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***The Effectiveness of Crossword Puzzles as an Educational game in
Improving English Vocabulary among Third Year pupils at Khaitati
Brothers Middle School, Bordj-Ghedir, Algeria***

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Acronyms and Abbreviations

| | |
|--------------|---|
| EFL | English as a foreign language. |
| ESL | English as a second language. |
| EAL | English as an additional language. |
| L2/SL | Second language. |
| FL | Foreign language. |
| AWL | Academic word list. |
| L1 | First language (or native language). |
| STEM | Sciences, Technology, Engineering, Mathematics. |
| CP | Crossword puzzle. |
| ESP | English for Specific purposes. |
| 3MS | Third year middle school. |
| RQ | Research question. |
| M | Mean. |
| SD | Standard deviation. |
| SPSS | Statistical Package for Social Sciences. |
| HF | High Frequency |
| LF | Low Frequency |

Abstract

This study investigates the effectiveness of using crossword puzzles as an educational tool to improve English vocabulary among third-year middle school pupils at Khaitati Brothers Middle School. Recognizing vocabulary acquisition as a foundational aspect of language learning, the research explores how engaging, game-based strategies such as crossword puzzles can foster vocabulary retention. The research adopts mixed-method approach, employing a pre-experimental design with both pre-tests and post-tests to quantitatively assess vocabulary improvement, and qualitative observation checklists to identify challenges teachers face in implementing crossword activities. Results demonstrate a marked improvement in students' vocabulary knowledge, particularly in both high-frequency and low-frequency words, following the crossword puzzle intervention. The findings also highlight that while crossword puzzles can transform vocabulary instruction into an interactive and enjoyable process, challenges such as time constraints, resource limitations, and insufficient teacher training may hinder effective implementation. Overall, the study supports the integration of crossword puzzles in EFL classrooms as a complementary tool for enriching vocabulary learning and increasing learner engagement.

Chapter 1

GENERAL INTRODUCTION

Introduction

Language is a complex and structured system of communication that enables individuals to convey thoughts, emotions, and information (Fromkin, Rodman&Hyams, 2017). It is composed of two main elements: grammar, which governs structure, and vocabulary, which provides the building blocks of meaning.

In the field of second and foreign language learning, vocabulary knowledge has been recognized as a critical element for achieving language proficiency. Over the past three decades, numerous studies have confirmed a strong correlation between vocabulary richness and overall language competence. A notable 2023 study by Rafique, Waqas, and Shahid examined the relationship between vocabulary knowledge and English language proficiency among undergraduate students in Pakistan. The researchers assessed both receptive and productive vocabulary knowledge and found a strong positive correlation with speaking proficiency. Learners with a wide and deep vocabulary are more capable of understanding texts, expressing ideas fluently, and engaging in meaningful conversations. According to Ghezelsflou and Seyedrezaei (2015), second language learners can enhance their vocabulary proficiency either through structured classroom instruction or through informal interactions, daily social engagement and experiences outside of the classroom. While both English as a Foreign Language (EFL) and English as a Second Language (ESL) learners benefit from vocabulary development, researchers have highlighted that depth of vocabulary knowledge is especially important for ESL learners' language growth. Despite this, vocabulary has historically been undervalued in language teaching, while greater attention is given to grammar and the four core skills (listening, speaking, reading, and writing). However, growing evidence now supports the view that a strong vocabulary base is essential for mastering a second language and achieving academic success. (Schmitt, 2008). Vocabulary acquisition is often emphasized in classroom contexts, where learners are exposed to new words through reading materials, dialogues and teacher-led instruction.

Yet many learners struggle to retain and recall newly learned vocabulary. Dewi Nurhamida (2012) found that students often experience difficulty in memorizing and applying new lexical items. One contributing factor is the widespread use of traditional teaching methods, such as lectures and rote memorization. These approaches, although commonly practiced, tend to be passive and can lead to low levels of student engagement and knowledge retention. In the current educational landscape, there is an increasing demand for teaching methods that actively involve students in the learning process. Contemporary pedagogical theories emphasize the importance

of student-centered learning, where learners participate actively, work collaboratively, and construct their understanding. In this context, teachers are encouraged to adopt innovative strategies that promote interaction, critical thinking, and motivation.

Active learning techniques, including educational games, peer discussion, and problem-solving activities, have gained prominence for their ability to enhance student engagement and improve learning outcomes. Among these, the use of crossword puzzles has emerged as an effective and enjoyable way to reinforce vocabulary. Crossword puzzles are language-based games that challenge students to recall and apply vocabulary in context, promoting both memory and critical thinking. (Prince,2004).

According to Paul (2003), crossword puzzles can be utilized at any educational level and are an excellent tool for integrating vocabulary from various lessons .Nurhamida (2012) also notes that crossword puzzle is an interactive tool that contributes to making the educational process more engaging and compelling. When integrating such tools in the classroom, vocabulary learning transferred from a passive to an active process, improving students' ability to retain and use new words meaningfully.

1.1 Background

The acquisition of vocabulary is a vital aspect of learning a foreign language, as the importance of new terms is often emphasized in educational materials and classroom settings. It plays a fundamental role in language education and pedagogy. Recent research indicates that vocabulary instruction can be challenging, as many educators may feel uncertain about effective teaching methods and may struggle to prioritize vocabulary acquisition in their lessons (Berne & Blachowicz,2008).Additionally, Nation (2001) points out that vocabulary knowledge and language use are interdependent; a strong vocabulary enhances language application, while practical language use promotes vocabulary development

Students often find vocabulary acquisition daunting; but it can be made manageable. Hatch and Brown (2001) describe vocabulary as a collection of words relevant to a particular language or as a set of words that individual speakers might use. It is essential to recognize that not all learners can easily acquire a vast vocabulary, highlighting the need for effective strategies to help them learn new words. One successful approach is integrating games into the educational framework. Games are an excellent and engaging approach to teaching. One type of game is the crossword puzzle that provide an interactive way of learning and teaching A prime example of such a game is the crossword puzzle, which serves as an effective resource for vocabulary

instruction. According to Hornby (1974) claimed that crossword puzzle is a game where the given words are filled into a grid based on numbered clues arranged both vertically and horizontally. Furthermore, Njoroge, Ndung'u, and Ganthigia (2013) noted that crossword puzzles make the learning experience enjoyable and engaging; by offering to students numerous opportunities to practice and reinforce their understanding of sentence structures and vocabulary. The crossword puzzle is an effective game for assisting students in mastering vocabulary, providing them the chance to memorize as much vocabulary as possible, since many words are given as prompts that they need to understand to fill the squares with the appropriate words

In a similar study to Wefi, Dzulfikri, and Elfiyanto (2023) found that students who engaged in vocabulary practice through crossword puzzles exhibited superior performance in vocabulary assessments when compared to their peers who utilized conventional methods. These findings indicate that crossword puzzles are not only an enjoyable educational resource but also play a crucial role in enhancing vocabulary acquisition.

Crossword puzzles promote active recall and word associations, both of which are important components of vocabulary acquisition. When utilized in groups, they can also promote collaborative learning.

1.2 Problem Statement

Building a rich vocabulary is one of the most essential aspects of learning a foreign language, as it directly supports learners' ability to comprehend and produce language effectively (Nation, 2001). Despite its significance, many learners face persistent challenges in acquiring and retaining new words. These difficulties often stem from monotonous teaching methods, lack of contextual application, and low learner motivation (Schmitt, 2008; Webb & Nation, 2017). Teachers have also faced challenges such as low student motivation, limited teaching resources, lack of classroom interaction.

In response to these issues, educational games such as crossword puzzles have emerged as alternative tools to make vocabulary learning more interactive and meaningful. Crossword puzzles engage learners in a process of word retrieval, recognition, and contextual inference, which strengthens memory and promotes deeper understanding (Zamani & Shafiee, 2020). Moreover, the problem-solving nature of crossword activities can stimulate learners' cognitive engagement and support the development of critical language skills (Rasouli et al., 2013).

Nonetheless, while crossword puzzles are widely used in various educational contexts, their actual effectiveness in enhancing vocabulary acquisition especially in environments with limited resources remains under-researched. In contexts where English is taught as a foreign language, students often struggle with vocabulary due to limited exposure to authentic input and insufficient practice opportunities (Kukulska-Hulme, 2020). This highlights the need to explore innovative and engaging instructional methods.

Therefore, this study seeks to investigate the impact of using crossword puzzles as a pedagogical tool for improving vocabulary retention and engagement among learners of English as a foreign language at Khaitati Brothers Middle School.

1.3 Significance of the study

Crossword puzzles are an innovative learning method which promotes active, enjoyable learning for English vocabulary improvement. The results of this research can be effective for both pupils and teachers in addition to further researcher

For student, it is intended that it will help pupils become more proficient in language. Pupils can benefit from enjoyable and interactive educational tools and enjoy themselves when vocabulary is taught through word games because it makes vocabulary acquisition simple and effortless. This implies that it can improve pupils' language mastery.

For teachers, it is crucial to recognize the challenges that pupils have when learning new words and to develop strategies and tactics that should aid them in expanding their vocabulary and this study offers insights into how games can improve pupils' engagement in vocabulary.

1.4 Research questions

This research seeks to investigate the following questions:

1. To what extent are crossword puzzles effective in improving English vocabulary among third- year middle school pupils?
2. What specific types of English vocabulary (High frequency; Low frequency words) are most effectively improved with crossword puzzles in the classroom?
3. What are the challenges do teachers face when integrating crossword puzzles into English vocabulary lessons?

1.5 Research Objectives

Based on what has been said the aim of the research is to explore the effectiveness of crossword puzzles as an Educational tool in improving English vocabulary among third-year Middle School.

1. To evaluate the effectiveness of crossword puzzles as an educational game in improving English vocabulary.
2. To identify the specific types of vocabulary (high- frequency/ low- frequency words) that is the most effectively improved through the using of crossword puzzles in classroom instruction.
3. To identify the challenges that teachers face when integrating the crossword puzzle into English vocabulary Teaching.

1.6 Scope of the study

This research address to investigate the impact of crossword puzzles as another tool for enhancing English vocabulary among third-year middle school pupils. It also identified the different types of vocabulary specifically high-frequency words versus low-frequency words were the most enhanced and benefited by pupils from this engaging learning way. Furthermore, the study addresses the significant challenges that teachers may encounter when integrating crossword puzzles into their instructional strategies. This research will provide concrete recommendations on effectively utilizing crossword puzzles to boost vocabulary acquisition and foster active student participation in the learning process.

1.7 Research Methodology

The study aims to explore and evaluate the effectiveness of crossword puzzles in developing various types of English vocabulary. The study employes to use mixed-method approach to achieve a deeper insight about the research area.

The mixed method consists of:

1. **Quantitative Method:** The study will employ a pre-experimental design (one single group pre-test and post-test) involving third-year middle school pupils to examine the effectiveness of crossword puzzles as educational tool for improving English vocabulary. This will include an assessment of the types of vocabulary enhanced by crossword puzzles (high-frequency /low-frequency words).

2. **Qualitative Research** This method aims to identify the challenges encountered by middle school teachers when integrating crossword puzzles into their English vocabulary classes. The data will be collected using an observation checklist with participating teachers.

Mixed method enables the researcher to obtain a more thorough understanding by integrating the strengths of both quantitative and qualitative approaches, rather than relying on either method in isolation. Using different instruments from mixed-methods in collecting data makes the results of a research more credible.

The goal is to provide valuable insights into how crossword puzzles can be utilized to enrich English vocabulary learning in middle school settings.

1.8 Definitions of key terms

1.8.1 Effectiveness

Refers to the extent to which a particular method, tool, or intervention achieves its stated objectives and produces the intended outcomes. In educational research, it is commonly used to evaluate how well a teaching strategy or instructional material contributes to the improvement of learners' academic performance, skills, or knowledge. When applied to language learning, for example, effectiveness may indicate how successfully a specific approach such as using crossword puzzles enhances vocabulary acquisition among learners. Scriven (1991) emphasizes that effectiveness is measured by the alignment between the intended goals and the actual results, meaning that a method is considered effective when it leads to the desired learning outcomes.

1.8.2 Vocabulary acquisition

Vocabulary acquisition refers to the process by which individuals come to understand the meanings, forms, and applications of words in a language over a period of time. It encompasses both receptive knowledge (the ability to comprehend words when they are heard or read) and productive knowledge (the capability to utilize words in speaking and writing). As noted by Schmitt (2010), vocabulary acquisition is a gradual and intricate process that necessitates repeated exposure and meaningful application, and it is essential to language learning since vocabulary is pivotal to all facets of communication and understanding.

1.8.3 Game

A game can be described as an organized and rule-governed competitive activity, where players are presented with a challenge and aim to achieve a specific objective within a defined context (El Shamy, 2001).

1.8.4 Crossword Puzzles

According to Utami (2014), crossword puzzles are structured activities where learners fill in a grid with words or numbers based on corresponding clues, promoting vocabulary acquisition through problem-solving in an engaging format. Beau (2007) emphasizes the cognitive value of this method, noting that it activates various mental processes such as word recognition, spelling accuracy, and the use of synonyms, making it an effective educational approach.

1.9 Limitations of the study

While this study offers insightful findings, it is important to recognize several limitations. Firstly, time restrictions presented a major obstacle. Each session, which included both the pre-test and post-test was limited only to one hour. This duration was not adequate to fully explore the effectiveness of crossword puzzles in vocabulary teaching. As Nation (2001) emphasizes, successful vocabulary learning requires frequent exposure and use in varied contexts, which are difficult to meet within such a limited timeframe.

Secondly, the study's limited sample size and specific setting affect the generalizability of its results. It was conducted solely on third-year middle school pupils from a single school, which may not represent all the students in other schools or regions. Creswell (2012) points out that finding from narrowly focused studies may not be broadly applicable across different educational environments. Another significant limitation is the implementation of crossword puzzle activities by teachers in their classes. Some of them expressed difficulty incorporating this technique into their usual lessons, citing constraints like limited time, inadequate resources, or lack of training. This supports earlier research by Richards and Farrell (2005), which indicates that teachers often face obstacles in adopting innovative teaching tools without sufficient institutional support or professional development.

This chapter introduces crossword puzzles as an effective educational game for teaching English vocabulary. It highlights the significant impact of vocabulary acquisition in language learning and explores how crossword puzzles, as a form of gamification, enhance student engagement and vocabulary retention. This study focuses on third-year middle school pupils at Khaitati Brothers as its case study. The research investigates the effectiveness of crossword puzzles in vocabulary learning, the types of vocabulary best learned through this method, and the challenges teachers face in its implementation. The research objectives include assessing the impact of crossword puzzles on vocabulary acquisition. The study employs a mixed-method approach. A pre-experimental design (one-group pre-test and post-test) measures the impact of crossword puzzles on vocabulary acquisition. Additionally, an observation checklist is used to gather insights and obstacles from participating teachers.

