturalist intelligence. Likewise, no student scored in existential intelligence. A small sample size can be a challenge because it might not accurately represent the larger population or provide results that apply to different contexts. However, it is important to note that the findings of the present study remain valuable despite the relatively small sample size in this research. Its findings still provide insight within the context of the group examined. Additionally, despite the sample size limitation, the findings still offer valuable insights relevant to the group studied. Thus, even though the sample size was limited, the findings add a significant contribution to the existing body of knowledge.

Another limitation to consider is the lack of randomization in this study. Learners of each group were chosen by convenience sampling instead of random procedures. Due to administrative constraints, random selection was not feasible. Since randomization considerably reduces the effect of extraneous variables and improves the

dependability of the findings, it might have resulted in more generalizable results across different groups.

Along with the mentioned limitations, time constraints posed another challenge in this research. The researcher was obliged to stick to a fixed timetable in order to complete the official syllabus while also implementing MI-inspired teaching, which was a difficult task. Trying to balance the demands of the curriculum with the demands of the study was not evident. In other words, despite the efforts of the teacher to integrate MI instructional strategies, time constraints (Four sessions per week, one hour each session) limited the extent to which these strategies could be applied and evaluated. As a result, although the study aimed to implement innovative MI teaching, these limitations hindered the extent to which MI could be implemented. In addition, they hindered the extent to which vocabulary learning could be promoted. This all led to limiting the depth of the study, as well as its application.

6.3. Suggestions for further research

In future studies, it is important to address the limitations faced in this research to ensure that the findings are valid and reliable. One major limitation that needs to be tackled is the issue of sample size. This highlights the need to employ a more appropriate sampling strategy to ensure more representative results. By using a larger and more diverse sample, future research can reduce the possible biases that come with a small sample size, ensuring the generalizability of findings across broader populations. Additionally, to address the constraints of time, it would be beneficial to conduct longitudinal studies to track the long-term effects of MI-based instruction on the vocabulary repertoire. This could help determine how lasting the vocabulary gains are and whether they lead to improved language proficiency over time.

Moreover, it is recommended that future studies explore alternative methods for constructing MI profiles and investigate alternative vocabulary assessment tools. By using a variety of methods to create MI profiles and assess the vocabulary repertoire, researchers can explore more tools that are available for investigating the relationship between MI-inspired teaching and the vocabulary repertoire.

Additionally, future research should go beyond just vocabulary and look into how MI-inspired teaching could impact other aspects of language learning. By examining how it affects different language skills, like grammar, or pronunciation, researchers can get a clearer picture of how MI-based instruction influences overall language proficiency. Future research could also develop and test instructional strategies that specifically target the productive use of vocabulary within an MI framework. For instance, it could focus on identifying which types of MI-based activities best support the ability to use vocabulary actively in speaking and writing.

Furthermore, future research should look into other factors that contribute to individual differences and how they affect the results of MI-based interventions. For instance, exploring the role of self-esteem and other relevant factors could provide valuable insights into how these factors influence the success of MI treatment. Understanding how these variables interact with the treatment can help researchers gain a deeper understanding of the learning environment. Another approach could involve conducting qualitative studies to examine learners' experiences and perceptions of MI-based vocabulary instruction. This might include interviews or focus groups to explore how learners feel these strategies affect their learning.

Ultimately, no matter what direction future researchers choose to take, it is essential to address the limitations found in this study and take steps to avoid repeating them. By keeping these recommendations in mind and focusing on strong

methodologies, future studies can not only advance our understanding of language education but also ensure that their findings are valid and reliable.

Conclusion

This chapter discussed the pedagogical implications of the findings of the research It also tackled the research limitations and highlighted areas where better methods or more extensive studies could be beneficial in the future. Additionally, the chapter suggested some recommendations for further research.

General Conclusion

The present study aimed to investigate the potential to improve the learners' vocabulary repertoire through the implementation of MI-inspired instruction. The study targeted second year learners at Azri Mohamed secondary school in Oum El Bouaghi province, during the 2021/2022academic year. It followed a quasi-experimental design. To examine the potential positive effect of the independent variable (MI-based instruction) on the dependent variable (the vocabulary repertoire), the researcher, initially, gauged learners' MI profile to create a map identifying their unique strengths that needed celebration and areas of weakness that needed more nurturing. The MI profile of the teacher was also evaluated to identify differences in the intelligences and areas of incompatibility that the teacher had to overcome in order to respond to the class unique profile and needs. Accordingly, an MI-inspired teaching intervention was designed to enhance learners' vocabulary repertoire. Improvement was measured using an adapted version of the VKS was used, prior and post the four-month intervention.

The thesis in hand consists of six chapters. The first three constitute the literature review. The first chapter is on the MI theory, the second on the MI in the EFL classroom, and the third on vocabulary teaching and learning. The following three chapters were devoted to the practical side of the study. The fourth chapter is about the methodology followed, including the instruments and the treatment employed. The fifth chapter presents the results attained, followed by their discussion and interpretation. Finally, the sixth chapter outlines the pedagogical implications based on the discussion of the attained results, limitations faced in the study, and suggestions for further research.

