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The Contribution of Vocabulary knowledge and Working Memory to the Understanding of Literary Themes in *Things Fall Apart*

Dissertation Submitted in Partial Fulfillment of the Requirements for Master's degree in Literature and Civilization.

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Dedication

"*Success is no accident. It is hard work, perseverance, learning, studying, sacrifice and most of all, love of what you are doing or learning to do*."

Pele, a Brazilian professional football player

We dedicate this work to our beloved parents, regardless of how much we thank them and in spite of what we say to them, we will never be able to repay them for their encouragement and support.

I, Ziad Baizid, want to dedicate this dissertation to my deceased aunt Bouchoul Zohra. May Allah accept her with His Mercy.

I, Samir Abdellahoum, would also like to dedicate this work to my precious mother and father, who are the reason for the man I am today, for all the support that they have provided along the course of my educational career, for all the small details that most of us take for granted.

Finally, we want to dedicate this work to our great friends and colleagues for their kindness, prayers, and encouragement.

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Abstract

It is undeniable that reading in a foreign language is a demanding task for many learners in comparison to reading in one's first language. Despite researchers' and teachers' attempts to develop learners' conception and appreciation of literary texts, several learners fail to construct a complete understanding of the essence of narratives. To date, little empirical evidence exists concerning the factors contributing to these challenges. Assuming that vocabulary knowledge and working memory capacity are two of the most significant components in reading comprehension, the present research investigates the contribution of these two variables to the understanding of literary themes in Chinua Achebe's novel *Things Fall Apart*. The study was conducted among 76 master's one students enrolled in the department of Arts and English Language at Hamma Lakhdar University of El Oued. Four measures were employed in this study, including vocabulary knowledge test, reading comprehension test, thematic study test, and a digit span task. These tests were designed to assess participants' vocabulary knowledge, general reading ability, grasp of literary themes and working memory capacity respectively. The obtained findings revealed a significant positive correlation between participants' vocabulary knowledge and their reading comprehension performance (r = .373, p= .005). However, no statistically significant correlation was found between the other remaining variables. The present research might have important implications for syllabus designers, language educators and learners as it helps them develop more effective courses' outlines through including more aspects of language mastery skills, use efficient teaching strategies that might support learners in their reading comprehension process, and increase their awareness towards their general reading ability respectively.

***Keywords*:** *Thing Fall Apart*, Literary themes, Reading Comprehension, Vocabulary Knowledge, Working memory.

List of Abbreviations and Acronyms

SVR	The Simple View of Reading
LQH	The Lexical Quality Hypothesis
CI model	The Construction-Integration model
RC	Reading Comprehension
VOC	Vocabulary Knowledge
WMC	Working Memory Capacity
THEMES	Literary Themes
EFL	English as a Foreign Language

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General Introduction

Reading comprehension is a complex process that requires the interaction of several skills to be successfully achieved. Recent research indicated that vocabulary knowledge is one of the most important predictors to text processing. It has also been argued that readers' ability to process incoming textual input and integrate it into one's background knowledge (text comprehension model) is prerequisite for the comprehension process to take place. Constructing a consistent text comprehension model during reading requires active working memory skills. Although abundant research has investigated the relationship between these two constructs and reading comprehension, to the best of the researchers' knowledge, no study has discussed their contribution to learners' understanding of literary themes in narratives in the EFL context, particularly the Algerian context. Accordingly, the present research addresses this issue through examining whether graduate students' understanding of the literary themes expressed in Chinua Achebe's *Things Fall Apart* can be explained by their vocabulary knowledge, general reading ability and working memory capacity.

1. Background of the Study

Understanding narratives and their literary themes is a difficult task for many foreign language learners who tend to encounter several challenges during the process of reading (Block, 1992; Grabe, 2009). For illustration, decoding word meanings (Fender, 2003), searching for details in the text, identifying the gist of the text, making assumptions and inferences (Abbott, 2006), and identifying citations are demanding tasks for many learners while reading in a foreign language. These difficulties can be caused by a number of factors, such as limited or poor vocabulary and content knowledge, and failure to recall previously learned items. The latter is dependent on the strength of learners' working memory capacity (Yuvirawan et al., 2021) as it might moderate the contribution of word-and discourse-level knowledge to reading

comprehension.