Chapter 2

LITERATURE REVIEW

Introduction

Language is a crucial way which we use to express our ideas, beliefs and sentiments whether verbally (spoken form) or in print language. Vocabulary in the other hand has a critical role in developing one's language proficiency because without vocabulary mastery, humans can never interact and communication would not happen.

Oxford dictionary (2007) defined vocabulary, as it is the whole words, which somebody knows, learns, or used in a book or subject. An effective and appropriate learning of vocabulary needs successful and efficient strategies to get words that are more new and use them correctly because the ability to recognize lexis does not ensure full comprehension. One has to be careful to the context, meaning, and the concept that each word is involved. In education, teachers have many modern and developed techniques to use during vocabulary acquisition with students. One of them is crossword puzzle which considered as a successful and enjoyable educational tool for learning.

To give a clear description of literature review, this chapter will discuss pertinent elements that are related to the research topic, which is exploring the effectiveness of crossword puzzle as an educational tool in improving English vocabulary. The literature will go through details to highlight the three key sections, which are first, vocabulary and its definition ,importance ,types, teaching and learning of English vocabulary. Second, educational games in teaching, learning and its impact on the motivation and engagement of students. The last part about crossword puzzles followed by the benefits in learning and teaching, its types as well as the clues.

The researcher would like to show some relevant studies that have been done by other researchers. Several investigations have validated the efficacy of crossword puzzles in enhancing vocabulary acquisition .Illiyin (2023) performed research with fourth-grade students, highlighting the role of crossword puzzles in substantially improving their English language skills, including speaking, listening, reading, and writing. The study particularly cited a marked advancement in students' perception of vocabulary associated with human body systems. Equally, Hafizhah and Pratolo (2022) examined the impact of CP games on seventh-grade students at SMP Muhammadiyah 2 Kalasan. Their experimental design separated students into two groups: one involved in crossword puzzle-based learning, while the control group received traditional instruction. Findings signified students who participated in crossword puzzle activities showed considerably advanced vocabulary retention and engagement levels compared to their counterparts. This indicates that game-based learning methodologies can effectively reinforce

vocabulary skills. Furthermore, Maheshwari et al.(2021) compared the efficacy of crossword puzzles versus traditional teaching methods. According to the study's findings, students learn better through crossword puzzles because they are entertaining, which ultimately helps teachers break up the monotony of traditional instruction. Moreover, Shetgar et al.(2018) carried out crossword puzzles to reinforce student attention in numerous questions. Through pre-test and post-test analysis, they concluded that this revolutionary method uniquely assessed students' comprehension of the material providing an opportunity to traditional evaluation methods.

1.10 Vocabulary

1.10.1 Definition of vocabulary

Vocabulary serves an important function in both learning and teaching languages. In the context of second language (L2) acquisition, vocabulary teaching is often considered an essential element for achieving success in learning a second language (Gu, 2005 & Schmitt 2000). It is also essential for the acquisition of both first and second languages (Gass et al, 1999). McCarthy (1990) further states that regardless of how proficient a student becomes in grammar or how well they master the sounds of a second language, effective communication in that language remains impossible without a sufficient vocabulary to convey a broader array of meanings. Some research studies also suggest that both learners and instructors consider vocabulary to be the top priority in the process of learning and teaching a second language (Knight, 1994; Marcaro, 2003).

As Read (2000) declared that the majority of learners perceive L2 acquisition as fundamentally about mastering vocabulary, often spending considerable time memorizing lists of L2 vocabulary and depending on their bilingual dictionary as a primary tool for communication ; vocabulary knowledge serves as a crucial element in the development of students. It establishes the groundwork necessary for decoding and comprehending texts. Many students enter school from environments where English is not the dominant language, leading to a limited vocabulary at the outset. Despite this challenge, there is often insufficient emphasis on vocabulary instruction in the early years in education. Brown (2007) characterizes vocabulary as a fixed set of phrases that underpins language.

These phrases are vital for communication, as language relies on them for functionality. Anwar and Effendy (2018, p.4) assert that Vocabulary is one of the first things that many specialists pay attention to because it is the clearest components of language. In a similar vein, Napa (1991) highlights that vocabulary is a crucial aspect of language, as words are indispensable for its existence. Thornbury (2008) declared that pronunciation, grammar, and vocabulary are the main essential elements to master English language. Similarly, Lehr, et al (2001) defines vocabulary as the lexicon employed for communication in both spoken and written forms.

1.10.1.1 Parts of speech

For effective learning and communication, students must cultivate a robust vocabulary and grasp the meanings of words since proficiency in vocabulary helps them to understand both spoken and written forms of language. Learning Instructions typically introduces students to various parts of speech, including nouns, verbs and adjectives.

1.10.1.1.1 Definition of parts of speech

English language is fundamentally structured around several parts of speech; nouns, verbs, adjectives, adverbs...These categories determine a word's function within a sentence in both meaning and grammar. A single word can belong to different functions depending on its usage and its context. Mastering parts of speech is crucial for accurately interpreting a word's meaning when referring to a dictionary. Similarly, Oxford and Cambridge dictionaries describe parts of speech as sections in which words are divided based on their grammatical function, such as nouns, verbs, and adjectives. Abdullah (2014), in his study titled "The Effect of Teaching Grammar through Parts of Speech on Students' Writing Performance," investigated the impact of explicit grammar instruction centered on parts of speech on EFL learners' writing proficiency. The findings revealed that when learners received targeted instruction in recognizing and utilizing parts of speech, there was a marked enhancement in their grammatical accuracy and their ability to produce well-structured and coherent written texts.

1.10.1.1.2 Noun

Nouns are words that name people, places, animals and objects...They are categorized into two main types: common and proper nouns. Common nouns are general terms like car, and stick, whereas proper nouns always begin with a capital letter and refer to specific names such as Charles, The White House, and the Sun.

Nouns can serve different roles in a sentence, such as a subject, direct object, indirect object, subject complement, or object of a preposition. They can be singular or plural. Here are some examples of nouns used in sentences:

- They bought a new truck
- I have an pet animal
- Excuse me, Is this your book?

1.10.1.1.3 Verb

The verb is a word that expresses an action, occurrence or a state of being like read, sit, run, pick, come, go. Each sentence contains a main verb alone or with one or more helping verbs. For instance, in the sentence (She can sing) “sing” is the main verb, while “ can” functions as the auxiliary verb. Additionally, a verb must correspond with its subjects in number, which means both should be singular or both plural. Verbs also change form to indicate different tenses, such as the simple present, past simple, past perfect, present continuous...for example :

- Sami is playing football.
- Peter Wilson travelled last week to the USA.
- Crossword puzzles are an enjoyable game.

1.10.1.1.4 Adjective

An adjective is a word that describes, modifies, or gives additional information about a noun or the subject within a sentence. It typically responds to the questions of “Which one?” “ what type?”, or “How many?” Examples of adjectives are words like good, ugly, quick, beautiful, late, and so on. Examples of adjectives used in sentences:

- She wore a blue dress to the party.
- The tall man helped the child reach the shelf.
- It was a cold and rainy morning.

Table 01 offers a classification of words according to their grammatical functions, concentrating on three primary categories: nouns ,verbs ,and adjectives .These categories are essential for forming sentences and enhancing vocabulary skills .The table emphasizes the significance of each category by supplying a short definition and pertinent examples that help learners identify patterns and enhance their capacity to use words correctly .The following table summarizes these categories .

Table 1: Parts of speech

| Part of speech | Definition | Example |
|-----------------------|---|--|
| Noun | It is a crucial element of speech that designates a person, location, animal, or object. | For example : Kid, school, book, lion, Algeria... |
| Verb | It is the most complex part of speech that conveys actions or a state of being, according to Marcella Frank (1972). | For example : Run, tell, stand, go, play, eat, study... |
| Adjective | It is a word that describes nouns, modifies and specifies size, color, and other grammatical properties | For example : Slim, tall, fat, beautiful, green, delicious... |

1.10.2 Importance of Vocabulary

Vocabulary is the base of learning a foreign language and second language (FL/SL). Many experts in the field of (FL/SL) acquisition emphasize that lexical competence “vocabulary knowledge” plays a critical role in learning new words and achieving the objective of mastering the language, therefore students will be able to communicate with one another more freely and appropriately (Lewis, 2005; Nation, 2001; Schmitt, 2000). Trianawoodson et al. (2023) stress the critical role of vocabulary significantly in affecting students’ capacity to understand and produce language. Johnson et al. (2016) defines vocabulary as it is the core component of language proficiency, and it gives a groundwork on how students can listen, read, write, and speak well. Besides, to truly recognize a lexical item, students of a second language have to master diverse productive and receptive knowledge dimensions of each word (Schmitt, 2014). This shows clearly the importance of creating a developed and structured program of an English vocabulary course which aims directly to vocabulary knowledge retention (Schmitt 2010).

According to Renandya (2002), vocabulary is a large part of the basis for speaking, listening, reading, and writing as well as language proficiency; therefore, students who wish to acquire a new language must possess a large vocabulary. They will be unable to effectively communicate and express their feelings through spoken and written forms if they lack a sufficient vocabulary.

For English foreign language (EFL) learners studying in a setting where teaching is conducted in English, their words quantity must be required is higher. Nation (2006) gave an example and indicated that students have to master about 8.000 to 9.000 word families to they will comprehend a variety of literary novels which they are engaging with in the classroom.

Vocabulary knowledge also helps EFL students to excel well in technical subjects like Math and science (Trakulphadetkrai et al., 2020). However, studies show that weak vocabulary skills would significantly affect learners' capacity to understand written texts and answer questions, and that can lead them to struggle academically inside the classroom (Burgoyne et al., 2009). Vocabulary is essential to reading comprehension, and students who struggle to master the vocabulary within their classroom texts often find it difficult to grasp the content of the assigned readings (Coxhead et al., 2010). Thus, the precise number of words students must comprehend to fully understand a specific text varies depending on the grade level and subject area (Green & Lambert, 2019; Greene & Coxhead, 2015). Rasinski et al. (2011) conducted a study with 16,143 students from Grades 4 to 10 in U.S. schools found that reading fluency improves comprehension for most students, except English as Additional Language learners (EAL). Studies focused on EAL learners (e.g., Farnia & Geva, 2011; Lee & Chen, 2019) suggest that for beginners, fluency alone aids comprehension, while for advanced learners, comprehension depends on the combined effects of fluency, vocabulary, and oral proficiency. According to Winarti (2020), students' language skills improve both quantity and quality when they comprehend and acquire vocabulary. In a similar vein, Carter and McCarthy (2013) stress that vocabulary is an essential part of reading comprehension and language learning in general. Students with a strong vocabulary are better able to communicate, build meaningful sentences, and acquire other language skills more successfully (Dewi & Syahuma, 2022).

In general, a well-rounded vocabulary enhances students' English communication abilities, enabling them to articulate their thoughts clearly and effectively (Jambari et al., 2013).

1.10.3 Types of vocabulary

There are various kinds of vocabulary according to many experts' points of view.

Nation (2013) developed a detailed framework to explain the complexity of vocabulary knowledge. In this framework, he categorized the components involved in understanding a word into three main dimensions: meaning, form, and use. The meaning aspect includes the connection between form and meaning, conceptual and referential relationships, and word associations. The form dimension covers spoken and written forms, as well as word parts. Lastly, the use dimension involves collocations, usage constraints, and grammatical functions.

Also he separates vocabulary into high frequency and low frequency words, academic words, and technical words based on how frequently they appear in a language.

1.10.3.1 High frequency /low frequency words

Vocabulary in general consists of both high-frequency and low-frequency words. Research into the lexical coverage of texts consistently emphasizes the importance of high-frequency vocabulary due to its prevalence across a wide range of language contexts (Schmitt, 2008). Understanding the distinction between high- and low-frequency words is crucial, as instructional strategies differ for each category (Webb & Nation, 2017). High-frequency vocabulary includes words that learners are more likely to encounter in both spoken and written communication, making them essential targets for early vocabulary instruction. Because these words appear repeatedly across various contexts, learning them enhances learners' ability to understand and produce language effectively. In contrast, low-frequency words are often domain-specific and less likely to appear in general discourse. They are typically found in academic or professional texts related to fields like science, mathematics, or technology, and require different teaching approaches. Schmitt (2020) highlight that once learners have acquired the most frequent 2,000–3,000-word families, their focus should shift to low-frequency vocabulary that aligns with their academic or professional needs. To teach these less common words effectively, strategies such as inferring meaning from context, using flashcards, employing mnemonic devices like the keyword method, and consulting dictionaries are particularly helpful in classroom environments. Despite the known value of high-frequency vocabulary, many teachers do not systematically plan vocabulary instruction. This may be due to the belief that vocabulary learning occurs naturally or the assumption that course books sufficiently cover it. However, studies have shown that course books often do not provide adequate vocabulary input or practice opportunities (Webb, 2009). Furthermore, while native speakers typically enter school with a robust vocabulary, including many high-frequency words, non-native learners often start with a much smaller lexicon. This makes intentional, focused instruction on high-frequency vocabulary particularly important for English as Foreign Language (EFL) learners (Elley, 1989; Schmitt, 2008).

1.10.3.2 Academic words

Academic Word List (AWL) is well known among educators and curriculum designers, as it reflected in the number of publications and online resources based on it (Schmitt, 2005; Zimmerman, 2007). The AWL consists of 570-word families classified into ten sub-lists. It was assembled by identifying words that frequently appear across various academic disciplines, such as humanities, science, commerce, and law but are not included in the most common 2000 words

of English. When learners acquire the first 2000 words of English, it enables them to comprehend a major portion of academic material. Additionally, the widespread use of the AWL in different formats, for instance in newspapers, journals, articles. It can be attributed to its immediate applicability. Another determining factor is that university-level instructors, who are the primary users of the list, often have training in teaching English as a second (ESL) or foreign language (EFL). Although the list has received criticism (Hyland & Tse, 2007), most commentaries focus on purposes beyond its primary and original intention. The AWL's broad usefulness across academic fields is both a strength and a limitation; while it serves various disciplines, some words may have different meanings depending on the subject area.