The literature review provided a solid theoretical foundation for formulating the research questions and hypotheses. Prior the intervention, MI profiling was conducted for the EG and a pre-test using the VKS was administered to both the EG and the CG. After that, the intervention stage for the EG involved the implementation of MI-inspired instruction over four months, covering four different units of the syllabus. Lastly, a post-test was administered, and the data was analyzed to answer the following main research question:

Research Question: Can MI-inspired instruction improve learners' vocabulary repertoire?

In addition we aimed to answer the following sub-questions:

1- How does the distribution of the MI profiles vary among learners in the class?

2- What are the dominant intelligences among the MI profile of the present EFL classroom?

3- Is the MI profile of the teacher different from that of the class?

Accordingly, the following corresponding hypotheses went through confirmatory analysis:

Null Hypothesis (H_0): MI-inspired instruction has no effect on improving the learners' vocabulary repertoire.

Alternative Hypothesis (H_1): MI-inspired instruction does enhance the learners' vocabulary repertoire.

In addition to these hypotheses:

- The distribution of the MI profiles among learners in the class is diverse, reflecting a range of dominant and secondary intelligences.

- The dominant energy within the MI profile of the class is linguistic.

- The MI profile of the teacher is different from that of the class.

After testing the hypotheses and answering the questions, the findings of the study are summarized as follows:

- The jagged MI profile of the class showcases predominant and secondary intelligences. Linguistic intelligence was the predominant, followed by visual and social intelligences, whereas existential intelligence was the least present in the profile. This reflects the varied strengths and the different learning needs and preferences of learners, which mirrors the uniqueness of the EFL classroom. Thus, more effort should be focused on nurturing all learners' intelligences and targeting their strengths.
- MI profiles are unique. However, the mismatch of the teacher's predominant intelligences and those of the class reflects the need for EFL teachers to develop awareness of their MI profiles and to try to mend the gap between their teaching style and the needs of their learners. They should mobilize their strengths and manage their way around their weak areas to provide all learners with the best possible learning experience.
- MI-based instruction has the potential to improve learners' overall vocabulary knowledge. Specifically, it has significant positive effect on receptive vocabulary, including recognizing words and identifying their meaning. However, it does not equally improve productive vocabulary skills, which involve actively using words in writing. This suggests the need to explore other

educational theories that might better target the learners' ability to actively use the vocabulary they learn.

Further research should overcome limitations faced in this study, specifically the research sample size. This would help ensure that the findings are more representative and applicable across a broader range of contexts.

References

Akcin, S. (2009). The effects of using activities based on multiple intelligence theory of 11th grade students' learning and retention of Enlish vocabulary. Izmir.

Arab, K. (2015). Stressing vocabulary in the Algerian EFL class using the lexical notebook as a vocabulary learning strategy. *The journal of teaching English for specific and academic purposes, 3* (2), 329-346.

Armstrong, T. (1999). *7 Kinds of Smart: Identifying and Developing Your Multiple Intelligences.* New York: Penguin Putnam Inc.

Armstrong, T. (2000). *Multiple intelligences in the classroom* (2e ed.). Virginia USA: ASCD Alexandria.

Bemmoussat, N. D., & Bouyakoub, N. (2019). English Language Education in Algeria: Hostage of an Exam-Centric Education System. *Arab World English Journal, 10* (3), 202-219.

Berman, M. (1998). *A Multiple Intelligences Road To An ELT Classroom.* Carmarthen, Wales, UK: Crown House Publishing Ltd.

Beth A., V., Michael C., A., & Philip A., V. b. (2006). Beyond g: Putting multiple intelligences theory to the test. *ELSEVIER, 34*, 487–502.

Bhandari, H. (2022). Learning Style Differences as an Issue in EFL Classroom. *AWADHARANA, 7*, 119-132.

Bishop, A., Yopp, H. K., & Yopp, R. H. (2009). *Vocabulary Instruction for Academic Success.* U.S.A.: Shell Education.

Bouchefra, m. (2021). Algerian EFL Learners' Vocabulary Deficiency: Insights and Suggestions. *Ennass Journal, 08* (03), 752-767.

Boulmaiz, D. (2017). The Place of The Multiple Intelligences Theory in the Algerian EFLTextbook : An Evaluation of 1st Year Secondary School Textbook "At the Crossroads". *Revue des sciences humaines, 8* (1), 19-29.

Campbell, L., & Campbell, B. (1999). *Multiple Intelligences and Student Achievement: Success stories from six schools.* Alexandria,Virginia. USA: Association for Supervision and Curriculum Development.

Chacón-Beltrán, R., Abello-Contesse, C., & Torreblanca-López, M. d. (2010). Vocabulary Teaching and Learning: Introduction and Overview. In R. Chacón-Beltrán, C. Abello-Contesse, & M. d. Torreblanca-López, *Insights into Non-native Vocabulary Teaching and Learning* (pp. 1-12). Toronto: Multilingual Matters.

Cianciolo, A. T., & Sternberg, R. J. (2004). *Intelligence: A Brief History.* Oxford, UK: Blackwell Publishing.

Coxhead, A. (2007). Factors and aspects of knowledge affecting L2 word use in writing. In P. Davidson, C. Coombe, D. Lloyd, & D. Palfreyman, *Teaching and Learning Vocabulary in Another Language* (pp. 31-42). Dubai: TESOL Arabia.