2. Statement of the Problem

Many EFL learners seem to struggle in reading and understanding novels written in the target language. This is mainly due to their poor vocabulary knowledge which might be influenced by their reading practice. In addition, the strength of learners' working memory capacity represents another factor that might affect their comprehension of literary themes when reading narratives. Particularly, keeping relevant information active in one's mind and suppressing less plausible text's interpretations during reading is a demanding task for foreign language learners. This source of difficulty might not be easily detected by language teachers and students alike. Consequently, limited amount of research was conducted within this respect. The present study focuses on determining the contribution of learners' general reading ability, vocabulary knowledge and working memory capacity (WMC) to their understanding of literary themes.

3. Research Questions

The present research attempts to answer three major questions. Each research question is followed by a null hypothesis (H0) and an alternative one (H1). For this latter, the researchers opted for directional research hypotheses in which they postulate the direction of the relationship between the variables under discussion, whether positive (direct) or negative (indirect). This decision was driven by the empirical evidence provided by previous research on the nature of the association between the variables discussed in this research.

RQ1: What is the relationship between learners' vocabulary knowledge and their general reading ability? Particularly, how much variance in learners' reading comprehension performance could be explained by their vocabulary knowledge?

H0: There is no statistically significant correlation between learners' vocabulary knowledge and

their reading comprehension level.

H1: There is a statistically significant positive correlation between learners' vocabulary knowledge and their reading comprehension level.

RQ2: What is the relationship between learners' vocabulary knowledge and their ability to understand literary themes in narratives?

H0: There is no statistically significant correlation between learners' vocabulary knowledge and their understanding of literary themes.

H1: There is a statistically significant positive correlation between learners' vocabulary knowledge and their understanding of literary themes.

RQ3: What is the relationship between learners' working memory capacity and their ability to understand literary themes in narratives?

H0: There is no statistically significant correlation between learners' working memory capacity and their understanding of literary themes.

H1: There is a statistically significant positive correlation between learners' working memory capacity and their understanding of literary themes.

4. Literature Review

An extensive body of research literature supports the idea that successful discourse comprehension cannot be achieved without basic word-level knowledge. Grabe (2009), for instance, found a strong positive correlation between reading in the first language context and learners' vocabulary knowledge. Likewise, Stanovich (1986, 2000) argued that there is a reciprocal causal relationship between vocabulary and reading understanding. Similarly, in his lexical quality hypothesis, Perfetti (2007) maintained that deficiencies in word representation quality tend to influence individuals' general reading comprehension ability. Both skilled and less-skilled learners seem to form poor quality representations for low-frequency words, be it a general or a specialized vocabulary Accordingly, Perfetti and Hart (2002) argued that for

communicating fundamental notions, authors should use high-frequency words or terms that both proficient and less-proficient readers are familiar to.

According to the simple view of reading, Gough and Tunmer (1986) indicated that reading comprehension can only be achieved through the interaction between word decoding and language comprehension skills; particularly, inadequacy in one component or both of them during reading may result in a reading disability which can be manifested in various forms, including *dyslexia*, *hyperlexia*, or a *variety garden reading disability*.

Not only does vocabulary knowledge influence learners' general reading ability, but working memory also seems to play a role in the comprehension process. Baddeley (2003) defined working memory as a cognitive system that supports the active processing and manipulation of information, and it is crucial for understanding literary themes, characters, and plot events. Daneman and Carpenter (1980) suggested that traditional measures of short-term memory, such as the ability to remember a sequence of digits or a list of words, are not strongly correlated with reading ability. This may be because these measures do not adequately capture the complex cognitive processes involved in reading comprehension, which rely on more than just the ability to maintain information for a short period of time.

Research has shown that reading comprehension is related to working memory capacity, and that training interventions aimed at enhancing working memory can also improve reading comprehension skills (Daneman & Merikle, 1996). According to Cain and Oakhill (2006), working memory is a limited-capacity system that is responsible for temporarily holding and manipulating information during complex tasks. As far as understanding narratives is concerned, working memory is important for maintaining and manipulating the various themes, characters, plot, and events encountered in a text, as well as integrating this information into one's prior knowledge to form a coherent understanding of the text.