1.10.3.3 Technical words

Technical vocabulary refers to the specific language used within a particular discipline, which has developed to enable experts in that area to communicate clearly, precisely, and concisely. This is a significant challenge for learners with specific language learning goals. The desire to expand your vocabulary should be a continuous process; whenever you encounter new terms, make an effort to use them in your conversations to help reinforce them in your mind. Technical vocabulary is known by various names, such as 'terminological words' (Bečka, 1972), 'specialized lexis' (Baker, 1988), and 'technical words' (Farrell, 1990). It is an integral part of the subject knowledge system. Vocabulary knowledge plays a crucial role in enabling English as an Additional Language (EAL) learners to succeed in technical subjects such as mathematics and science (Trakulphadetkrai et al., 2020). For instance, Greene and Coxhead (2015) conducted a study analyzing the range and frequency of vocabulary used in science textbooks for middle school students in the United States. They found that eighth-grade learners would require knowledge of at least the most frequent 7,000 word families to comprehend the material effectively. Similarly, Coxhead et al. (2010) investigated vocabulary demands in New Zealand high school science textbooks and concluded that students need a vocabulary range of 11,000 word families in Grades 9 and 10, and up to 15,000 word families for Grade 11 alongside proper nouns to achieve 98% text coverage and ensure adequate understanding. Therefore, technical words can be identified by consulting the experts of the area. This identification can be achieved in two ways: by utilizing a technical dictionary compiled by a specialist or a group of experts (Nation, 2001; Oh et al., 2000), or by using hints that are the most relevant and employed by them to highlight the essential words for conveying the text's message. As new terms emerge, writers intentionally provide contextual clues to assist readers in comprehending unfamiliar terminology (Bramki & Williams, 1984; Flowerdew, 1992). Hatch & Brown (1995) and Johnson

(2008) distinguish between two main categories of vocabulary: receptive vocabulary (listening / reading), productive vocabulary (speaking /writing).

1.10.3.4 Receptive Types of Vocabulary (Listening /Reading)

Receptive vocabulary refers to the words that learners can identify and comprehend when encountered in context, particularly through reading or listening .However, these words are not actively used by the learners in their own speaking or writing. As noted by Webb (2009), such vocabulary is recognized passively during language input but remains inactive in language output. People must interpret information when they are listening to speakers and make sense of passages when reading to grasp its meaning. Listening vocabulary is made up of the words you can understand by hearing sound. Most adults are able to recall nearly 50,000 words. Deaf children use sign language for visual listening, but they have a much smaller vocabulary than children who can listen. However, reading is a key component of expanding one’s vocabulary. The words and letters that we can recognize when reading texts are referred as reading vocabulary. There are instances when you can recognize words from reading even if you don’t use them in conversation. The majority of students have a very small reading vocabulary when they start school; reading is therefore made learning easier since every year they knew roughly 3,000 new words.

1.10.3.5 Productive Types of Vocabulary (Speaking /Writing)

On the other hand, productive language consists of speaking and writing, where humans use the language they have acquired to communicate messages through speech and write texts for others to comprehend. Productive vocabulary encompasses the words that learners not only understand but also pronounce accurately and employ appropriately in oral and written communication. This type of vocabulary requires both comprehension and the ability to actively use the words in context. According to Webb (2005), productive vocabulary involves a higher level of language mastery, as it enables learners to articulate their thoughts and engage in meaningful expression. Speaking vocabulary are words used in conversations and when giving directions, due to incomplete or contextual understanding (we understand a word in the context of a sentence or situation, but not the word itself), the majority of adults have a very small vocabulary, using between 5,000 and 10,000 words to communicate. Therefore, expanding our word knowledge helps us communicate our ideas verbally more effectively and efficiently.

On the other hand, writing vocabulary are words that we use to express ourselves through the process of writing. The words that we get and comprehend when reading texts help us in writing. Therefore, your writing vocabulary is also related and based on how well you speak and pronounce the language; it is greatly influenced by your spelling knowledge.

1.10.4 Teaching vocabulary

Teaching is a multifaceted and intricate process (Hegarty, 2000). According to Sherin and Madanes (2000), exploring teachers' knowledge is essential for gaining insight into teaching difficulties. According to Sokmen (1997) and Schmitt (2000), vocabulary teaching can generally be approached in two ways: implicit and explicit. The implicit instruction method emphasizes the need for L2 learners to identify contextual clues and to use monolingual dictionaries instead of bilingual ones to explain words or gloss texts (Sokmen, 1997). Unlike implicit vocabulary instruction, explicit vocabulary teaching is characterized by multiple key principles identified by Sokmen (1997), developing an extensive sight vocabulary, connecting new words with previously learned ones, ensuring multiple exposures to the word fostering a deeper of meaning based processing, facilitating imagery and concreteness, and promoting independent learning strategies. However, research critiques the inefficiency of relying too heavily on a single method for vocabulary instruction. Scholars propose that a more successful strategy for learning L2 vocabulary is to combine implicit instruction with explicit teaching. A study conducted by Nurriya (2018), titled "Authentic Materials in Vocabulary Development Process," examined the impact of authentic materials on vocabulary acquisition at Kimiyae Danesh Institute in Yasuj, Iran. The research explored how the integration of authentic resources can enhance vocabulary learning and teaching. The findings revealed that authentic materials significantly contribute to vocabulary development and play a crucial role in second language instruction. Consequently, the researcher advocated for the incorporation of authentic materials by language educators. Similarly, Hidayati and Pratiwi (2016), in their study "The Use of Authentic Material in Teaching Vocabulary: an Experimental Study of the First Graders of SMAN 1 Batukliang in the Academic Year 2015/2016," aimed to assess the effectiveness of authentic materials in vocabulary instruction. Their results indicated that the application of authentic materials proved to be beneficial in enhancing learners' vocabulary acquisition. Teachers need to employ the appropriate methods when teaching vocabulary. They are able to design a lesson that can be used in the classroom. Teachers can also use games to help students learn vocabulary.

As a result, the learning environment will become more engaging. Language instruction encompasses more than just the subject matter and teaching methodology, the role of the teacher in the classroom and the elements of the setting in which the lessons are being taught are also covered.

1.10.4.1 The role of teacher during vocabulary classes

For many educators, one of the most challenging aspects of their role is the instruction of vocabulary. The teacher's essential function during vocabulary lessons is to devise a plan, selecting appropriate techniques that will aid in embedding words into students' long-term memory, particularly for understanding various types of words; especially idiomatic expressions (Kyaalti, 2018). Educators must implement strategies that enable students to utilize the memorized vocabulary accurately and fluently across different contexts. As noted by Takač (2008), the methods employed by teachers are shaped by several factors, including the nature of the material, the time constraints, and the perceived significance to the learners. As a result, educators choose specific vocabulary presentation techniques based on these factors. Furthermore, it is crucial for them to view vocabulary acquisition as a cumulative process and to possess a keen intuition regarding the vocabulary their students are familiar with. This understanding will assist them in selecting the most appropriate vocabulary for a particular group of learners and ensuring an equitable distribution of learning opportunities (Hutchinson & Walters, 1998). Since learning enough words is a basic prerequisite for English proficiency, the teacher plays a critical role in assisting students in reaching their objectives. Teachers must use their creativity to structure vocabulary instruction according to the context in which it will be taught.

1.10.4.2 Techniques for teaching vocabulary

There are various strategies, activities, and practices that can be utilized to teach vocabulary and meet every student's preferences. Those techniques are using objects and drawings (Takač & Singleton, 2008), drilling, spelling, and active involvement (Thorbury, 2002), flashcards, gestures and pictures (Andrä et al., 2020). Also the use of technology is one of the innovative strategies that Brewster et al. (2003) elaborate. They also intended to use verbal techniques like providing definitions to explain where needed. For instance, a gift is something you give to someone on a special day, such as their birthday.

Using different tools and real materials (realia) inside the classroom facilitates the process of teaching new words including working with dictionaries (structured activities that emphasize the comprehension of a word and its meaning). It is a crucial resource for enhancing your vocabulary. Although you can frequently guess a word's meaning from its context, your interpretation might not always be accurate. Only a dictionary can provide you with the exact definition. Analyzing word units (activities that concentrate on examining prefixes, suffixes, and root words), and oral practice (interactive speaking activities that utilize the new vocabulary, for example, having students create dialogues incorporating the target words). Instructors can create visuals, display images, or sketch diagrams when teaching vocabulary. They can also share personal anecdotes, connect new words to current happenings, or encourage students to associate new words with their own experiences.

1.10.5 Learning vocabulary

Vocabulary is crucial when learning a foreign language, claims Harmer (2007). Speaking, listening, reading, and writing are the four language skills that are connected by this component. Since it gives the language its essential organs and flesh, students should learn a sufficient number of words and be able to use them correctly in context. It may be challenging them to learn as many words as possible to use in the right situation. On the other hand, they must do it in order to be proficient in every language skill. Lightbown and Spada (2006) state that in order students to learn a word well, enough to recognize it in a new context or use it in their own writing and speaking, they typically need to encounter it numerous times. Moreover, Ahour and Abbasi Dogolsara (2015) aimed to investigate the impact of multiple-choice tasks and sentence-construction exercises on the vocabulary acquisition of EFL learners. To this end, sixty participants were selected and randomly assigned to two separate groups. After the intervention, both groups completed the same vocabulary assessment used in the pre-test as a post-test to evaluate the effectiveness of the instructional methods. The findings revealed that the sentence-writing activity led to significantly greater vocabulary gains compared to the multiple-choice task.

Furthermore, when learning vocabulary, students will be aware that some words appear to be simpler to learn than others. Thornbury (2002) suggested some reasons behind why some words are harder to learn than others are. He indicates that learning words that are hard to pronounce is more challenging. Those words contain sounds that some learner's groups are unfamiliar with like silent letters words. In addition, it appears that learning long words is no more difficult than learning short ones as dealing with simple words is totally different than

complex ones. Additionally, the meanings of some words can also lead to issues for instance; idiomatic words or expressions will typically be more challenging than words with obvious meanings.

2.1.5.1 Techniques for learning vocabulary

It is widely recognized that effective vocabulary acquisition is connected to the strategies learners employ for vocabulary learning (Gu, 2003, 2005; Schmitt, 1997, 2000). From the past to the present, many experts from all over the world have studied and suggested a multiple strategies for learning vocabulary. For instance, guessing from context (Alqahtani, 2015), rote repetition (Singer et al., 2013), using the mnemonics technique which is considered as an effective method for improving vocabulary retention. It aids students to store the learned new words in their long-term memory compared to short-term memory (Kayaalti, 2018). Those studies have been conducted in psychology, specifically in the fields of memory and forgetting (Pyc & Rawson, 2007). Findings show that a massive amount of vocabulary can be learned rapidly and retained with time through spaced retrieval and mnemonic techniques like the keyword method (McDaniel, Pressley & Dunay, 1987). Recent research (Elgort, 2011) has illustrated that deliberate vocabulary learning not only results in explicit knowledge but also fosters implicit knowledge, which is crucial for natural language use. In comparison with research on grammar, learning indicates that explicit learning does not automatically lead to implicit knowledge. Learners need an extensive vocabulary to understand authentic materials independently without external guidance (Nation, 2006). Using word cards for intentional vocabulary learning can facilitate the development of a sufficient vocabulary. In an empirical study, Ebrahimian and Nabifar (2016) sought to examine the comparative effects of three vocabulary acquisition strategies, word-part analysis, word-card utilization, and context-clue inference, on EFL learners' immediate and delayed vocabulary retention. The research involved 90 students, who were divided into three separate classes. Using the PET (Preliminary English Test), 20 students were selected from each class to participate. These intact classes were randomly assigned to one of the three experimental groups. Upon analyzing the results, it was determined that the context-clue strategy yielded significantly superior outcomes in vocabulary retention compared to the other two methods. Zazulak (2016, p. 1) argues that technology has assumed a pivotal role within educational settings in recent years, offering substantial advantages, particularly for educators implementing blended learning approaches. Integrating computers and other technological tools proves to be both effective and advantageous for English language learners. Similarly, Khiyabani, Ghonsooly, and Ghabanchi (2014) assert that

the widespread accessibility of computer technology, the Internet, and digital resources in many educational institutions provides educators and learners with a broad spectrum of tools and opportunities for language development. Nevertheless, the optimal benefits of these technological assets can only be achieved when instructors proficiently integrate them into the design and implementation of pedagogical materials for language instruction.

Language learner employs multiple set of preferred techniques when approaching an activity (Dickinson, 1987; Macaro, 2001; Oxford, 1990). Other strategies for learning vocabulary like spaced retrieval (Pyc & Rawson, 2007), using L1 and images to represent word meanings and avoid interference (Laufer & Shmueli, 1997). Although training learners in these strategies can enhance their vocabulary acquisition, few teachers integrate such instruction regularly into their vocabulary programs.

2.2 Educational games

2.2.1. Educational games

According to (Matthews, 2023) educational games are games used in the classroom to improve learning, frequently used to complement conventional teaching. Instructional games are often employed in a teaching method called game-based learning, utilizing game structures in education to convey and strengthen concepts while developing learners' skills across different fields. The simplest definition of educational games in the classroom is that the teacher presents a game, and students engage in it as a part of their learning experience. Games and game-based learning are utilized due to their numerous advantages; in particular, they are closely linked to children's cognitive development and the contribution of various cross-curricular skills.

2.2.2 The Effectiveness of Educational Games in Teaching and Learning

Recent research has increasingly highlighted the significant and multifaceted role that educational games and gamification play in fostering enhanced student motivation, active engagement, and improved academic performance across various educational contexts. Álvarez and Polanco (2021) argue that game-based learning strategies go beyond mere entertainment; they effectively capture learners' attention while simultaneously promoting deeper cognitive processing, critical thinking, and long-term knowledge retention. This underscores a powerful connection between increased student motivation and higher educational achievement, suggesting that when learners are actively engaged and intrinsically motivated, their capacity to absorb and apply knowledge is significantly heightened. In a similar vein, Leitão et al. (2022)

stress the pedagogical value of integrating enjoyable, playful elements into structured learning environments. They maintain that academic rigor and learner enjoyment are not mutually exclusive but rather complementary forces that, when balanced effectively, contribute to a more dynamic, emotionally supportive, and learner-centered educational experience. Furthermore, Prieto-Andreu et al. (2021) advocate for the thoughtful incorporation of gamification into broader active learning paradigms such as project-based learning, inquiry-based learning, and flipped classrooms. These methodologies not only encourage learner autonomy and critical engagement but also sustain students' interest over time by positioning them as active agents in their educational development. Supporting and enriching these perspectives, the comprehensive systematic review conducted by Jaramillo-Mediavilla et al. (2024) affirms that gamified learning environments particularly those that incorporate structured challenges, progression levels, feedback systems, and reward mechanisms effectively cultivate both academic and socio-emotional competencies. These elements contribute to a heightened sense of accomplishment, increased perseverance, and greater emotional investment in learning tasks, ultimately leading to more meaningful, lasting, and student-centered educational outcomes.

2.2.3 The impact of Educational games on motivation and engagement

Recent research has increasingly highlighted the significant and transformative role that educational games and gamification play in enhancing student motivation, engagement, and overall academic performance across different educational levels and disciplines. Álvarez and Polanco (2021) argue that game-based learning not only captures learners' immediate attention but also stimulates intrinsic motivation by creating an immersive and interactive learning experience. This environment facilitates deeper cognitive processing, encourages active participation, and ultimately leads to more effective knowledge retention and academic achievement. Their findings suggest that when students perceive learning as an enjoyable and rewarding activity, their commitment and persistence increase, which positively impacts their performance.