Dawson, R. (2011). How Significant is a Boxplot Outlier? *Journal of Statistics Education, 19* (2), 1-12.

Dóczi, B., & Kormos, J. (2016). *Longitudinal Developments in Vocabulary Knowledge and Lexical Organization.* New York: Oxford University Press.

Ellis, N. C. (1994). Vocabulary acquisition: the implicit ins and outs of explicit cognitive mediation. In N. C. Ellis, *Implicit and explicit Learning of Languages* (pp. 211-282). London: Academic press.

Fariba, H., & Akbar, A. (2019). Vulnerability of Multiple Intelligences Assessment Instrumentation to Gender Variance in EFL Context. *Iranian Journal of English for Academic Purposes, 8* (1), 77-92.

Fleetham, M. (2006). *Multiple Intelligences in Practice: Enhancing self-esteem and learning in the classroom.* Stafford: Network Continuum Education.

Gardner, H. (1983). *Frames of mind.* New York: Basic Books.

Gardner, H. (1993). *Frames Of mind: the theory of multiple intelligences* (2nd edition (tenth-anniversary edition) ed.). New York: Basic books.

Gardner, H. (1999). *Intelligence reframed: multiple intelligences for the 21st century.* USA: Basic Books.

Gardner, H. (2006). *Multiple Intelligences: New Horizons.* New York: Basic Books.

Gerald, B. (2018). A brief review of independent, dependent and one sample t-test. *International journal of applied mathematics and theoretical physics, 9* (2), 50-54.

Gopalan, M., Rosinger, K., & Bin, A. J. (2020). Use of Quasi-Experimental Research Designs in Education Research: Growth, Promise, and Challenges. (S. journals, Ed.) *44* (1), 218-243.

Hadj Said, M. (2021). The inclusion of Multiple Intelligences Theory in The Algerian EFL Textbook: a content analysis of 2nd year Secondary School Textbook "Getting Through". *Applied Linguistics, 05* (09), 283- 293.

Hajhashemi, K., & Wong, B. E. (2010). A Validation Study of the Persian Version of McKenzie's Multiple Intelligences Inventory to Measure Profiles of Pre-University Students. *Pertanika Journal of Social Sciences & Humanities (JSSH), 18* (2), 343 - 355.

Haley, M. H. (2004). Learner-Centered Instruction and the Theory of Multiple Intelligences With Second Language Learners. *Teachers College Record, 106* (1), 163-180.

Henriksen, B. (1999). Three dimensions of vocabulary development. *Studies in Second Language Acquisition, 21* (2), 303-317.

Herman, M. J., Kordinak, S. T., & Bruce, A. (2009). Multiple intelligences: current trends in assessment. *I-manager's Journal on Educational Psychology, 2* (3), 9-13.

Huang, S., Willson, V. L., & Eslami, Z. R. (2012). The Effects of Task Involvement Load on L2 Incidental Vocabulary Learning: A Meta-Analytic Study. *The Modern Language Journal, 96*, 544–557.

Ismail, N., Kinchin, G., & Edwards, J.-A. (2018). Pilot Study, Does It Really Matter? Learning Lessons from Conducting a Pilot Study for a Qualitative PhD Thesis. *International Journal of Social Science Research, 6* (1), 1-17.

Jane, A., & M Carmen, F. (2004). Multiple Intelligence Theory and Foreign Language Learning :A Brain-based Perspective. *International Journal of English Studies, 4* (1), 119-136.

Kamil, M. L., & Hiebert, E. H. (2005). Teaching and Learning Vocabulary: Perspectives and Persistent Issues. In M. L. Kamil, & E. H. Hiebert, *Teaching and Learning Vocabulary: Bringing Research to Practice* (pp. 1-23). London: Lawrence Erlbaum Associates, Publishers.

Kaufhold, S. S., & Kaufhold, J. A. (2013). *Basic statistics for educational research.* Bloomington: iUniverse.

Khelalfa, N., & Kellil, M.-B. (2023). Reconsidering the use of L1 in the Algerian EFL classroom. *SAGE Open* , 1-13.

Kirsi, T., Petri, N., & Erkki, K. (2013). Multiple intelligences: Can they be measured? *Psychological Test and Assessment Modeling, 55* (1), 438-461.

Laufer, B. (2010). Form-focused Instruction in Second Language Vocabulary Learning. In R. Chacón-Beltrán, C. Abello-Contesse, & M. d. Torreblanca-López, *Insights into Non-native Vocabulary Teaching and Learning* (pp. 15-27). Toronto: Multilingual Matters.

Legg, S., & Hutter, M. (2007). A Collection of Definitions of Intelligence. *Frontiers in Artificial Intelligence and Applications, 157*, 17-24.

Lesiak, K. (2015). Teaching English to adolescents. *World Scientific News, 7*, 223-237.

Literacy Teaching: Toolkit. (2021, September 14). Retrieved from Victoria States Government: https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/english/literacy/readingviewing/Pages/litfocusvocab.aspx

McCarten, J. (2007). *Teaching Vocabulary: Lessons from the Corpus, Lessons for the Classroom.* New York: Cambridge University Press.

McKenzie, W. (2005). *Multiple Intelligences and Instructional Technology* (2nd edition ed.). New York: International Society for Technology in Education.