5. Aims of the Study

This study aims to investigate the relationship between learners' vocabulary knowledge, general reading ability, working memory capacity and their ability to understand literary themes in novels, taking *Things Fall Apart* by Chinua Achebe as a sample text. Specifically, it examines how much variance in learners' scores on literary themes test could be explained by variance in students' performance on other tests, including reading comprehension, vocabulary, and a working memory span task.

6. The Significance of the Study

This dissertation attempts to fill a gap in literature on how vocabulary and working memory relate to the comprehension of literary concepts among EFL learners in the Algerian context. It empirically demonstrates how these cognitive processes influence literary texts' interpretation and comprehension. The findings of this study tend to help language teachers in the present context understand the source of difficulties faced by learners in reading and understanding literary works, and, accordingly, suggest potential solutions to assist them in this respect. This research is also important for curriculum designers from the perspective that more focus should be given to language mastery courses to increase learners' vocabulary knowledge that is necessary to understand basic literary texts, and consequently increase their confidence in their ability to be efficient language learners. Students might also find this research interesting as it helps them understand what contributes to their comprehension of texts written in a foreign language**.**

7. Research Methodology

The present research is a correlational study which investigates the relationship between vocabulary knowledge, reading comprehension, working memory capacity and learners' ability to understand literary themes. The study involved 76 Master one students enrolled in the

Department of Arts and English Language at Hamma Lakhdar University of El-Oued. A variety of data collection methods was used to measure students' performance on the aforementioned constructs, including vocabulary test, reading comprehension test, digit span task and a thematic analysis of the novel *Things Fall Apart* task respectively. After collecting data, participants' responses to the tests were scored and analysed using the Statistical Package for Social Sciences (SPSS) software. A Pearson Correlation Coefficient test was conducted to estimate the association between the research variables (a detailed description of the research methodology can be found in Chapter 2, pp. 25).

Ethical Considerations

The aim of this research is purely educational and presents no risk to the subjects involved in it. After a thorough description of the study aims and procedures and that participation is entirely voluntary and would not affect the way students are assessed in their studies, students provided oral consent that they want to take part in the study.

8. Structure of the Study

The present dissertation contains two main chapters. The first chapter provides a detailed theoretical explanation of the research variables, and it is divided into four subsections. Its first part describes the nature of narratives and the skills required for understanding them. A summary of the plot of the novel *Things Fall Apart* is also provided within this subsection as a sample text. The three remaining subsections of the chapter offer a comprehensive description of the constructs: reading comprehension, vocabulary knowledge and working memory capacity respectively.

The second chapter of this dissertation is empirical. It provides a detailed account of the research methodology used in the present research. A complete presentation of the research findings and their interpretations based on relevant literature is the core of this chapter.

Also, the research hypotheses are statistically tested, and the research questions are empirically answered within this chapter.

CHAPTER ONE

Understanding Narratives and its Correlates

Chapter One: Understanding Narratives and its Correlates.

Introduction

Chapter One aims to explore the nature of narratives and define some of their relevant correlates. This chapter involves four sections. The first section analyses the structure, types, and goals of narratives, and identifies the necessary reading skills involved in understanding narratives. This section concludes with a brief summary of the novel *Things Fall Apart*. The second section provides a thorough overview of three of the most fundamental models of reading comprehension, including the simple view of reading, the construction integration model, and the cognitive processing approach, and presents the difference between literal and inferential understanding. Vocabulary Knowledge and Working Memory capacity and their contribution to successful reading comprehension are discussed in sections three and four respectively.

1.1 Understanding of Narratives

1.1.1 The Nature of Narratives

Narratives can be defined as a sequence of events that portray a particular topic in different ways (Nordquist, 2019). Narratives can be told through jokes, anecdotes, or conversations. According to Velleman (2003), the way how instances are cohesively organized into a unified whole is a distinctive feature of stories. Narratives are central to literature as they are used to express complicated concepts and emotions via the art of storytelling.