Similarly, Leitão et al. (2022) emphasize the pedagogical value of incorporating fun and playful components into structured learning environments. They challenge the traditional view that academic seriousness must exclude enjoyment, demonstrating that emotional engagement and academic rigor can coexist harmoniously. This integration creates a dynamic, inclusive, and emotionally supportive atmosphere in which learners are more willing to take intellectual risks and invest sustained effort in their learning processes.

In addition, Prieto-Andreu et al. (2021) advocate for the integration of gamification within broader active learning strategies, such as project-based learning, inquiry-based learning, and flipped classrooms. These methodologies not only promote learner autonomy and self-regulated learning but also foster collaboration, creativity, and problem-solving skills that are essential in the 21st-century educational landscape. The gamified elements embedded in these strategies serve to reinforce learning objectives while maintaining high levels of student engagement over time.

Supporting these perspectives, the comprehensive systematic review conducted by Jaramillo-Mediavilla et al. (2024) provides strong empirical evidence that gamified learning environments through the inclusion of elements like progressive challenges, scoring systems, feedback loops, and digital rewards have a measurable impact on both cognitive and affective learning domains.

These game elements not only enhance academic skills and conceptual understanding but also cultivate students' sense of achievement, self-efficacy, and emotional connection to the subject matter. Ultimately, gamification contributes to the creation of more meaningful, student-centered learning experiences that align with contemporary educational goals focused on holistic development and lifelong learning.

2.3 Crossword puzzles

2.3.1 Crossword puzzles

Crossword puzzles are considered as a functional and productive tool in education that reinforces learning vocabulary. It can be defined in several ways: According to Sabiqoh (2016), crossword puzzles are beneficial learning tools for understanding terminology, definitions, spelling and connecting essential key concepts with related names, which improves retention and memorization of information. Crossword puzzle games involve filling in a blank grid using letters that form words based on the provided answers to questions.

This game requires students to respond to a phrase in a sentence and then complete the crossword puzzle, linking the word answers together through hints for the next answer (Malonoy, 2014). In the same context, (Orawiwatnakul, 2013) described a crossword puzzle as a word game where players have to guess the correct word based on the clues given and fill in the blank fields with the corresponding letters. Implementing crossword puzzles as a learning resource has a positive impact on enhancing students' vocabulary. Active learning can be achieved by crossword puzzles require the capacity to recall factual information and help to establish needful knowledge for more comprehensive understanding (Frink, 2013). Active

learning supports the integration of crossword words into a Core Knowledge Clarification Course consistent with the level of recall in Anderson and Krathall's book (2001) which revised Bloom's taxonomy of educational goals that classified cognitive learning into updated six levels (Remembering, Understanding, Applying, Analyzing, Evaluating, Creating).. (Krathall,2002). Crossword puzzles align with the first two levels) Remembering and understanding) that facilitate active recall and knowledge reinforcement. In referent from the statements above, crossword puzzles are a word-focused learning tool that supports vocabulary development among students. By incorporating this activity into lessons, teachers can create interactive and fun learning environment. The game encourages students to think critically and apply logic as they fill in the blanks, which enhance their understanding of new words in a meaningful way .Additionally, the engaging nature of crossword puzzles helps keep students' attention, making them more likely to actively participate in learning. As a result, this method not only promotes vocabulary retention but also fosters a positive attitude toward learning activities, promoting deep learning and cognitive engagement.

2.3.2 Potential benefits of crossword puzzles

As Lindawati (2019) stated that acquiring vocabulary in a new language is an essential initial stage. Effective speaking and writing rely heavily on vocabulary, and lacking it restricts one's capabilities in both areas. The use crossword puzzle represents an interesting and instructional strategy that can improve motivation, skills, and knowledge of students. Hand (2008) cited in Dashela, Supardi, & Wardah (2017) explained that crossword puzzle game has diverse benefits allow students to build interaction relationships with their peers while teachers differ their lessons and increase motivation; students 'motivation is the most important keys that affect their success in EFL learning (Salvin: 2003).In fact, motivation significantly improves their performance in learning EFL.This game makes students learn easily and without stress (Manullang et al.,2020).In line with Widyasari (2010),engaging in crossword puzzles can enhance students' cognitive abilities by aiding in the memorization of new vocabulary.Furthermore,students can collaborate with peers to complete these puzzles. Such activities promote critical thinking and problem-solving skills, while also fostering creativity and active learning. The development of critical thinking and problem-solving strategies equips students to adapt to new learning environments (Redhana 2003).Sudjana (2005) finds that using CP help students to think quickly and feeling fun in their studies. Furthermore, crossword puzzles increase collaborative work and encourage active participation in teaching and learning. Crossword puzzles are a useful tool to help students improve their vocabulary through contextual inference and repetition. Students who participated in vocabulary exercises involving crossword

puzzles demonstrated significantly higher recall rates compared to those taught using traditional methods, according to research by Mansour et al. (2023). These puzzles also assist learners in recognizing spelling patterns and word structures, thereby improving their spelling comprehension. The regular use of crossword puzzles in classroom activities encourages students to analyze word usage in a variety of contexts and explore meanings, which enhances learner autonomy. Due to these features, crossword puzzles can be designed to suit a range of learning preferences and ability levels.

2.3.2.1 Crossword puzzles in learning vocabulary

Learning vocabulary is a major element in EFL; it needs to be taught in a way that provides and makes an enjoyable learning environment. Students will acquire language easily and effectively. Crossword puzzles can enhance students' engagement in the learning process when they receive guidance to solving puzzles, including partial definitions, the alphabet at the top of the grid, and the word length needed for each grid (Thomas and Sangeetha, 2020). Students need to fill in the blanks and follow specific limits in CP (Thomas and crossword puzzle grids. Sangeetha, 2020). They must provide correct answers to fit into the grid is an activity that helps students get familiar with, identify and retain knowledge, it gives them opportunities to reinforce English vocabulary (Moursund, 2006; Njoroge, Ndung'u, & Gathigia, 2013). Furthermore, Mshayisa (2020) claimed that CP has been demonstrated that using crossword puzzles during the learning process enhances student learning outcomes and fosters scientific discipline. Finally, including crossword puzzles into vocabulary education is a highly effective method for increasing student engagement and learning outcomes. These puzzles offer a dynamic way to mix enjoyment and targeted language instruction, ensuring that pupils absorb, retain, and use new vocabulary more effectively. Their adaptability enables educators to tailor them to different language levels and instructional objectives, making them an indispensable tool in any EFL classroom. When used consistently and effectively, crossword puzzles not only help students learn vocabulary, but they also promote learner autonomy, critical thinking, and teamwork.

2.3.2.2 Crossword puzzles in teaching vocabulary

In English language teaching, vocabulary is considered the main part of the language structure. Based on the curriculum, teachers must choose and implement educational strategies that meet their students' needs. Teachers should use their creativity in structuring vocabulary according to the context in which it will be taught if they want to achieve the educational goals. Teachers can easily create crossword puzzles for students to use as an engaging learning tool. These puzzles serve as both a teaching and evaluation tool, to increase students' vocabulary

mastery in EFL. Crossword puzzles are an efficient way to reinforce teaching vocabulary due to them providing definitions, synonyms, and antonyms within the game. Using Crossword puzzles can be beneficial in promoting the use of dictionaries or learning vocabulary related to a particular subject, and at the end of the course, they could serve as a quiz or test of a unit or a lesson. Recent empirical research suggests that integrating crossword puzzles into vocabulary instruction can be beneficial for EFL learners. For example, a quasi-experimental study conducted by Mansur, Fatima, and Zulfikri (2023) with seventh-grade students at SMP Negeri 10 Palu found that those who were taught using crossword puzzles had significantly higher scores on vocabulary assessments ($M = 85.5$) compared to their peers in the control group ($M = 44.2$). This highlights the effectiveness of crossword puzzles in enhancing vocabulary acquisition. The use of crossword puzzles in vocabulary instruction is a highly effective strategy for enhancing EFL learners' word mastery. Research has demonstrated that crossword activities not only reinforce retention and understanding of vocabulary but also significantly boost student motivation and participation. Their adaptability makes them an essential tool for both teaching and assessment across diverse educational settings.

2.3.3 Using Crossword puzzles is effective in improving English vocabulary

Creating engaging and innovative strategies is crucial for educators teaching English as a foreign language. Crossword word puzzles are still an instructional tool for improving different skills, problem solving, grammar, and memory. This can be attributed to several earlier studies. The study of Zamani et al. (2021) examines the effectiveness of crossword puzzles in enhancing English for Specific Purposes (ESP) vocabulary among students in the Maritime Department at Muhammadiyah University of Mataram. Using a quasi-experimental design with a control group and an experimental group, the research demonstrates that students who learned vocabulary through crossword puzzles showed significantly greater improvement in their post-test scores compared to those taught using conventional methods. The engaging and interactive nature of crossword puzzles was found to boost students' motivation, retention, and understanding of specialized vocabulary. These findings confirm that crossword puzzles are not only an effective educational tool but also a practical and enjoyable method for facilitating vocabulary acquisition in ESP contexts. Similar to the study conducted by Yuli Astutik and Nanik Wahyuni (2022) examined the effectiveness of using crossword puzzles to teach vocabulary to eighth-grade students at SMP Negeri 2 Tarik. The research utilized a quasi-experimental design that included pre- and post-tests. The results showed a significant improvement in the students' vocabulary scores after the implementation of crossword puzzles. The experimental group, which used the puzzles, outperformed the control group, indicating that crossword puzzles are an effective tool

for enhancing vocabulary acquisition. These findings support the use of engaging and interactive methods, like crossword puzzles, in language learning to boost student motivation and retention. Crossword puzzles have not been confined to the field of English as a foreign language; rather, they have been applied in a wide range of disciplines

As what this study explored utilizing crossword puzzles as an innovative way to assess medical students' understanding of forensic medicine. We worked with 38 second-year medical students and discovered that an impressive 92% found the activity engaging. Additionally, 84% felt that helped them remember what they had learned more effectively. Notably, 73% considered it a valuable assessment method, and 81% supported its use in competitive exams.

The puzzles not only encouraged individual critical thinking and memory recall but also reinforced key concepts, making the learning experience both effective and enjoyable. We concluded that crossword puzzles can significantly enhance performance, improve critical thinking skills, and boost memory retention, all while providing a more student-friendly and time-efficient assessment method compared to traditional approaches. This strategy aligns well with the growing emphasis on competency-based and active learning in contemporary medical education. Further, Mckeachie (2002) claims that students acquire massive advantages when solving crossword puzzles and successfully learning words. As stated by Whisendand and Dunphy (2010), when teachers implement crossword puzzles as a part of the learning process, students build vocabulary knowledge and improve their understanding by recalling learned information and controlling several words to find the correct terms.

To solve this kind of games, students should read the clue if any (definition, example, synonym...) Then they count the number of blank squares until they determine the words whose numbers and meanings matches with their letters.

Crossword puzzles serve as a valuable educational tool enabling students to assess their understanding when they successfully identify answers correctly. It can increase active learning, problem solving, and self-confidence (Franklin et al; 2003). Furthermore, it contributes to academic improvement and achievement (Cassidy, 2009).

2.3.3.1 Kinds of crossword puzzles

Crossword puzzles identified that make the educational experience into an exciting and funny environment and provide opportunities for students to practice their vocabulary. Neugebauer (2014) suggests a range of crossword puzzles that include classical crossword puzzles, numerous crossword puzzles, and fill-up crossword puzzle.

2.3.3.1.1 Classical or Traditional crossword puzzle

Each word is related by a clue that assists students in solving the puzzle. In addition, it is categorized by numbered squares where words crisscross horizontally and vertically. This type helps students to improve word knowledge and language skills by keeping the mind active.

2.3.3.1.2 Numerous crossword puzzles

Represent just numbers instead of letters and without hints or clues. Students have to enter words correctly into the grid. This type of puzzles increase cognitive skills and keep the mind active.

2.3.3.1.3 Fill-up crossword puzzle

A list of words that must be used that consists of black or white boxes in which required filling the grid with the correct answer based on the given clues.

However, Widyasari stated (2010), there are specific types of crossword puzzles that can aid in teaching vocabulary in the classroom .Those include; oral crossword puzzle, picture crossword puzzle, and object crossword puzzle. Each teacher used various types of this game depending on what the teacher needed to use in teaching.

2.3.3.1.4 Oral crossword puzzle

A game where students got black crosswords without any written clues, relying solely on the teacher's verbal instructions .Therefore ,this puzzle leads students to be more focused when listening extensively to the given directions.

2.3.3.1.5 Picture crossword puzzle

Crossword game where the clues are provided in the form of images. In this case students receive puzzles without written hints, as the pictures themselves serve as the clues. These puzzles assist students in solving crosswords more easily and enable them to quickly guess vocabulary words based on the provided images.

2.3.3.1.6 Object crossword puzzle

The teacher provides the students with clues that are written directly on objects and a blank crossword grid rather than giving them ready-made clues. These puzzles help students to improve vocabulary and learning in an engaging manner.

2.3.3.2 Clues

Crossword puzzle a game in which words, predicted from their definitions. The crossword puzzle features words arranged horizontally (across clues) and vertically (down clues),(Wahyuningsih,2009).Completing crossword puzzles requires significant skills; the ability to make inferences, evaluate choices, and draw conclusions. According to dictionaries, clues in crossword puzzles are hints provided by teachers to assist students in finding the correct, unfamiliar words to fill the puzzle grid. It requires analyzing and identifying the new terms by

discovering information about how a word fits in a clue. A clue is a phrase or a word provided as evidence to help find an answer or response in a crossword puzzle on a game grid.

2.3.3.2.1 Context clues

One of the methods seeks to assist language students in enhancing their vocabulary skills by guessing the meaning from the context provided in the reading text. Context clues have also been evaluated and confirmed to be effective in boosting the language learner's vocabulary (Wilson,2013;Ebrahimian and Nabifar,2015; Malik,2016).According to Boonchum (2018), context is a cognitive method that includes any information that readers or listeners utilize to comprehend what is being said, whether orally or in writing.