McKenzie, W. (2017). *Multiple Intelligences Inventory*. Retrieved October 11, 2020, from surfaquarium.com: https://surfaquarium.com/MI/inventory.htm

Milton, J. (2009). *Measuring Second Language Vocabulary Acquisition.* Toronto: Multilingual Matters.

Miyahara, M. (2000). Sampling: Problematizing the issue. In J. McKinley, & H. Rose, *The Routledge Handbook of Research Methods in Applied Linguistics* (pp. 52-62). Oxford: Routledge.

Moran, S., Kornhaber, M., & Gardner, H. (2006). Orchestrating multiple intelligences. *Educational Leadership, 64* (1), 22-27.

Nagy, W. (2005). Why Vocabulary Instruction Needs to Be Long-Term and Comprehensive. In M. L. Kamil, & E. H. Hiebert, *Teaching and Learning Vocabulary: Bringing Research to Practice* (pp. 27-44). London: LAWRENCE ERLBAUM ASSOCIATES, PUBLISHERS.

Nation, P. (2001). *Learning Vocabulary in Another Language.* Cambridge, UK: Cambridge University Press.

Nation, P. (1990). *Teaching and Learning Vocabulary.* New York: Newbury House.

National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction.* National Institute of Child Health and Human Development. Washington, DC: Author.

Nicholson-Nelson, K. (1998). *Developing Students' Multiple Intelligences.* New York: professional books.

Nolen, J. L. (2003). Multiple intelligences in the classroom. *Education, 124* (1), 115−119.

Read, J. (2000). *Assessing Vocabulary.* Cambridge: Cambridge University Press.

Richards, J. C. (1976). The role of vocabulary teaching. *TESOL Quarterly, 10* (1), 77-89.

Rogers, J., & Révész, A. (2020). Experimental and quasi-experimental designs. In J. McKinley, & H. R. Rose, *the routledge handbook of research methods in applied linguistics* (pp. 133-143). Oxford: Routledge.

Schmitt, N. (2000). *Vocabulary in language teaching.* Cambridge, United Kingom: Cambridge university press.

Schmitt, N. (2010). *Researching Vocabulary: A Vocabulary Research Manual.* New York: Palgrave Macmillan.

Schmitt, N., & Rodgers, M. P. (2002). *An introduction to applied linguistics.* (N. Schmitt, & M. P. Rodgers, Eds.) London: Arnold.

Seyyed, A. R. (2008). On the relationship between multiple intelligences and language proficiency. *The Reading Matrix, 8* (2), 155-174.

Silver, H., Richard, S., & Matthew, P. (1997). Integrating Learning Styles and Multiple Intelligences. *Educational Leadership, 55* (1), 22-27.

Sonbul, S., & Schmitt, N. (2010). Direct teaching of vocabulary after reading: Is it worth the effort? *English Language Teaching Journal, 64*, 253–260.

Susan D., M., Dale S., R., & Michaela, P. (2004). Multiple Intelligences and Reading Achievement: An Examination of the Teele Inventory of Multiple Intelligences. *The Journal of Experimental Education,, 73* (1), 41–52.

Susana, U. O. (2013, september). The multiple intelligences theory and language learning strategies: relation and the effect of instruction. *Computer Science* .

Syeda, A. I., & Syeda, A. K. (2017). Analyzing the Effectiveness of Vocabulary Knowledge Scale on Learning and Enhancing Vocabulary through Extensive Reading. *English Language Teaching, 10* (9), 36-48.

Takač, P. V. (2008). *Vocabulary Learning Strategies and Foreign Language Acquisition.* Ontario, Canada: Multilingual Matters Ltd.

Tirri, K., & Nokelainen, P. (2011). *Measuring Multiple Intelligences and Moral Sensitivities in Education.* Rotterdam: Sense Publishers.

Tirri, K., Nokelainen, P., & Komulainen, E. (2013). Multiple intelligences: Can they be measured? *Psychological Test and Assessment Modeling, 55* (4), 438–461.

Torki, S. (2012). The relationship between learners' lexical coverage and the readability levels of the Algerian English textbooks. *Doctoral thesis, University of Setif* . Dspace.

Ur, P. (2022). *Penny Ur's 77 tips for teaching vocabulary.* Cambridge, UK: Cambridge university press.

Vidal, k. (2011). A comparison of the effects of reading and listening on incidental vocabulary. *Language Learning, 61*, 219–258.

Warning, R. (2002, March). *Rob Warning*. Retrieved June 21, 2019, from Ron Warning Org: http://www.robwaring.org/papers/various/scales.htm

Webb, S., & Chang, A. C. (2012). Second language vocabulary growth. *RELC journal, 43* (1), 113-126.

Webb, S., & Webb, S. A. (2020). *The Routledge handbook of vocabulary studies* (Vol. 2). (S. Webb, & S. A. Webb, Eds.) London: Routledge.

Wesche, M., & Paribakht, S. (1996). Assessing second language vocabulary knowledge: Depth versus breadth. *Canadian Modern Language Review, 53* (1), 13-40.

Wilkins, D. (1972). *Linguistics in language teaching.*London: Arnold.

Williams, R. B. (2002). *Multiple Intelligences for Differentiated Learning.* California: Corwin press.