Understanding literary tales requires a thorough understanding of several factors that contribute to the construction of a captivating story. These factors include the plot, character development, setting, topic, and author's tone. A good story needs a careful balance of these factors, as well as a professional author who can merge them together in a manner that engages and thrills the reader (Press, *Literary elements of a story: The Complete Guide*2022). The process of studying the multiple aspects of a given story and recognizing their value in the overall

narrative is known as literary analysis. This latter involves examining the author's literary techniques, styles, and language choices, as well as identifying the cultural and the historical settings in which they have been developed. Literary analysis is crucial for an adequate understanding of literary works.

Narratives may give insights into the social, political, and cultural challenges of a certain era; meanwhile, they may also examine universal themes and topics that are applicable beyond time and space. To properly appreciate tales, it is vital to analyze the multiple elements that constitute a compelling tale, understand their significance, and be aware of the cultural and historical contexts in which they have been created. Understanding narratives also involves recognizing their different forms, including epistolary tales, multiple-person narratives, first- and third-person narratives. Each form of storytelling has some assets and identifying them might help readers enjoy the tale being told more fully (Rosbottom, 1977).

1.1.2 The Structure and Types of Narratives

Narratives are an essential component of literature. This literary genre often follows a pattern of five parts, starting with exposition, rising action, climax, falling action and ending with a resolution. *The exposition part* generally constitutes the introduction of the story. It establishes the scenario and introduces the characters, as well as the context of the coming prose. *The rising action* is a collection of events that prepares the reader for the climax or the turning point of the story where the main characters must overcome dilemmas and obstacles they are facing. It involves dealing with tension, suspense and conflict that escalate to the climax (Rosbottom, 1977).

The climax is the story's decisive moment, and it often represents a substantial change in the protagonist's situation. It is the section where the tension is at its peak, and the conflict is finally displayed. *Falling Action* is the end of the dispute. It is basically what happens as a result of the climax or the protagonist's decision during which the effects of the events are

discussed, and the narrative starts to faint. *The resolution* is the closure of the story. It ties up any loose ends and provides finishing touches about all characters and events.

Throughout history, many scholars and researchers discussed the nature of different types of narratives and specified their significance to literature. However, in the present research, the two texts used for collecting data concerning the reading comprehension measure were under the umbrella of a prose narrative; one was informative persuasive (bullying), while the other was informative descriptive (literate women). A prose narrative is basically any novel, short story, biography or memoir ever written; the first text includes a story that has both persuasive and informational aspects. In fact, many tales use these features to captivate readers and express their themes. The informative part aims to provide readers with information and knowledge, whereas the persuasive part strives to convince the readers and divert their viewpoint to adopt a certain path. The second text is an informative report about a study that investigated the impact of poorly educated mothers on their children's survival and health. It demonstrates the findings of this study and highlights the importance of female education to ensure child safety. However, it does not include any attempts to convince the reader to act in a certain way (Rosbottom, 1977).

1.1.3 Goals of Narratives/ Literary Themes

Narratives in literature serve many aims, such as amusing, informing, convincing, or inspiring readers. However, the basic purpose of a narrative is to communicate a story that stimulates the reader emotionally, intellectually, and imaginatively. To achieve this, writers use literary themes to provide a framework for exploring complicated concepts and messages in an engaging manner. According to Yadav (2017), Chinua Achebe assumes that writers have a duty to use their craft as a tool for improving humanity. He also believes that through their writing, writers should defy any type of oppression and marginalization that might exist in society and focus on raising people's awareness of these issues. Achebe also encourages African writers to

celebrate the values, cultures, and histories inherent within Africa by exploring them in detail. Ultimately, he views literature as an opportunity for authors not only to entertain readers but also to educate them on various topics using new perspectives that associate with readers' reality.

1.1.4 Skills Required for Understanding Narratives

One of the most fundamental skills required for understanding narratives is reading comprehension. It involves the ability to construct meaning from written materials, assimilate knowledge offered and draw conclusions based on that knowledge. Skillful readers can interact with the text and grasp the author's intended message which is particularly crucial when reading tales with complex storylines, themes, and characters. It seems impossible for an individual to completely comprehend and appreciate the intricacies of a story without developing effective reading comprehension abilities.