2.3.3.2.2 Types of Clues

According to a lot of deviations, the provided table represents the various common types of clues that are found as evidence in the crossword puzzle game. It consists of three columns: clues, definitions, and examples for each one. Those types assist students solving this game effectively to enhance their English vocabulary. The table shows eight types of clues, including:

Table 2: Types of clues

| Clue types | Definition | Example |
|------------------------------|--|---|
| Definition clue | A direct definition or synonym of the answer. (Cambridge dictionary) | Where students study SCHOOL |
| Fill in the blank clue | A common phrase with a missing word. | Hehis homework. DID |
| Wordplay (unscramble) | The answer is found by rearranging the letters of a given word or phrase. | Unscramble: egear → (Answer: AGREE) |
| Wordplay(lettre manipulation | The answer is formed by modifying the given word (adding, removing, or changing letters | Add an e to the word cut → (Answer: CUTE) |
| Anagram clue | The letters of a word or phrase must be rearranged to create another word. (Collins Cobuild English Dictionary) | Rearrange "listen" SILENT |
| Antonym clue | A word that has the opposite meaning as another | Antonym for cold Hot |
| Past Tense clue | Describes actions that happened in the past | Past tense of tell → (Answer: TOLD) |

| | | |
|----------------------|--|----------------------------------|
| <p>Synonyms clue</p> | <p>A word that has the same meaning as another one. Synonyms which have complex expressions are a kind of paraphrasing of words, phrases or sentences (written forms) or utterances (spoken forms) (Fromkin and Rodman 1993)</p> | <p>Synonym for big Large</p> |
|----------------------|--|----------------------------------|

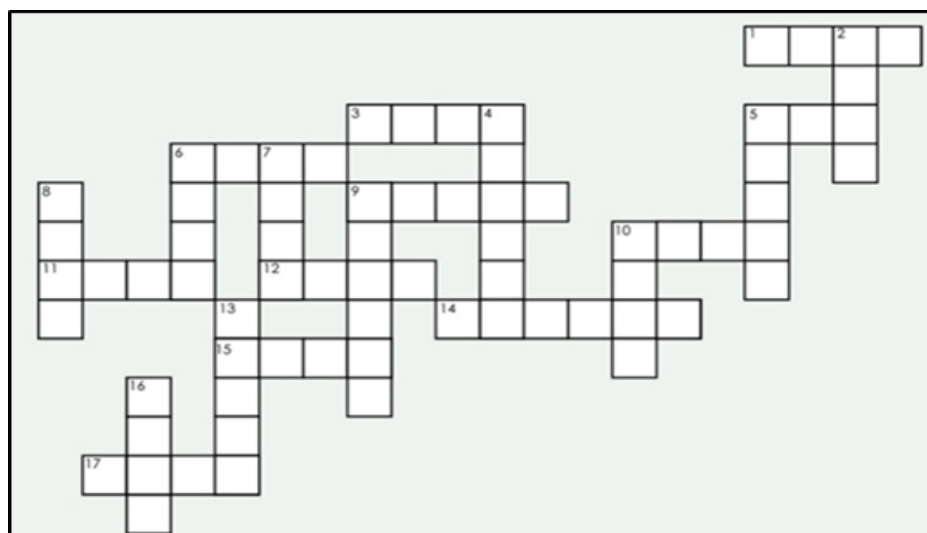


Figure 0.1: Crossword puzzle game

Table 3: Crossword puzzle game solving

| N° | Clues ACROSS | N° | Down |
|----|-------------------------------------|----|---------------------------------|
| 1 | Color of the sky | 2 | Antonym for New |
| 3 | Put in your hands | 4 | My pool is than yours. |
| 5 | Apple and pumpkin are types of this | 5 | Use this to call people |
| 6 | Add an e to the word cut | 6 | Past tense of come |
| 9 | Unscramble: egear | 7 | Past tense of tell |
| 10 | Unscramble: mnia | 8 | Has a tail and flies in the sky |
| 11 | a clock tells you this | 9 | Surprise |
| 12 | Unscramble: lead | 10 | Breakfast is one of these |
| 14 | Day before Saturday | 13 | A triangle is this |
| 15 | Where you live | 16 | Put your lunch on this |
| 17 | She her bed. | | |

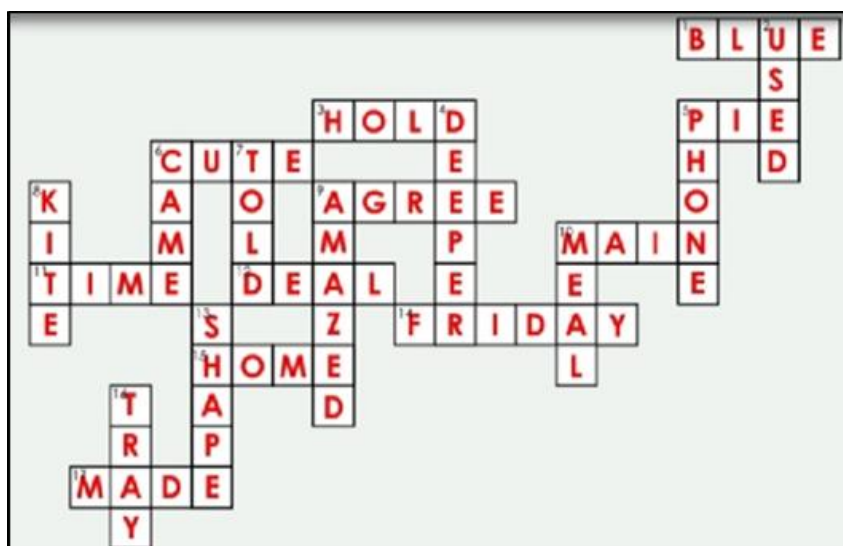


Figure 0.2 : Crossword puzzle game solving

Conclusion

This chapter showed three key sections. The first part explored details related to vocabulary, including its definition, types, and its importance in the teaching and learning process. Vocabulary helps students communicate ideas clearly and efficiently, which promotes improved language learning and fluency by highlighting the role of the teacher in the classroom and providing a list of techniques that assist students to develop their vocabulary in English as a foreign language and one of the techniques is crossword puzzles. The next section included the Impact of educational games in improving English vocabulary when integrated as a successful tool and their effect on student engagement and motivation. Additionally, many previous studies have indicated the impact of crossword puzzles in promoting vocabulary retention, problem-solving, critical thinking, student engagement, and motivation. The last part examined the effectiveness of crossword puzzles and covered the history, benefits of crossword puzzles, and their types, as well as encouraging students to use clues by fostering answers. The next chapter will outline the methodology that will be used in this research.

Chapter 03 METHODOLOGY

Introduction

This chapter presents the research methodology adopted in this study, which examine the effectiveness of CP as an educational tool in improving English vocabulary among third-year pupils at Khaitati Brothers Middle School. It explores whether engaging students in crossword activities enhances their vocabulary retention and comprehension. The research employs a mixed method as an approach to data collection and uses a pre-experimental design, utilizing a pre-test and post-test for one single group of students to assess the impact of crossword puzzles on the different types of vocabulary acquisition by analysing students' performance before and after the intervention. In addition, an observation checklist for teachers to discuss the challenges encountered by them while integrating crossword puzzles in their classrooms.

3.1 Research design

Mixed-Methods research represents a methodological approach that merges qualitative insights with quantitative data to strengthen the validity and richness of findings within a study. As noted by Burke-Johnson et al. (2007), this design allows researchers to combine the strengths of both methods to achieve a more comprehensive and validated understanding of the research problem. In this approach, qualitative methods provide open-ended, exploratory data, whereas quantitative methods contribute structured, numerical data (Creswell, 2014). The development of the mixed method approach stems from the recognition that qualitative and quantitative methods each possess inherent limitations. By integrating both, researchers can offset these weaknesses and achieve a more holistic view of the research problem. Creswell and Plano Clark (2011) explain that this design allows for the gathering and the interpretation of both qualitative and quantitative data, either sequentially or concurrently. The method of integration is determined by the research objectives and the philosophical stance of the researcher.

To achieve the objective of this research, which is evaluate how effective crossword puzzles are as a matter of enhancing English vocabulary acquisition among third-year middle school pupils who learn EFL .To investigate this topic, the research design must be selected that closely aligns with the study's objectives and context. The study design offers a framework that directs the entire research process that including data collection and analysis, so ensure the validity and reliability of the results. Research designs are classified into three main types: quantitative, qualitative, and mixed methods, each offering distinct aspects and benefits based on the target research questions .Consequently, selecting an appropriate research design is essential

for ensuring that the study produces meaningful and applicable insights (McMillan & Schumacher, 2009).

3.1.1 Experimental Research Design

Experimental design is a methodical and regulated approach to conducting research aimed at enhancing accuracy and deriving specific conclusions regarding a hypothesis (Bell, 2008). This scientific methodology entails the manipulation of one or more independent variables to assess their impact on one or more dependent variables. The primary goal is to regulate all other factors that could affect the results, enabling the researcher to forecast or ascertain potential outcomes. In statistical terms, experimental design pertains to the organization of an experiment to gather data in a controlled manner, particularly when variations are present. This concept is predominantly associated with controlled experiments, where the researcher maintains complete authority over the experimental conditions.

An experimental design was chosen as the most appropriate research design to measure the effectiveness of the Crossword Puzzles game. Experimental research involves manipulating subordinate variables to measure their impact on other variables. In this case, the researcher aimed to explore the extent to which the use of crossword puzzles influences vocabulary acquisition, as well as to explore the difficulties teachers may encounter when implementing this alternative teaching tool to instead as compared to the other traditional methods.

3.1.1.1 Pre-experimental design

The study employed a pre-experimental design, which means single group pre-test and post-test), this design involved one experimental group design without control group that is pre-test (O1), followed by an intervention (X) and post-test (O2),(Arikunto,2006).It aims to know whether there is a significant effect before and after using crossword puzzles and assessing any improvement in pupils' level.

Table 4: Pre-experimental (one- group pre-test /post-test design), (Arikunto, 2006)

| | |
|---------------------|----|
| Pre-test | O1 |
| Intervention | X |
| Post-test | O2 |

3.2 Research Approach

3.2.1 Quantitative Research Design

Quantitative research design refers to the methodologies and metrics that yield quantifiable or discrete values (Kothari, 2007). The data gathered is derived from empirical observations and measurements. These approaches require significant time and meticulous planning, and they generally involve closed-ended responses.

Quantitative research is viewed as a systematic and analytical method of investigation. As explained by Rovai et al. (2014), quantitative researchers see the world as external to themselves, believing in an objective reality that exists independently of any personal observation.

In research, objective reality is divided into smaller, understandable parts called objectives or hypotheses. Researchers explore variable relationships, collect data through various methods, and analyze it using statistical techniques. This process allows them to draw conclusions and generalize findings to a larger population. This approach is grounded in the post-positivist paradigm (Phillips & Burbules, 2000). Quantitative research comprises two main types: experimental and non-experimental research designs.

3.2.2 Qualitative Research Design

Qualitative research focuses on investigating and comprehending the significance that a person or groups attach to a social or human issue (Creswell, 2014). Qualitative research design generates data that cannot be quantified through the use of open-ended questions. This approach allows the researcher to understand issues by examining them within their unique context and the significance individuals attach to them. (Denzin & Lincoln, 2005). It seeks to construct meaning and insight based on the perspectives and experiences shared by participants (Merriam, 2009).

3.3 Population and Sampling

As noted by De Vos (1998:191), the effectiveness and implications of the design and associated methodology impacts the selection of the population and the size of the sample. The aspects of the population deemed relevant for potential inclusion in the study. In research, a sample refers to a subset of individuals or elements drawn from the entire population for the purpose of measurement. To ensure that findings can be generalized to the broader population the sample must accurately represent that population.

The general population for this study is all the third-year pupils in Khaitati Brothers Middle School, in which they consist of 180 pupils. In addition to 4 English teachers who work in this school. The sample of this study consisted of 40 pupils were selected randomly (Class of 3MS1) and answered the pre-and post-activities. It was selected as it offered a practical and representative sample, enabling the researcher to carry out the pre-experimental design efficiently with minimal disruption to the regular school routine and ensuring accurate pre-and post-test data collection. For the observation checklist with English teachers, the researcher employed a non-random sampling technique.

3.4 Instruments of the research

A research instrument is a method utilized to gather, assess, and interpret data related to the focus of your study. It may involve interviews, tests, surveys, or checklists. A suitable instrument is essential for gathering comprehensive data pertinent to the research question. Depending on the study's objectives, one or more tools can be utilized together (Burns & Grove, 2011). To give an answer to the three research questions of this study, two instruments were utilized to collect data. (Table 5).

Table 5: Research Questions and the Instruments used in Data Collection.

| Research Questions | Instrument |
|--|------------------------|
| 1-To what extent are crossword puzzles effective in improving English vocabulary among third-year middle school pupils? | Pre-test and Post-test |
| 2-What specific types of English vocabulary (high frequency /low frequency words) are most effectively improved by the use of a crossword puzzle in the classroom? | |
| 3-What are the challenges faced by teachers when integrating crossword puzzles into English vocabulary classes? | Observation Checklist |

3.4.1 Pre-test and Post-test design

The pretest-posttest design is likely the most widely used experimental research method (Cook & Wong, 2008). It evaluates the frequency of an outcome before and after the implementation of a specific intervention. These studies can either be single-arm, measuring one group or involve multiple groups for comparison. This method continues to be widely used due to its quick and convenient approach to assessing a target group that has undergone an intervention.

The pre-test and post-test evaluation facilitates an immediate assessment of the intervention and allows for the swift refinement of instructional techniques or simulation methods. Besides being a convenient research approach, the pre-test and post-test design enables statistical analysis of the data using established statistical techniques. In this pre-experimental research, four pre-post activities are designed for third-year middle school pupils related to the unit of "My Environment and I". Those activities are to evaluate the level of pupils in English vocabulary without using any educational game (pre), and then when they use a crossword puzzle (post) In addition to identifying the types of vocabulary most enhanced through the use of this technique.

3.4.2 Crossword puzzle intervention with third-year middle school pupils

This intervention was conducted during the third term of the school year 2024 /2025 with third-year pupils at Khaitati Brothers Middle School. It took place in one session, in the presence of the teacher. At the beginning, pupils were introduced to the concept of crossword puzzles and how they work. The goal was to help pupils improve their vocabulary and understand the words in a fun and interactive way. The intervention consisted of an educational activity using crossword puzzles. The used vocabulary was taken from the third-term unit titled 'My Environment and I' which focuses on environmental topics such as types of pollution, environmental problems (e.g. air and water pollution, deforestation), natural elements (e.g. Rivers, forests, mountains) and common solution or action (e.g. recycling, protecting, reducing waste). These lexical items were drawn from the pupils textbook and aligned with the curriculum objectives.

The exercises were specifically designed by the teacher Ms. Brahimi. To foster collaboration and peer learning, the pupils were divided into small groups of 4 to 5 members, ensuring a mix of skill levels and learning styles within each group. This grouping strategy aimed to create a supportive environment where more proficient pupils could assist their peers. The

teacher explained the rules briefly, clarified unfamiliar clues if needed, and monitored the groups' progress by circulating around the room, offering help and encouragement. The atmosphere in the classroom was dynamic and enjoyable. Pupils were engaged and excited to take part, including those who are usually less active. The playful nature of the task helped them focus and better understand the target vocabulary. The intervention showed that crossword puzzles can be a useful and motivating tool to support vocabulary learning and class participation.

3.4.3 Observation Checklist

Checklist observations are widely used in various educational settings. They can be filled out either during or following the observation. It is a research method where the researcher spends a long time closely interacting with the people being studied in their natural setting. During this time, the researcher quietly and carefully takes notes about what they see and hear. (Bogdan 1972: 3). Observation checklist is effective and easy to use, also it requires minimal time. This instrument was conducted in this study with four English teachers at Khaitati Brothers middle school to answer the third research question and highlight the challenges that could face them when using crossword puzzle as an educational tool to acquire English vocabulary.