Zwier, L. J., & Boers, F. (2023). *English L2 Vocabulary Learning and Teaching: Concepts, Principles, and Pedagogy.* New York: Routledge.

Appendices

Appendix 1

Multiple Intelligences Inventory

Part I Complete each section by placing a "1" next to each statement you feel accurately describes you. If you do not identify with a statement, leave the space provided blank. Then total the column in each section.

Section 1

_____ I enjoy categorizing things by common traits
_____ Ecological issues are important to me
_____ Classification helps me make sense of new data
_____ I enjoy working in a garden
_____ I believe preserving our National Parks is important
_____ Putting things in hierarchies makes sense to me
_____ Animals are important in my life
_____ My home has a recycling system in place
_____ I enjoy studying biology, botany and/or zoology
_____ I pick up on subtle differences in meaning

_____ TOTAL for Section 1

Section 2

_____ I easily pick up on patterns
_____ I focus in on noise and sounds
_____ Moving to a beat is easy for me
_____ I enjoy making music
_____ I respond to the cadence of poetry
_____ I remember things by putting them in a rhyme
_____ Concentration is difficult for me if there is background noise
_____ Listening to sounds in nature can be very relaxing
_____ Musicals are more engaging to me than dramatic plays
_____ Remembering song lyrics is easy for me

_____ TOTAL for Section 2

Section 3

_____ I am known for being neat and orderly
_____ Step-by-step directions are a big help
_____ Problem solving comes easily to me
_____ I get easily frustrated with disorganized people
_____ I can complete calculations quickly in my head
_____ Logic puzzles are fun
_____ I can't begin an assignment until I have all my "ducks in a row"

_____ Structure is a good thing
_____ I enjoy troubleshooting something that isn't working properly
_____ Things have to make sense to me or I am dissatisfied

_____ TOTAL for Section 3

Section 4
_____ It is important to see my role in the “big picture” of things
_____ I enjoy discussing questions about life
_____ Religion is important to me
_____ I enjoy viewing art work
_____ Relaxation and meditation exercises are rewarding to me
_____ I like traveling to visit inspiring places
_____ I enjoy reading philosophers
_____ Learning new things is easier when I see their real world application
_____ I wonder if there are other forms of intelligent life in the universe
_____ It is important for me to feel connected to people, ideas and beliefs

_____ TOTAL for Section 4

Section 5
_____ I learn best interacting with others
_____ I enjoy informal chat and serious discussion
_____ The more the merrier
_____ I often serve as a leader among peers and colleagues
_____ I value relationships more than ideas or accomplishments
_____ Study groups are very productive for me
_____ I am a “team player”
_____ Friends are important to me
_____ I belong to more than three clubs or organizations
_____ I dislike working alone

_____ TOTAL for Section 5

Section 6
_____ I learn by doing
_____ I enjoy making things with my hands
_____ Sports are a part of my life
_____ I use gestures and non-verbal cues when I communicate
_____ Demonstrating is better than explaining
_____ I love to dance
_____ I like working with tools
_____ Inactivity can make me more tired than being very busy
_____ Hands-on activities are fun
_____ I live an active lifestyle

_____ TOTAL for Section 6

Section 7

_____ Foreign languages interest me
_____ I enjoy reading books, magazines and web sites
_____ I keep a journal
_____ Word puzzles like crosswords or jumbles are enjoyable
_____ Taking notes helps me remember and understand
_____ I faithfully contact friends through letters and/or e-mail
_____ It is easy for me to explain my ideas to others
_____ I write for pleasure
_____ Puns, anagrams and spoonerisms are fun
_____ I enjoy public speaking and participating in debates

_____ TOTAL for Section 7

Section 8
_____ My attitude affects how I learn
_____ I like to be involved in causes that help others
_____ I am keenly aware of my moral beliefs
_____ I learn best when I have an emotional attachment to the subject
_____ Fairness is important to me
_____ Social justice issues interest me
_____ Working alone can be just as productive as working in a group
_____ I need to know why I should do something before I agree to do it
_____ When I believe in something I give more effort towards it
_____ I am willing to protest or sign a petition to right a wrong

_____ TOTAL for Section 8

Section 9
_____ Rearranging a room and redecorating are fun for me
_____ I enjoy creating my own works of art
_____ I remember better using graphic organizers
_____ I enjoy all kinds of entertainment media
_____ Charts, graphs and tables help me interpret data
_____ A music video can make me more interested in a song
_____ I can recall things as mental pictures
_____ I am good at reading maps and blueprints
_____ Three dimensional puzzles are fun
_____ I can visualize ideas in my mind

_____ TOTAL for Section 9

Part II Now carry forward your total from each section and multiply by 10 below:

Section	Total Forward	Multiply	Score
1		X10	
2		X10	
3		X10	
4		X10	
5		X10	
6		X10	
7		X10	

8		X10	
9		X10	

Part III Now plot your scores on the bar graph provided:

100									
90									
80									
70									
60									
50									
40									
30									
20									
10									
0	Sec 1	Sec 2	Sec 3	Sec 4	Sec 5	Sec 6	Sec 7	Sec 8	Sec 9

Part IV Key:

Section 1 – This reflects your Naturalist strength

Section 2 – This suggests your Musical strength

Section 3 – This indicates your Logical strength

Section 4 – This illustrates your Existential strength

Section 5 – This shows your Interpersonal strength

Section 6 – This tells your Kinesthetic strength

Section 7 – This indicates your Verbal strength

Section 8 – This reflects your Intrapersonal strength

Section 9 – This suggests your Visual strength

Appendix 2

Adapted Vocabulary Knowledge Scale Test

Words **الكلمات**	**1. I don't remember having seen this word before** **لا اذكر أنني رأيت هذه الكلمة من قبل** **Use (✓)**	**2. I have seen this word before but I don't know what it means** **رأيت هذه الكلمة من قبل لكن لا اعرف ماذا تعني** **Use (✓)**	**3. I know this word. It means…….. (Synonym or translation)** **انا اعرف هذه الكلمة. مرادفتها هي..... او ترجمتها بالعربية هي.....**	**4. I can use this word in a sentence. E.g…… استطيع استعمال هذه الكلمة في جملة مفيدة. مثال.....**
1-Conflict				
2- To recycle				
3-Futuristic				
4- Natural disaster				
5- Charitable				
6- Sustainabledevelopment				
7- Duty				
8- Emergency				
9-Racism				
10-Conservation				
11- Discovery				
12-Solidarity				
13-Dream				
14-Natural resources				
15- To imagine				
16-Safety				

**** All word forms driven from the given words are accepted: noun/ verb/ adjective/ adverb/ plural...***

Words الكلمات	1. I don't remember having seen this word before لا اذكر أنني رأيت هذه الكلمة من قبل Use (✓)	2. I have seen this word before but I don't know what it means رأيت هذه الكلمة من قبل لكن لا اعرف ماذا تعني Use (✓)	3. I know this word. It means…….. (Synonym or translation) انا اعرف هذه الكلمة. مرادفتها هي..... او ترجمتها بالعربية هي.....	4. I can use this word in a sentence. E.g…… استطيع استعمال هذه الكلمة في جملة مفيدة. مثال.....
17-Bullying				
18- To waste				
19- Film-maker				
20-Pandemic				
21- Human rights				
22- Pollution				
23- To speculate				
24- Catastrophe				
25- Manifestation				
26-Deforestation				
27- Magic				
28- Scenario				
29- Peace				
30- Renewableenergy				
31- Donation				
32- Science-fiction				

**** All word forms driven from the given words are accepted: noun/ verb/ adjective/ adverb/ plural...***

Appendix 3

Lesson Plan Sample

Lesson Plan

Project : Waste not, want not!
Theme : Poverty & world resources.
Level : 2nd year Letters & Philosophy.
Competencies : Interaction / Interpretation / Production
Sequence: Reading & writing
Materials :worksheets, graphic organizers, dictionaries, visuals.
Time Allocated: 2 hours

Objective: By the end of this lesson learners will be able to develop awareness of green living, and to express their personal opinions on the matter.

Target Intelligences:

Linguistic	To word-search To read and interpret a text about 'living green' To work on worksheets To use the dictionary to look up new words
Visual	To color correct answers and circled words To respond to pictures about preserving the planet
Social	To work in groups To work in pairs To discuss in groups To exchange answers, ideas, drafts, etc.
Kinesthetic	To move around the class from home groups to expert groups & vice versa To use the 'hands-on' when Ls hear a word they want to know more about
Intrapersonal	To use the 'one-minute' chair To take time alone to reflect on answers To use personal KWL charts
Naturalist	To develop awareness about 'green' living
Logical	To guess To use graphic organizers
Musical	To listen to music while drafting
Existential	To reflect on answers, one's role in the world, etc.

<table>
<tr><th>Time</th><th>Steps</th><th>Rationale</th><th>Activities</th><th>Target Intelligences</th></tr>
<tr>
<td>5 minutes</td>
<td>Warm up</td>
<td>• To raise Ls' interest</td>
<td>To solve the following word search by guessing
hints :
Starts with a G, 5 letters, a colour …etc.
<table>
<tr><td>C</td><td>O</td><td>N</td></tr>
<tr><td>S</td><td>E</td><td>E</td></tr>
<tr><td>G</td><td>R</td><td>E</td></tr>
</table>
To reflect on the question: what does the colour green represent?
* Ls are reminded to use their personal KWL charts at the beginning of each lesson</td>
<td>• Linguitic
• Logical</td>
</tr>
<tr>
<td>10 minutes</td>
<td>Pre-reading</td>
<td>• To train Ls to guess the gist of the text through picturestudy.
• To activate Ls' background knowledge.</td>
<td>To study the pictures then tick the appropriate pictures according to what can be done to preserve nature.
To think of otherways to preserve the planet.</td>
<td>• Visual
• Naturalist
• Intrapersonal</td>
</tr>
</table>