Another important variable for successful comprehension of narratives is a good vocabulary command. It allows readers to interpret the meaning of words, sentences, and paragraphs in a text. Learning new words helps students understand the intricacies of language (tone, mood, voice), which may provide them with additional context about the story being told. Understanding the meaning of individual words is necessary as it, eventually, allows readers to comprehend the overall structure and message of narratives.

Readers' ability to retain relevant information during processing incoming text is also vital for understanding narratives. Readers with a strong working memory capacity can remember crucial elements in the story, including characters, events and locations and establish a coherent link among them to construct a thorough comprehension of the novel. Following complicated storylines with several plotlines or characters might be difficult without efficient working memory capacity.

Genre knowledge is another skill that is essential for understanding narratives as they can take many different forms and are often categorized under specific genres. The rules, expectations, and storytelling methods specific to each genre influence how tales are created and understood. For example, one would predict a detective book to discuss a crime that needs to be solved, along with clues to guide the protagonist to complete his mission of solving the case.

1.1.5 Brief Summary of Chinua Achebe's *Things Fall Apart*

Chinua Achebe's astonishing novel *Things Fall Apart* is the highlight of his literary career as it clinched him several awards including Nigeria's highest literary honour- the Nigerian National Merit Award, in 1979. This novel stunned the colonial literary world as it portrayed one of its key themes which is the clash of cultures, specifically the conflict between the traditional African community and the European colonial power.

Achebe (1958) presented the story of a powerful Nigerian tribe Umuofia and its leader Okonkwo. In the first part of the novel, Okonkwo, a man who achieved success through persistence and hard work, is introduced. He is later banished from the village due to the unintentional murder of Ezeudu's sixteen-year-old son during Ezeudu's funeral. The second part of the novel explores the impact of European colonialism on Nigerian tribes and their inhabitants.

The exiled leader returns after seven years and is shocked by the huge change in the village. The British colonial powers establish a government system (a school, court, and church) that disrupts the traditional way of life in Umuofia. Okonkwo becomes more violent and decides to fight back along with those sharing the same beliefs with him. This leads to his downfall. As the Igbo people are forced to confront the brutal realities of colonialism and its influence on their society, the novel concludes with a sense of doubt about their future and way of living.

The novel *Things Fall Apart* is a dramatic and thought-provoking literary piece that tackles

topics of identity, tradition, and cultural clashes. *Things Fall Apart* also highlights the reality of colonialism and how it sought to destroy the authenticity of the African community and traditions and exploit its natural resources.

1.2 Reading Comprehension

1.2.1 The Simple View of Reading

The Simple View of Reading (SVR) is an abstract model that illustrates how word recognition (decoding) and spoken language comprehension are crucial factors in reading comprehension. Word decoding involves accurate and automatic recognition of words, whereas language comprehension refers to individuals' ability to understand the meaning of words, sentences, and extended parts of a text (Tunmer & Chapman 2012). Gough and Tunmer (1986) maintained that word decoding is not enough for efficient reading comprehension to occur, but rather an essential skill for it. For effective reading comprehension, one must learn how to decode words as well as interpret spoken language (Tunmer & Chapman 2012). According to the SVR, perfect decoding skill does not necessarily guarantee successful reading comprehension. More specifically, understanding spoken language is as crucial as recognizing words in terms of reading comprehension.

In the same line, Hoover and Gough (1990) indicated that reading comprehension consists of two essential skills: decoding and spoken language comprehension. The researchers intended to confirm the validity of the SVR. The obtained results confirmed the fact that reading comprehension contained two distinctive and separate components, decoding, and understanding oral language. Hoover and Gough (1990) emphasized that the two dimensions are independent of one another and require separate instructions to be developed. Accordingly, they concluded that reading instructions should target both decoding and comprehension skills to improve the overall reading comprehension level.