3.5 Data collection

3.5.1 Quantitative data collection

The Quantitative data for this study were collected at Khaitati Brothers Middle School in Bordj Ghedir, BBA, focusing on third-year pupils. Pre- and post-tests were designed based on the unit « My Environment and I. » The pupils were given one hour to complete the pre-activity tests. Following this, an intervention was introduced, teaching the third-year pupils about crossword puzzles and how to use them effectively. During the post-activity phase, four crossword exercises were distributed again, and the pupils had the same amount of time one hour to solve them individually. After the allocated time, all answer sheets were collected for analysis.

3.5.2 Qualitative Data Collection

To gather qualitative data on the challenges faced by middle school teachers when integrating crossword puzzles into English vocabulary lessons, a checklist observation was conducted with four English teachers at Brothers Khaitati Middle School who were selected non-randomly on two different days. Each teacher was observed during their regular one-hour classroom sessions. The observation checklist included various challenges categorized into instructional challenges, classroom and time management, student engagement and motivation,

and materials, among others. For each item, the observer marked « Yes » or « No » based on whether the challenges occurred during the lesson. Additional space was provided for notes and comments to capture specific incident

3.6 Data Analysis

This study employed a mixed-methods design. The researcher conducted and collected the quantitative data (pre-test and post-test) from a group of third-year middle school pupils. The qualitative part consisted of an observation checklist conducted with English teachers to offer additional insights about the implementation of crossword puzzles in vocabulary activities.

3.6.1 Quantitative Data Analysis

Descriptive statistics were employed to examine and interpret the results of the pre-test and post-test in this study, which answered the first research question about the effectiveness of CP in improving English vocabulary. The second research question (RQ2) about which types of vocabulary (high-frequency /low-frequency words) are most enhanced using this game. The data was analyzed using SPSS .The majority of this group (3MS1) is female (55%) (Table 06).

Table 6: Demographic Information of pupils (Gender) (3MS1).

| / | Frequency | Percentage |
|---------------|-----------|------------|
| Male | 18 | 45% |
| Female | 22 | 55% |
| Total | 40 | 100% |

3.6.2 Qualitative Data Analysis

The purpose of the observation checklist is to find out the challenges and obstacles that face English middle school teachers when integrating crossword puzzles in vocabulary classes (RQ3).The results of the checklists were analyzed thematically. The four participant teachers were coded according to their gender, with males denoted (M) and (F) coded for females. The teachers were one male (01) and three female (3).Their years of experience in teaching English were considered (Table 7).

Table 7: Demographic Information of teachers (Gender)

| Gender | Years in teaching English (experience) | Frequency |
|---------------|--|-----------|
| Male | 10 years | 01 |
| Female | From 20 to 31 years | 03 |
| Total | / | 04 |

Summary

This chapter provides a detailed description of the research methodology used in the present study. It covers the research design, approach, population, sampling methods, and the instruments utilized. The study applies both quantitative and qualitative methods for data collection, consisting of pre-and post-tests alongside an observation checklist. Additionally, this chapter highlights the techniques used to analyze the participants' responses.

CHAPTER 4 RESULTS AND DISCUSSION

Introduction

Throughout this chapter, the study's results are divided into two main sections: quantitative and qualitative findings. The quantitative data is presented through descriptive statistics using SPSS, including the Mean (M) and Standard Deviation (SD) scores. Data were collected through pre- and post-tests conducted with third-year middle school pupils to assess the effectiveness of using crossword puzzles as an educational tool for improving English vocabulary learning, in addition to the types of vocabulary most effectively enhanced (high-frequency/low-frequency words). The qualitative findings are based on an observation checklist used to capture the teachers' practices during their sessions. The teachers were observed while integrating crossword puzzles into their lessons, and the checklist helped to highlight the main challenges they faced throughout the process.

4.1 Quantitative Results

4.1.1 The effectiveness of the crossword puzzle in improving English vocabulary among third-year middle school pupils.

Pre-and post-test results highlight a noticeable improvement following the implementation of crossword puzzles as a vocabulary development tool. Among 40 pupils, 26 (65%) exhibited an increase in their scores, 10 (25%) maintained the same performance level, and only 4 (10%) experienced a decline. The most remarkable progress was observed in pupil 29, whose score rose by 3 points, from 1 in the pre-test to 4 in the post-test. Several other pupils, including pupils 8, 10, 13, 22, 23, 26, 28, 30, and 39, showed considerable improvement with a 2 point increase. On the other hand, a few pupils, such as pupils 4, 20, and 35, experienced a slight decrease of 1 point, indicating minor regressions. It is noteworthy that most pupils who showed no change had initially moderate to high scores, suggesting that crossword puzzles were especially beneficial for those with lower starting proficiency. At the group level, the average pre-test score was 1.925 with a standard deviation of 0.6938, indicating generally low vocabulary knowledge with limited variation among pupils before the intervention. After using crossword puzzles, the mean post-test score significantly rose to 2.7, representing an average improvement of 0.775 points across the cohort. The post-test standard deviation slightly increased to 0.9115, implying that while most pupils improved, the degrees of improvement also differ than before using crossword puzzle. These findings confirm that the observed improvements were not due to random chance but are directly linked to the crossword puzzle activities. Both individual and group analyses

provide strong evidence that incorporating crossword puzzles into vocabulary lessons significantly enhances English language learning for third-year middle school pupils.

Table 8: Mean and Standard Deviation of Student's pre-test and post-test scores when using crossword puzzles

| Students | Pre-scores | Post scores | Students | Pre-scores | Post scores |
|--------------------------------|------------|-------------|----------|------------|-------------|
| 1 | 11 | 12 | 21 | 05 | 10.5 |
| 2 | 05 | 8.5 | 22 | 10 | 13.75 |
| 3 | 07 | 14 | 23 | 06 | 5.25 |
| 4 | 08 | 3.75 | 24 | 08 | 12 |
| 5 | 3.5 | 9.5 | 25 | 5.25 | 12 |
| 6 | 03 | 12 | 26 | 05 | 03 |
| 7 | 9.5 | 10 | 27 | 4.5 | 16.75 |
| 8 | 13 | 15.75 | 28 | 08 | 13 |
| 9 | 07 | 9.5 | 29 | 07 | 15 |
| 10 | 07 | 8.75 | 30 | 07 | 16 |
| 11 | 5.5 | 10.5 | 31 | 10.5 | 16 |
| 12 | 3.25 | 11 | 32 | 9.5 | 19.5 |
| 13 | 08 | 11.75 | 33 | 3.5 | 10 |
| 14 | 14 | 14 | 34 | 08 | 16.5 |
| 15 | 7.25 | 8.25 | 35 | 04 | 08 |
| 16 | 20 | 18 | 36 | 10 | 11 |
| 17 | 8.5 | 3.5 | 37 | 02 | 04 |
| 18 | 08 | 13 | 38 | 09 | 9.5 |
| 19 | 7.25 | 07 | 39 | 09 | 07 |
| 20 | 10 | 10 | 40 | 8.5 | 09 |
| MEAN (M) | | | | 1.925 | 2.7 |
| STANDARD DEVIATION (SD) | | | | 0.69383734 | 0.91146543 |

Table 08 shows the Mean scores and Standard Deviations of 40 pupils who conducted a vocabulary pre- and post-test. The mean score increased from $M = 1.925$ ($SD = 0.693$) in the pre-test to $M = 2.7$ ($SD = 0.911$) in the post-test. This improvement shows that the integration of crossword puzzles as a learning game significantly improved pupils' retention and knowledge of vocabulary. Similarly, a study by Shohib (2024) showed a significant improvement in students' vocabulary level after using crossword games. The students' average results increased from 41.90 on the pre-test to 76.67 on the post-test, reflecting a clear improvement of 34.77 points.

The results of the statistical analysis also showed a significant effect ($p = 0.000 < 0.05$), showing that the use of crosswords has a positive and effective effect on vocabulary learning. Students have indicated in interviews that these games helped them remember new words in a fun way and made it easier for them to memorize and review.

In this case, the findings of the primary research question that focused on the effectiveness of Crossword Puzzles as an educational tool in improving English vocabulary demonstrate that the use of crossword puzzles has a beneficial effect on the enhancement of English vocabulary among third-year middle school pupils. The overall scores on vocabulary assessments revealed a notable increase following the introduction of activities centered on crossword puzzles. The average score rose from $M=1.92$ in the initial test to $M=2.7$ in the subsequent test, with the standard deviation shifting from $SD=0.69$ to $SD=0.91$. This increase in mean scores indicates that a majority of pupils gained from the intervention, acquiring and retaining new vocabulary. The modest rise in standard deviation suggests that, although many pupils showed improvement, there was some variation in individual outcomes, likely attributable to differences in learning speed or levels of engagement. Crossword puzzles increased pupil participation during lessons while also increasing language abilities. Many pupils were highly motivated and committed, frequently expressing their excitement and eagerness to participate in the activities. This participatory method made studying more fun while also encouraging pupils to actively participate and collaborate with their colleagues, which created a more dynamic classroom environment.

This research aligns with the findings of Maheshwari et al. (2021) evaluated the efficacy of crossword puzzles in comparison to traditional teaching approaches. Their findings proved that crossword puzzles made learning more engaging and helped teachers reduce the monotony of traditional instruction. In addition to Hafizhah and pratolo (2022), who demonstrated that seventh-grade students engaged in crossword puzzle activities displayed enhanced vocabulary retention and increased engagement compared to their counterparts taught through conventional techniques. Furthermore, our findings corroborate the assertions of Maheshwari et al. (2021), who contended that crossword puzzles provide an engaging educational experience that mitigates the tedium of traditional teaching methods.

Several of the pupils in this study perceived the puzzles as interesting and regarded them as a stimulating alternative to rote learning, potentially improving their memory and attention retention.

The results align with those of Illiyin (2023), whose study involving four pupils showed notable enhancements in vocabulary and overall English language proficiency after implementing the crossword puzzle learners' comprehension of new terms within context. The findings revealed an improvement from the pre-test score of 46.67 to the post-test score of 61.24. The difference between the two was statistically significant ($p = 0.00 < 0.05$), indicating that using crossword puzzles effectively enhanced students' vocabulary performance. Among the vocabulary topics, terms related to the human body showed the greatest improvement (3.7), followed by classroom items (3.1), and fruits (2.5). These results suggest that incorporating realia can serve as an effective alternative medium for teaching vocabulary.

In conclusion, the improvement in test results, alongside the alignment with other previous studies, highlights the effectiveness of crossword puzzles as a beneficial and engaging tool for enhancing English vocabulary among third-year middle school pupils.

4.1.2 Types of English Vocabulary most effectively enhanced through the use of crossword puzzle

The findings from the pre- and post-assessments demonstrate significant differences in pupils' mastery of high-frequency and low-frequency English vocabulary through the implementation of crossword puzzles. In the pre-assessment, the mean score for high-frequency vocabulary was 7.275, whereas the mean score for low-frequency vocabulary was significantly lower at 3.9. Following the intervention, both scores showed improvement: the mean for high-frequency words increased to 8.725, while the mean for low-frequency words increased to 6.925. This indicates that although students made progress in both categories, the relative enhancement was more significant for low-frequency vocabulary, reflecting a gain of 3.025 points in contrast to a 1.45-point increase for high-frequency vocabulary.

The individual scores represent major variations. For instance, pupil 1 showed an increase in high-frequency vocabulary from 7 to 11, while experiencing a minor decline in low-frequency vocabulary from 7 to 5. Pupil 2 exhibited significant progress in both categories, with high-frequency scores rising from 4 to 10 and low-frequency scores increasing from 3 to 5. Pupil 3 displayed remarkable advancement in low-frequency vocabulary, escalating from 2 to 11, alongside a high-frequency improvement from 5 to 10. Conversely, pupil 4 faced reductions in both categories, with high-frequency scores decreasing from 5 to 3 and low-frequency scores falling from 5 to 2.

A significant finding is that numerous pupils exhibited greater advancements in low-frequency vocabulary compared to high-frequency vocabulary. For example, pupils 8 showed minimal progress in high-frequency words, increasing from 3 to 4, while achieving a remarkable improvement in low-frequency words, rising from 1 to 9. Similarly, pupil 10 enhanced their high-frequency score from 1 to 7 and their low-frequency score from 2 to 9. Likewise, student 18 elevated their high-frequency score from 5 to 12 and their low-frequency score from 5 to 10. Pupil 27 displayed significant development, advancing from 4 to 12 in high-frequency words and from 4 to 10 in low-frequency words.

Some pupils kept high scores with minor advancements. For instance, student 16, who achieved a high pre-test score of 13 in high-frequency words and 10 in low-frequency words, experienced a slight decrease to 10 in high frequency but maintained a robust score of 9 in low-frequency vocabulary. Pupil 24, who achieved 11 in both high-frequency and low-frequency pre-tests, exhibited slight decreases to 9 in high-frequency and 6 in low-frequency, suggesting a potential ceiling effect or diminished motivation. Pupil 19 and 38 showed irregular advancements. The high-frequency score for pupil 19 fell from 10 to 5, whereas their low-frequency score experienced a minor rise from 0 to 4. Pupil 38 increased from 6 to 7 in high-frequency vocabulary but fell from 8 to 1 in low-frequency, suggesting challenges in sustaining improvements in more advanced vocabulary.