35 minutes **30 minutes**	**While -reading**	• To boost Ls self-esteem by **moving around the class** • To train Ls to use a **graphic organiser** • To encourage **classmate interaction.** • To aid Ls to learn new vocabulary (target words are highlighted in the text). • To train Ls to **think strategically** about solving comprehension problems. • To enable Ls **to share** thoughts & ideas. • To encourage Ls to be enthusiastic readers.	**Jigsaw Reading:** **Moving** around the class, 4 "*home groups*" of Ls (5 Ls per group) are randomly formed, receiving 1 text with 5 stickered paragraphs, 5 graphic organizers, and 5 worksheets Each learner selects (**cuts**) a paragraph, a graphic chart, and a worksheet to work with, reading their chosen paragraph silently. Ls who read the same paragraph from different groups then meet at an "*expert group*" table to discuss the main ideas and challenging vocabulary of the paragraph, utilizing the graphic organizer for a five-minute discussion. This process repeats for all three paragraphs. Afterwards, learners return to their original home groups, where each member, now an expert on a different paragraph, collaborates to assemble the text onto a single paper. Ls then conduct a final collective reading and discuss their findings in order, using notes from the graphic organizers to guide their discussion. *Ls are encouraged to use the **dictionary** *During the meetings, Ls are encouraged to use the **one-minute chair** if/when needed **Worksheets:** *when reading the text aloud, Ls are invited to use the hands-on strategy when hearing a new word they want to learn - To **colour** correct answers - To **match** - To answer comprehension questions - To **circle** new words - To **look up** words in the dictionary - To **skim and Scan**	• **Linguistic** • **Social** • **Kinesthetic** • **Intrapersonal** • **Logical** • **Naturalist**

40 minutes	**Post- reading**	• To encourage Ls to integrate ideas &**reflect** on the learnt knowledge through a production.	* **Mood music** is played when Ls are writing To make use of all the previous answers and **reflect** on the topic of '**living green'** To express **personal opinions** through a small production following the studied paragraph structure and using the new learned vocabulary. To **exchange** first drafts with partners for peer reviewing To **read** their productions to the class. To copy a production on the board for review and feedback * At the end of each lesson Ls are encouraged to **share** new vocabulary they have learned	• **Naturalist** • **Social** • **Musical** • **Existential** • **Intrapersonal**

I- Pre-Reading:

a) Tick the things you can do to preserve ourplanet.

☐ 

Plant trees

☐ 

Recycle

☐ 

Use solar Panels

☐ 

Turn off the lights when leaving

☐ 

Switch to fluorescent lamps

b) What other things can you do to preserve theplanet? _____

_____

II- Reading: ***Read the text, and do the tasks below.***

Think Green

'Think green!' We have all heard this slogan many times, but do we understand what it means? Climate change is real, and it will affect us, our health, and the health of the planet, so maybe it's time to do something about it. There are many ways to help both ourselves and the planet: to turn off the electronics, plant vegetable gardens, and recycle objects. ***§1***

A great way to 'think green' is to turn off the electronics in our homes and spend time doing other enjoyable activities instead of watching TV or surfing the Internet. The planet is helped because we are using less energy. And if we do not use our electronic devices, we will have time to exercise and develop other hobbies that are enjoyable and kind to the planet. ***§2***

Another way is to plant a vegetable garden. The gardener gets exercise, time outdoors in the fresh air, as well as the benefit of eating well. In addition, if you garden organically, you won't use toxic chemicals and pesticides. Gardening is one small way to encourage environmental responsibility. ***§3***

Recycling objects from home is also a way to 'think green'. By recycling items like jars, paper, and old clothing, we reduce **waste** in landfills and cut down on new resource use. This can be both fun and creative: old jars transform into plant holders, worn-out clothes become pillowcases, and scrap paper turns into greeting cards. These efforts not only help the planet by saving resources but also add a personal touch to our homes. ***§4***

We can each be a small part of the solution to environmental problems. If we start with our everyday choices, we can 'think green', and 'act green'. Through small practices in our daily life, we can protect the environment and **preserve** **natural resources**. Who knows? Perhaps through our actions we will make a difference to both the earth and ourselves. ***§5***

(Adapted from the internet)

1. **Color the general idea of the text:**

a. Three environmental threats.	**b.** Three effects of climate change.	**c.** Three actions to live healthy and save the planet.

2. **Say whether the following statements are True or False:**
   - **a.** Thinking green helps the planet and human beings. _____
   - **b.** Gardening is a good way to have time outdoors in the fresh air. _____
   - **c.** Recycling objects is only fun. _____
   - **d.** Through our actions we will make a difference to earth. _____

3. **Match each paragraph with its main idea.**

Paragraph	Main idea
§1	We can be part of the solution to environmental problems by thinking and acting green.
§2	'Think green' in different ways can prevent the damage of climate change.
§3	Turning off electronic devices saves energy and can help us develop new hobbies.
§4	Planting vegetable gardens is beneficial for both the gardener and the environment.
§5	Recycling objects at home is beneficial for the environment as well as our homes.

4. Read the text and answer the following questions:

a. How can turning off the electronics help the planet? ……

b. What are the benefits of gardening? ……..

c. How is recycling helpful? …….

d. How can 'living & thinking' green help the environment? ……..……

5. **Circle new words in the text and look them up in the dictionary.**

6. Paragraph Structure: Read the following note carefully. Discuss it with your group!

Each **body paragraph** develops one idea that supports the thesis. Each body paragraph includes:

- A **topic sentence** that states the topic of the paragraph and the controlling idea.
- **Supporting sentences**, which all relate to the topic and give information to support and develop the controlling idea.
- A **concluding sentence**, which summarizes the ideas in the paragraph.
- There may also be a **transition sentence** or clause that helps connect the ideas between paragraphs.