Table 9: Means and Standard Deviation of High/Low vocabulary in pre and post-test (HF words: High frequency words / LF words: Low frequency words)

| Students | HF words (Pre-scores) | HF words (post scores) | LF words (pre-scores) | LF words (post scores) |
|----------|-----------------------|------------------------|-----------------------|------------------------|
| 1 | 07 | 11 | 07 | 05 |
| 2 | 04 | 10 | 03 | 05 |
| 3 | 05 | 10 | 02 | 11 |
| 4 | 05 | 03 | 05 | 02 |
| 5 | 04 | 10 | 01 | 07 |
| 6 | 07 | 08 | 03 | 07 |
| 7 | 03 | 10 | 05 | 07 |
| 8 | 03 | 04 | 01 | 09 |
| 9 | 08 | 10 | 01 | 04 |
| 10 | 01 | 07 | 02 | 09 |
| 11 | 07 | 09 | 04 | 04 |
| 12 | 10 | 11 | 05 | 10 |
| 13 | 08 | 11 | 01 | 10 |

| | | | | |
|--------------------------------|------------------|-------------------|-------------------|-------------------|
| 14 | 09 | 12 | 05 | 07 |
| 15 | 10 | 07 | 00 | 05 |
| 16 | 13 | 10 | 10 | 09 |
| 17 | 07 | 05 | 04 | 02 |
| 18 | 05 | 12 | 05 | 10 |
| 19 | 10 | 05 | 00 | 04 |
| 20 | 06 | 10 | 05 | 07 |
| 21 | 05 | 05 | 02 | 09 |
| 22 | 10 | 10 | 04 | 09 |
| 23 | 05 | 06 | 02 | 03 |
| 24 | 11 | 09 | 11 | 06 |
| 25 | 06 | 11 | 03 | 09 |
| 26 | 05 | 03 | 04 | 02 |
| 27 | 04 | 12 | 04 | 10 |
| 28 | 08 | 13 | 07 | 09 |
| 29 | 09 | 09 | 04 | 10 |
| 30 | 09 | 11 | 04 | 10 |
| 31 | 11 | 12 | 04 | 08 |
| 32 | 11 | 11 | 04 | 10 |
| 33 | 06 | 09 | 01 | 07 |
| 34 | 12 | 08 | 04 | 09 |
| 35 | 10 | 09 | 02 | 06 |
| 36 | 08 | 06 | 05 | 07 |
| 37 | 10 | 09 | 05 | 02 |
| 38 | 06 | 07 | 08 | 01 |
| 39 | 04 | 05 | 03 | 07 |
| 40 | 09 | 09 | 06 | 09 |
| MEAN (M) | 7.275 | 8.725 | 3.9 | 6.925 |
| STANDARD DEVIATION (SD) | 2.8283138 | 2.65047166 | 2.43689588 | 2.81377108 |

Table 10: Mean and improvement of High-Frequency and Low-Frequency Vocabulary after the intervention

| Vocabulary Type | Pre-test mean | Post-test mean | Improvement |
|------------------------|----------------------|-----------------------|--------------------|
| HF words | 7.275 | 8.725 | 1.45 |
| LF words | 3.9 | 6.925 | 3.025 |

The results from the pre and posttest scores indicate a significant enhancement in both high frequency and low frequency word acquisition; nonetheless, the increase in low frequency vocabulary seems to be more substantial when taught using crossword-based methods. The pretest results reveal that students initially possessed a greater baseline knowledge of high frequency words ($M=7.275$) than of low frequency words ($M=3.9$). As a result, there was potential for improvement in low frequency vocabulary. The significant gains observed in the posttest ($M=6.925$) highlight the effectiveness of crosswords in this context.

These findings are consistent with research on vocabulary acquisition, which indicates that learning strategies that involve active engagement and rich contexts are more effective for unfamiliar words (Nation, 2001). Words that are used less frequently are generally more challenging to learn because they are not encountered often in everyday conversation. Crosswords offer repeated exposure in a puzzle format, which helps reinforce both spelling and meaning in an enjoyable manner. Previous studies have indicated that low-frequency words are recalled more successfully than high-frequency words, likely because these words have an advantage during the retrieval process (Reder et al., 2000). Additional research has suggested that low-frequency words attract more focus during the encoding phase (Glanzer & Adams, 1990; Malmberg & Nelson, 2003; Naveh-Benjamin et al., 2000).

Crossword puzzles present vocabulary within clues, enhancing comprehension and supporting memory retention especially for abstract or unfamiliar terms. Because pupils are typically less acquainted with low-frequency words, solving crossword puzzle with clues demands greater cognitive effort, which often leads to deeper learning and longer-lasting retention (Craik & Lockhart, 1972). In contrast, high-frequency words tend to be too familiar, offering minimal cognitive challenge and thus limiting engagement. Low-frequency vocabulary, however, poses a stimulating challenge that keeps learners mentally engaged and is crucial for academic achievement and mastery of subject-specific content (Coxhead, 2000; Schmitt, 2014).

4.2 Qualitative results

4.2.1 The challenges that faced teachers when integrating crossword puzzles into English vocabulary classes

The table presents six different teaching challenges encountered by teachers during classroom observation. Each challenge is evaluated with four teachers, with the total number of 'Yes' responses and its percentage that indicates its frequency. The instructional challenge was identified in 2 out of 4 cases, resulting in a percentage of 50%. Pupils were familiar with the

game; however, they faced difficulties with new vocabulary words found in the crossword puzzle activities. The teachers re-explained some words many times. The challenge of student engagement and motivation also received 2 ‘Yes’ responses, corresponding to 50%. Pupils liked solving the game in groups more than working individually. Some of them were shy to participate, especially the pupils with a low level, which posed a moderate challenge for half of the observed teachers. Moving on, classroom management was observed in 3 out of 4 cases, yielding a percentage of 75%. This relatively high frequency points to a more widespread difficulty among teachers in maintaining discipline and ensuring a structured learning environment. In contrast, the challenge of assessment and effectiveness appeared only once, which translates to the lowest percentage at 25%. This implies that evaluating student performance and ensuring lesson effectiveness were less commonly noted as concerns. Furthermore, resources and materials were marked as a challenge in 2 of the 4 observations, giving a percentage of 50%. Some teachers encountered difficulties in using appropriate teaching aids and materials during their lessons, such as dictionaries, pictures, and digital tools. Lastly, time management stood out as the most frequently observed challenge, with all 4 teachers receiving a ‘Yes’ response. This resulted in a 100% frequency. Managing time effectively was a fundamental struggle across all observations. One hour was not sufficient to complete games and crossword puzzle activities.

Table 11: The respondents and percentage of teachers when integrating crossword puzzles into English vocabulary classes.

| Challenge type | T1 | T2 | T3 | T4 | Total “YES” | Percentage |
|-----------------------------------|-----|-----|-----|-----|-------------|------------|
| Instructional challenges | No | Yes | Yes | No | 02 | 50% |
| Classroom management | No | Yes | Yes | Yes | 03 | 75% |
| Time management | Yes | Yes | Yes | Yes | 04 | 100% |
| Student engagement and motivation | No | No | Yes | Yes | 02 | 50% |
| Resources and materials | Yes | Yes | No | No | 02 | 50% |
| Assessment and effectiveness | No | Yes | No | No | 01 | 25% |

The third results research question focused on identifying the various challenges that participating teachers encounter when integrating crossword puzzles as an alternative teaching tool. Based on their responses, the data analysis highlighted the percentage of “yes” answers regarding the challenges faced by these teachers.

Those main challenges are time management, classroom management, instructional challenges, student engagement and motivation, resources and materials, assessment, and effectiveness.

4.2.1.1 Time Management

The results indicate that time management is the most significant challenge encountered by them, with all respondents (100%, $n = 4$) reporting difficulties in this area. This may be attributed to the time required for various tasks, such as introducing the activity, explaining instructions, reviewing vocabulary, allowing students to engage with the crossword, and providing feedback. So, being involved in a new educational game needs more spending time, particularly when it comes to clarifying rules. Additionally, students needed extra time to understand and learn new vocabulary before they could effectively use it. Due to insufficient time; some tasks may have been left incomplete, which could reduce the overall effectiveness of the activity. These results correspond with Merrill (2020), who observed that time constraints can pose a major obstacle to adopting active learning methods, particularly when such activities necessitate comprehensive instructions and engagement from students.

4.2.1.2 Classroom Management

Classroom management was the second most frequently reported challenge, with 75% ($n = 3$) of participants emphasizing its difficulty. Even if they are entertaining, interactive methods, however, they require more organization in addition to controlling noise and demand more work to maintain students' focus and discipline. Especially in some cases when students prefer to work in teams during such enjoyable activities so this can increase motivation and on the other side lead to disorganization. In line with Marzano and Marzano (2003) determined that effective classroom management is crucial to sustain organisation during interactive activities, as a lack of structure often leads to a loss of focus and classroom regulation.

4.2.1.3 Instructional Challenges

The other participants (50%) ($n = 2$) were facing instructional challenges, and some students had difficulty understanding the game requirements and the instructions provided. This was especially noticeable when directions were given in English, which created a language barrier for learners with limited proficiency. Furthermore, many students were unfamiliar with the crossword format, leading to confusion as they struggled to navigate the activity without clear and simplified guidance. These factors collectively reduced overall engagement and performance in the task.

The results of the study conducted by Darling-Hammond et al. (2020) emphasized that unclear instruction can significantly reduce student engagement and comprehension, highlighting the need for clarity when implementing active learning strategies.

4.2.1.4 Student Engagement and Motivation

Another 50% (n=2) of the participants' teachers said they had difficulty retaining their students engaged and involved. Gamified activities typically serve to improve interaction, but they do not necessarily accommodate different learning styles. Despite the fact that crossword puzzles are meant to be entertaining, some students exhibited little interest in them, perhaps as a result of a lack of interest in game-based learning. These motivational differences could limit the success of such activities.

4.2.1.5 Resources and Materials

The respondents' teachers identified resources and materials as a challenge. The activity often relies on having access to various aids such as printed copy dictionaries, and visual support materials. The lack of sufficient printed puzzles or reference materials made it harder for students to work effectively. The finding of Tomlinson (2014) confirmed the importance of providing differentiated materials that match the diverse learning needs of students to support the success of active learning strategies.

4.2.1.6 Assessment and Effectiveness

This challenge was the least frequently mentioned that related to assessment and effectiveness. Evaluating student performance on this specific task was generally manageable; however, a minority of students still found it challenging. One of the difficulties was objectively measuring vocabulary acquisition through a game format. Additionally, variations in individual participation may have made it difficult to fairly assess some students. As Popham (2017) noted, traditional assessment tools often need modifications to effectively evaluate outcomes from non-traditional, interactive learning activities.

4.3 Summary

In summary, the data underscore that time management emerges as the primary challenge, succeeded by issues related to the classroom environment, whereas factors like assessment seem to be of lesser concern. These results emphasize the significance of task design, time distribution, and support mechanisms in the execution of vocabulary enhancement activities, such as crossword puzzles, within the language learning context.

**CHAPTER 5 CONCLUSION AND
RECOMMENDATIONS**

Introduction

This chapter provides a comprehensive conclusion that indicates the effectiveness of crossword Puzzles as an educational /game in improving English vocabulary among third-year pupils at Khaitati Brothers Middle School. Additionally, the study revealed the different types of vocabulary (high-frequency/ low-frequency words) that the pupils acquired by using crossword puzzles as a technique for learning. Moreover, this research identified multiple challenges that teachers encounter when integrating crossword puzzles. Furthermore, this chapter offers several pedagogical recommendations for both pupils and teachers.

5.1 General conclusion

It has been illustrated that using interactive educational tools substantially boosts pupil's language learning experiences .Specifically, crossword puzzles have become a very successful method for encouraging vocabulary growth in a fun and interesting way .This research was aimed investigating how well crossword puzzles help third-year middle school pupils acquire different types of English vocabulary. A mixed-method was used to achieve this goal, combining both quantitative and qualitative data. The quantitative data involved the participation of 40 pupils in the pre- and post-testing activities intended to evaluate the impact of crossword puzzles as well to the specific type of vocabulary mostly enhanced by the use of this learning method. Qualitatively,4 middle school English teachers participated in this research by assessing the implementation process using an observation checklist to identify the different obstacles faced by them.

This research provides a theoretical framework, consisting of a general introduction that addresses the concepts that are related to this topic. In the second chapter, the researchers addressed the most significant previous studies conducted by earlier researchers on this topic as well as the different aspects related to crossword puzzles. In the third and fourth chapters the researchers used a mixed-method approach in order to provide a comprehensive understanding about pupils' experiences and the challenges influencing teachers with crossword puzzles game.

The quantitative findings revealed a significant positive impact in using crossword puzzles as an alternative tool in education .The pre- and post-test results indicated improvements in low frequency vocabulary acquisition, and overall engagement and critical thinking of pupils. These improvements were attributed to crossword interactive as a gamification tool, which make vocabulary acquisition more engaging and enjoyable.

The qualitative data from observation checklist highlighted various and specific factors that influence teachers when using this game (instructional challenges, Time management, class management, Assessment and effectiveness...).The data analysis indicated that the most significant challenge encounter by them was time management because being involved in new education game will take more time consuming.

To sum up, this thesis aimed to integrate crossword puzzles into English language classrooms to shed light on alternative, engaging, interactive, and enjoyable tools. Hopefully, this study shed light on those innovative games to encourage educators to adopt them to meet pupils' needs. The findings revealed that crossword puzzles can be a valuable supplementary tool in vocabulary acquisition. Pupils demonstrated increased motivation and greater interest in the learning process when activities involved playful elements. Through the use of crosswords, students were able to revise and retain vocabulary in a contextual and meaningful manner, making the learning experience both effective and enjoyable .Moreover this research supports the integration of game-based learning strategies as part of a more student-centered approach. Crossword puzzles not only helped in reinforcing vocabulary but also improved cognitive skills such as problem-solving and critical thinking. This aligns with modern pedagogical trends that advocate for more active participation and learner autonomy in the classroom. It is recommended that English language teachers consider incorporating crossword puzzles and similar interactive methods into their lesson plans, especially when teaching vocabulary. These tools can help bridge the gap between traditional instruction and learners' expectations for dynamic and stimulating content. While this study focused on a specific context it opens the door for further research on the broader impact of educational games on language learning. Future studies might explore how such tools affect different linguistic skills, proficiency levels, or age groups to provide more comprehensive insights into their effectiveness.

5.2 Recommendations

5.2.1 For Students

- Students are encouraged to regularly use crossword puzzles to improve their vocabulary knowledge and spelling in a fun and engaging way.
- Focus on contextual learning rather than simply memorizing definitions. Students should use new words from crossword puzzles in different contexts, such as sentences or conversations, to improve their understanding and retention of vocabulary.

- Students should use crossword puzzles as writing prompts to help them practice forming sentences and short paragraphs using newly learned words.
- Students must utilize Digital Crossword Tools students are urged to investigate online crossword generators and applications, which can offer tailored vocabulary practice and immediate feedback, thereby improving independent learning.

5.2.2 For Teachers

- Teachers should incorporate crossword puzzles into vocabulary and writing lessons to make learning more interactive and support word retention.
- Educators ought to regularly evaluate the efficacy of crossword activities by administering quizzes or assigning writing tasks that include the target vocabulary. This approach guarantees that students are not merely recognizing words, but also employing them correctly.
- Teachers are advised to design or select crossword puzzles that match lesson objectives and guide students on how to use them to enhance both word usage and writing fluency.
- Differentiate Crossword Activities: Design puzzles of varying difficulty levels to accommodate students with different language proficiencies, promoting inclusive learning.

5.3 Summary

This final chapter provides a comprehensive recapitulation of the main insights derived from the previous chapters. Additionally, it outlines the researcher's proposed recommendations. For teachers, they are advised to use an appropriate crossword Puzzle to learn vocabulary and to develop students 'writing to enhance both word usage and writing fluency. For students, they have to use crossword puzzle activities as an enjoyable and engaging method to improve their lexis account and their productive skills.

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APPENDICES

APPENDIX A

Pre-Test Activities

Unit: My environment and I

Date: Student' name:

Score:...../20.

Class:

Activity 1 :(5pts)

Instructions: Match the words in Column A with their correct meanings in Column B

| Columns A | Columns B |
|----------------------|--|
| 1. Pollution | A. To keep someone or something safe |
| 2. Recycle | B. A place where people live |
| 3. Protect | C. Making something new from used materials |
| 4. Habitat | D .To use something carefully to avoid waste |
| 5. Endangered | E .Full of energy and life |
| 6. Litter | F. Unwanted or harmful substances in the air, water, or land. |
| 7. Conserve | G. Related to cities |
| 8. Vibrant | H .At risk of disappearing or dying out |
| 9. Urban | I. Small pieces of trash left on the ground |
| 10. Nurture | K. To care for and encourage growth |

Activity 2 :(5pts)

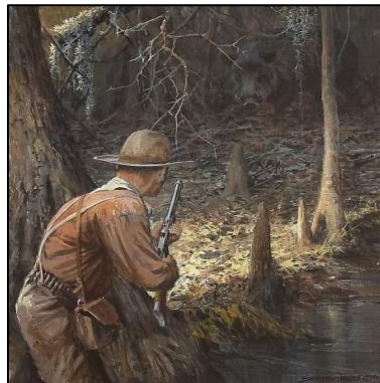
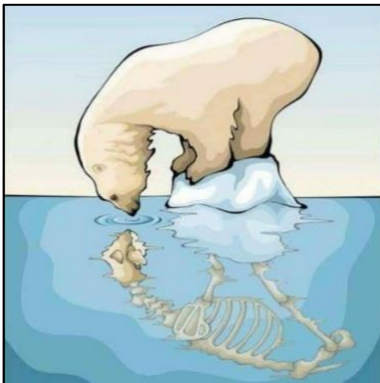
Instructions: Fill in the blanks with the correct word from the box. Use each word only once.

Word Box: recycle – clean – trees – protect – pollution – animals – dirty – plant – throw – environment

1. We must _____ the Earth for future generations.
2. Factories cause a lot of _____.
3. Please do not _____ trash on the ground.
4. I always _____ paper and plastic bottles.
5. My room is very _____; I need to tidy it up.
6. Many _____ live in the forest.
7. Let's _____ a flower in the school garden.
8. The _____ includes air, water, and land.
9. The janitor keeps the classroom _____.
10. We need to plant more _____ in our neighborhood.

Activity 3:(6pts)

Instructions: Put the following words under their appropriate picture: Deforestation - hunting- extinction -nature - Waste -Plants.



.....

Activity04: Write 4 sentences about how we can protect our environment. (4pts).

1-

2-

3-

4-

APPENDIX B

Post Test activities

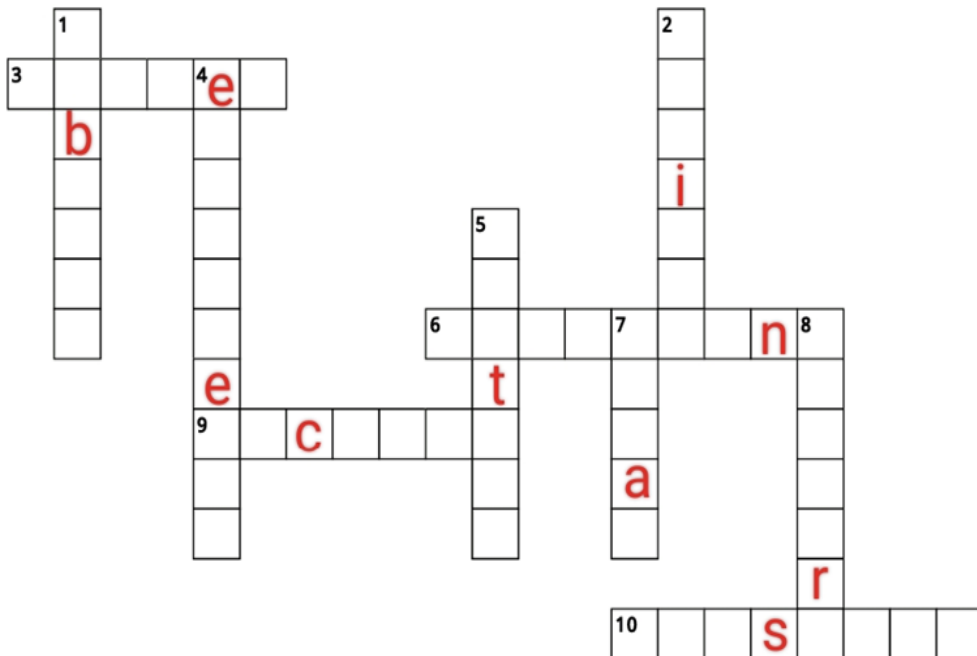
Unit: My environment and I

Date: Students name: Score:...../20.

Class:

Activity 1: Complete the following crossword across and down using the clues below to get the word. (5pts)

My environment and I



Across

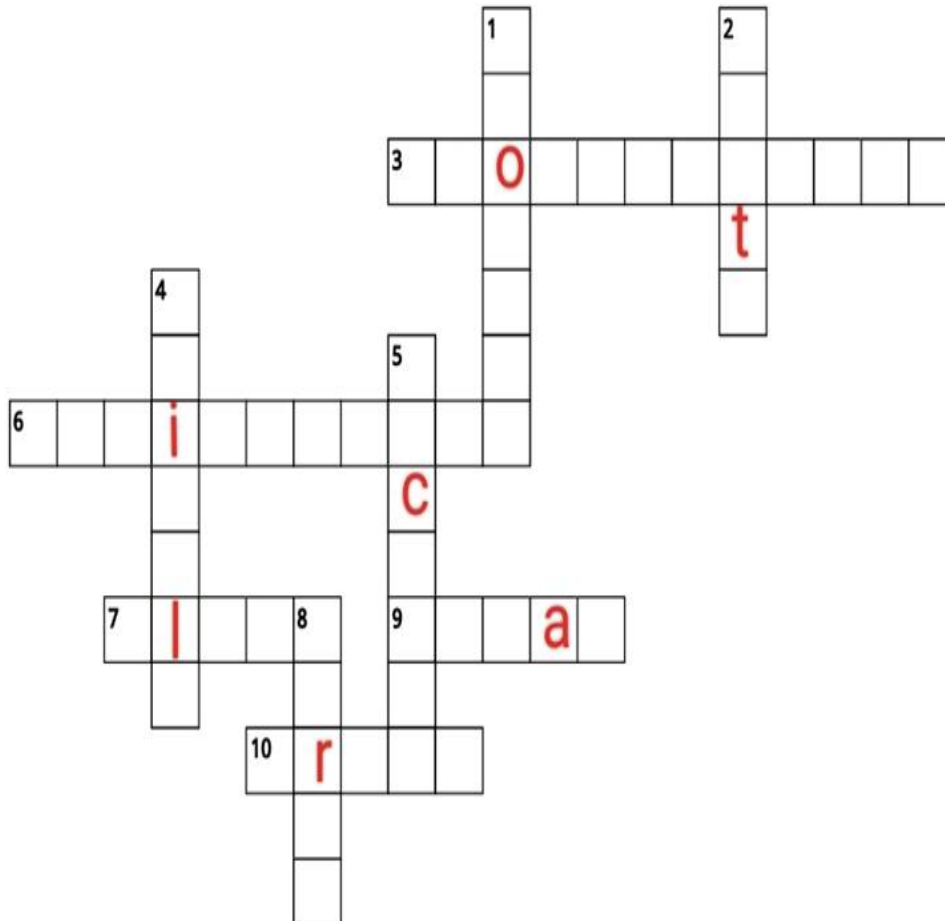
- 3. small pieces or trash left on the ground
- 6. unwanted or harm or harmful substances in the air water or land
- 9. making something new from used materials
- 10. use something carefully to avoid waste

Down

- 1. full of energy and life
- 2. place where people leave
- 4. risk of disappearing or dying out
- 5. keep something or someone safe
- 7. related to cities
- 8. care for it and encourage growth

Activity 2: Complete the following crossword across a down using the clues below to get the word. (5pts)

My environment and I



Across

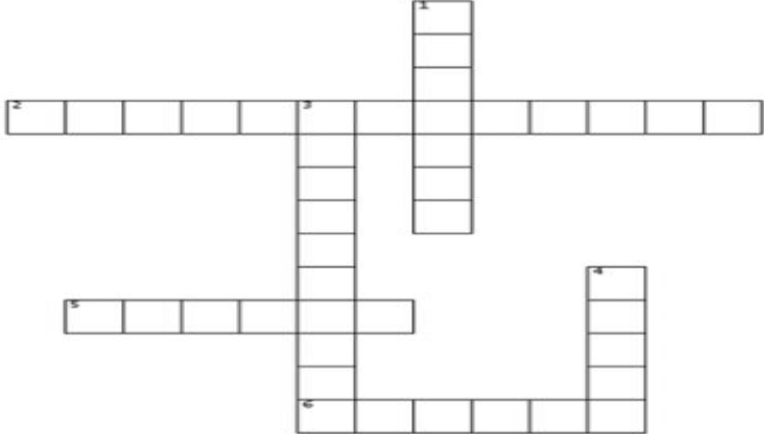
- 3. Variety in plants and animals
- 6. natural world around us
- 7. put seeds or plants in the round
- 9. no dirt or Miss
- 10. plants with leaves and the branches

Down

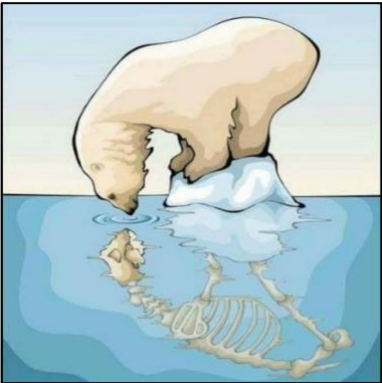
- 1. keep something safe
- 2. opposite of clean
- 4. living Creature like a dog or cat
- 5. process of making All Things New Again
- 8. send waste in the wrong place

Activity 3: Complete the following crossword Across and Down using the pictures above to get the word. (6pts)

Me and my environment



Across



2



6



5



3



4



1

Activity04: Write 4 sentences about how we can make our environment clean using “ must” and “ mustn't”. (4pts).

5-

6-

7-

8-

APPENDIX C

Observation Checklist about the Challenges Faced by Teachers During Crossword Puzzle Activities.

| | |
|--|-------------------------|
| • School Name: Khaitati Brothers Middle School /Bordj-Ghedir/BBA. Algeria. | |
| • School Year: 2024/2025. | |
| • Date: / 04 /2025. | |
| • Period (time start-finish): | |
| • Teacher Mr. /MS: | • Class: |
| • Number of children present: | • Subject Lesson: |
| • Name of observer: | |

- NOTE: This checklist is designed to identify the challenges teachers face when using crossword puzzles to improve English vocabulary among third-year middle school pupils.

| | Yes | No | Notes/comment |
|---|-----|----|---------------|
| Instructional Challenges | | | |
| Do students struggle to understand the crossword puzzle instructions? | | | |
| Do students have difficulty comprehending the vocabulary in the puzzles? | | | |
| Does the teacher need to frequently re-explain the activity? | | | |
| Classroom management challenges | | | |
| Do students become easily distracted during the activity? | | | |
| Is it difficult to keep all students engaged throughout the crossword puzzle? | | | |
| Are there behavioral issues, such as students refusing to participate? | | | |
| Time management challenges | | | |
| Is it difficult to balance time for fast and slow learners? | | | |
| Do students lose interest before completing the activity? | | | |
| Student engagement motivation challenges | | | |
| Do students show a lack of interest in the crossword activity? | | | |
| Are some students hesitant or lack confidence in solving the puzzle? | | | |
| Do students struggle with teamwork when working in pairs or groups? | | | |

| Resources&materials challenges | | | |
|---|--|--|--|
| Are the crossword puzzles appropriate for the students' vocabulary level? | | | |
| Does the teacher have enough resources (printed puzzles dictionaries,digital tools)? | | | |
| Do students need additional support to complete the crossword puzzle? | | | |
| Assessment &Effectiveness Challenges | | | |
| It difficult for the teacher to assess students' vocabulary improvement through the crossword activity? | | | |
| Do students require excessive teacher assistance to complete the crossword puzzle? | | | |
| Are students able to retain and use the vocabulary learned from the activity? | | | |

الملخص:

يهدف هذا البحث إلى دراسة مدى فعالية استخدام لعبة الكلمات المتقاطعة كأداة تعليمية لتحسين مفردات اللغة الإنجليزية لدى تلاميذ السنة الثالثة متوسط. انطلقت الدراسة من اعتبار المفردات عنصراً أساسياً في تعلم اللغة، حيث يعاني معظم المتعلمين من صعوبات في تذكر واستعمال الكلمات الجديدة باستخدام طرق تقليدية. اعتمدت الباحثات على المنهج المختلط، حيث تم إجراء اختبار قبلي وبعدي لمجموعة واحدة لقياس مدى التطور في تعلم المفردات بعد تطبيق نشاط الكلمات المتقاطعة، إضافة إلى استخدام قائمة ملاحظة لجمع بيانات نوعية حول التحديات التي تواجه المعلمين أثناء تنفيذ هذا النشاط داخل الفصل. أظهرت النتائج تحسناً ملحوظاً في رصيد التلاميذ اللغوي، خصوصاً في المفردات ذات التواتر العالي والمنخفض على حد سواء. كما بينت الدراسة أن الكلمات المتقاطعة تساهم في زيادة تفاعل التلاميذ وتحفيزهم، رغم وجود تحديات تتعلق بضيق الوقت، وقلة الموارد، ونقص التكوين لدى المعلمين. بناءً على النتائج، توصي الدراسة بإدماج الكلمات المتقاطعة ضمن الأنشطة الصفية كوسيلة مساندة في تعليم اللغة الإنجليزية، نظراً لقدرتها على تعزيز تعلم المفردات بطريقة ممتعة وفعّالة.







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مكتب التكوين

الرقم: 631 / 2025

مدير التربية

إلى السيد /

مدير متوسطة الأخوة خيتاتي

برج الغدير

الموضوع: ترخيص بإجراء تربص ميداني .

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وعليه المطلوب منكم تقديم لهن لمساعدة الممكنة و اللازمة في حدود أغراض البحث العلمي

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عنوانها: The Effectiveness of Crossword Puzzle as an educational game in
improving English vocabulary among third year At Khanate brothers Middle
School

أصرح بشرفي أنني التزم بمراعاة المعايير العلمية والمنهجية ومعايير الأخلاقيات المهنية والنزاهة الأكاديمية
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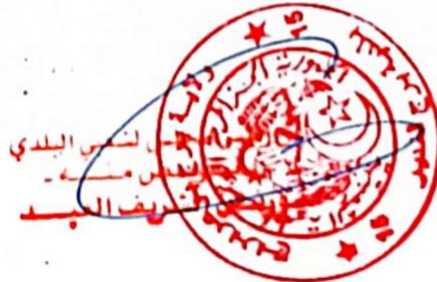
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عنوان: The effectiveness of Crossword puzzle as an educational game in improving English Vocabulary among third year at Khaitati Brothers Middle School.

المطلوبة في إنجاز البحث المذكور أـلاه .

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