⟶ **Then, go back to paragraph 4 and:**

- Pick out the topic sentence _____
- Pick out supporting sentences_____
- Pick out the concluding sentence _____
- Is there a transition sentence to move to another idea? _____

III- Post-reading:

Do you think that through small actions like the ones mentioned in the text, we will be able to make a difference to our planet?

Follow the structure of the paragraph studied above to answer the question.

I think that/ I agree that/ I disagree that _____(topic sentence). _____

_____. _____ (supporting sentences of your opinion). _____ (Concluding sentence).

Exchange drafts with your partner then read your paragraph to the class.

Résumé

Les complexités associées à l'enseignement et à l'apprentissage de l'Anglais en tant que langue étrangère (ALE) dans les classes algériennes comprennent la diversité des profils des apprenants et l'importance fondamentale mais souvent négligée du vocabulaire. S'appuyant sur la théorie des Intelligences Multiples (IM) (Gardner, 1999), cette étude visait à améliorer le répertoire de vocabulaire des apprenants, en mettant en œuvre une instruction basée sur les IM, en plus de l'exploration du profil MI des étudiants utilisant l'Inventaire des Intelligences Multiples (McKenzie, 1999-2017). Réalisée avec des élèves de deuxième année au lycée Azri Mohamed à Oum El Bouaghi, sur une période de quatre mois, l'étude a utilisé l'Échelle de Connaissance du Vocabulaire (ECV) (Wesche&Paribakht, 1996) pour mesurer les connaissances en vocabulaire avant et après l'intervention. Les résultats du profilage IM ont révélé une prédominance de l'intelligence linguistique suivie de l'intelligence visuelle, avec des degrés variés d'autres intelligences, y compris l'intelligence existentielle moins dominante. Les résultats de l'ECV ont indiqué que l'instruction inspirée par les MI mise en œuvre a amélioré de manière significative le vocabulaire réceptif des étudiants (reconnaissance et compréhension du sens). Cependant, les gains en vocabulaire productif (capacité à utiliser les mots dans le discours ou l'écriture) n'étaient pas aussi prononcés. Cela suggère que, bien que l'enseignement basé sur les IM puisse améliorer le vocabulaire réceptif, il est moins efficace pour améliorer le vocabulaire productif. Les résultats soulignent le potentiel d'intégration de la théorie des IM dans les stratégies d'enseignement de l'ALE pour répondre aux besoins d'apprentissage diversifiés et aux profils d'intelligence des étudiants, améliorant ainsi les résultats éducatifs en matière d'apprentissage du vocabulaire.

Mots-clés: Théorie des Intelligences Multiples, Profil des Intelligences Multiples, Répertoire de vocabulaire, Instruction inspirée par les Intelligences Multiples.

ملخص

تشمل التعقيدات المتعلقة بتعليم وتعلم اللغة الإنجليزية كلغة أجنبية في الفصول الدراسية الجزائرية التنوع الكامن في ملفات الطلاب والمكانة الأساسية المغفول عنها للمفردات. استنادًا إلى نظرية الذكاءات المتعددة (جاردنر،1999)، هدفت هذه الدراسة إلى تعزيز مخزون المفردات لدى الطلاب، من خلال تطبيق تعليم مستوحى من الذكاءات المتعددة، بالإضافة إلى استكشاف ملف الذكاءات المتعددة للطلاب باستخدام جرد الذكاءات المتعددة (ماكينزي،2017). أُجريت الدراسة مع طلاب السنة الثانية في مدرسة عزري محمد الثانوية في أم البواقي، على مدار أربعة أشهر، واستخدمت مقياس معرفة المفردات (ويش وباريباخت، 1993، 1996) لقياس معرفة المفردات قبل وبعد التدخل. كشفت نتائج تصنيف الذكاءات المتعددة عن سيادة الذكاء اللغوي تليه الذكاء البصري، مع درجات متفاوتة من الذكاءات الأخرى بما في ذلك الذكاء الوجودي الأقل سيادة. أشارت النتائج المستخلصة من مقياس معرفة المفردات إلى أن التعليم المستوحى من الذكاءات المتعددة الذي تم تطبيقه قد حسّن بشكل كبير القدرةالاستقبالية للمفردات للطلاب (التعرفعلي الكلمات وفهم المعنى). ومع ذلك، لم تكن المكاسب في القدرة الإنتاجية (القدرة على استخدام الكلمات في الكلام أو الكتابة) واضحة بنفس القدر. وهذا يشير إلى أن التدريس المبني على نظرية الذكاءات المتعددة يمكن أن يعزز القدرةالاستقباليةللمفردات ، ولكنه أقل فعالية في تحسين القدرة الإنتاجية. تبرز النتائج إمكانية دمج نظرية الذكاءات المتعددة في استراتيجيات تعليم اللغة الإنجليزية كلغة أجنبية لتلبية الاحتياجات التعليمية المتنوعة وملفات الذكاء للطلاب، مما يحسن النتائج التعليمية في تعلم المفردات.

الكلمات المفتاحية: نظرية الذكاءات المتعددة، ملف الذكاءات المتعددة، مخزون المفردات، تعليممستوحى من الذكاءات المتعددة