1.2.2 The Construction-Integration Model of Text Comprehension

The construction-integration (CI) model of text comprehension was formally proposed by Kintsch and van Dijk in 1978. Kintsch and his colleague highlighted the importance of making inferences and knowledge activation in text comprehension. Two basic components can be identified within this model: construction and integration. Readers construct a mental representation of each part of the text they read and activate relevant background knowledge in their minds. As they proceed to read through the text, readers integrate the newly formed mental representations into the pre-existing ones. Specifically, during the process of reading, readers construct the meaning of each word, sentence, and paragraph they read as a mental image and then integrate these representations together forming what is called a textbase comprehension; this latter is then integrated into readers' background knowledge creating what is called a situation model (Kintsch, 1988, 1998). It is necessary to note that the processes of construction and integration are automatic and subconscious. They become deliberate only when a comprehension breakdown happens at any level of the text.

Kintsch (1988, 1998) distinguished three different levels of text comprehension. The first level is *the surface structure* which involves the semantic understanding of individual words presented in the text. Successful representation of the surface structure of a text requires effective word decoding skills and appropriate syntactic knowledge. Although this level of text comprehension provides a shallow understanding of a text, it is fundamental for the reading process to proceed and for complete comprehension to occur (Kintsch & Rawson, 2007). For illustration, when students read in a foreign language and encounter many difficult words, their reading and comprehension processes will be negatively affected. Students might seize reading because they cannot cope with the level of difficulty of words. Accordingly, forming an appropriate surface understanding of a text is primordial for successful reading comprehension

Kintsch and Rawson (2007) argue that the second level of text comprehension is the textbase level. This level reflects the text's meaning as it is represented in the text. It also encompasses both the text's surface structure, such as grammar and syntax, and the underlying meaning expressed by the words and phrases. However, comprehension at this level may be superficial and does not lead to more profound knowledge.

The third and most complete level of text comprehension is called *the situation model*. Readers integrate the text base representation that they have formed during reading the text into their background knowledge. The situation model constantly changes and develops, during the process of reading, reflecting readers' ongoing understanding of the text. The situation model is constructed through the process of inference-making where readers incorporate their background knowledge and initial goals of reading a text to build a coherent mental representation of the situation being described in the text (Kintsch & Rawson, 2007).

1.2.3 The Cognitive Processing Approach

The cognitive processing approach, as proposed by Weir and Khalifa (2008), is an abstract approach that deals with the way individuals comprehend, view, and analyze texts whilst reading. The aim of the approach is to have a comprehensive understanding of how readers process texts, as well as to gain practical implications to evaluate learning practices in the future.

The cognitive processing approach provides insights into how readers use mental processes to engage in various types of texts' comprehension. Many researchers, such as Perfetti (1999) and Kintsch and Van Dijk (1978), have managed to set the components of this approach. They have concluded that the cognitive processing approach is a combination of visual information with world knowledge. Visual information, also known as bottom-up processing, deals with the mental processes involved in understanding the text itself. It considers smaller

units, i.e., words, as the base of comprehension. Top-down processing, however, revolves around using individuals' background knowledge to understand the text.

The bottom-up, top-down, and interactive processing are the three key components of the reading paradigm shown in *Figure 1.1* below. The model revolutionized the conventional definitions of reading comprehension, such as the ones provided by the factorial method and the subskills approach. These methods failed to accurately explain the complex cognitive processes required for reading comprehension. Investigations on eye movements and brain imaging during reading provide empirical support to the cognitive processing approach which is often taken as a theoretical foundation for determining the cognitive validity of reading tests.

Figure 1.1 below demonstrates different kinds of reading in which learners can engage to understand written texts. Careful reading is a type of reading that involves a slow, careful, and linear reading style. The goal of careful reading is to extract complete meaning from the presented material. Search reading is a method of reading that includes taking pieces of literature and extracting information about a certain subject. The reader's search for information on pre-specified macro-propositions may be supported by a formal understanding of text structure. Another type of reading is expeditious reading, which stresses the efficiency and speed of the reading process. It entails using techniques like scanning and skimming to rapidly find certain information in a given text.

Figure 1.1

The Cognitive Processing Approach

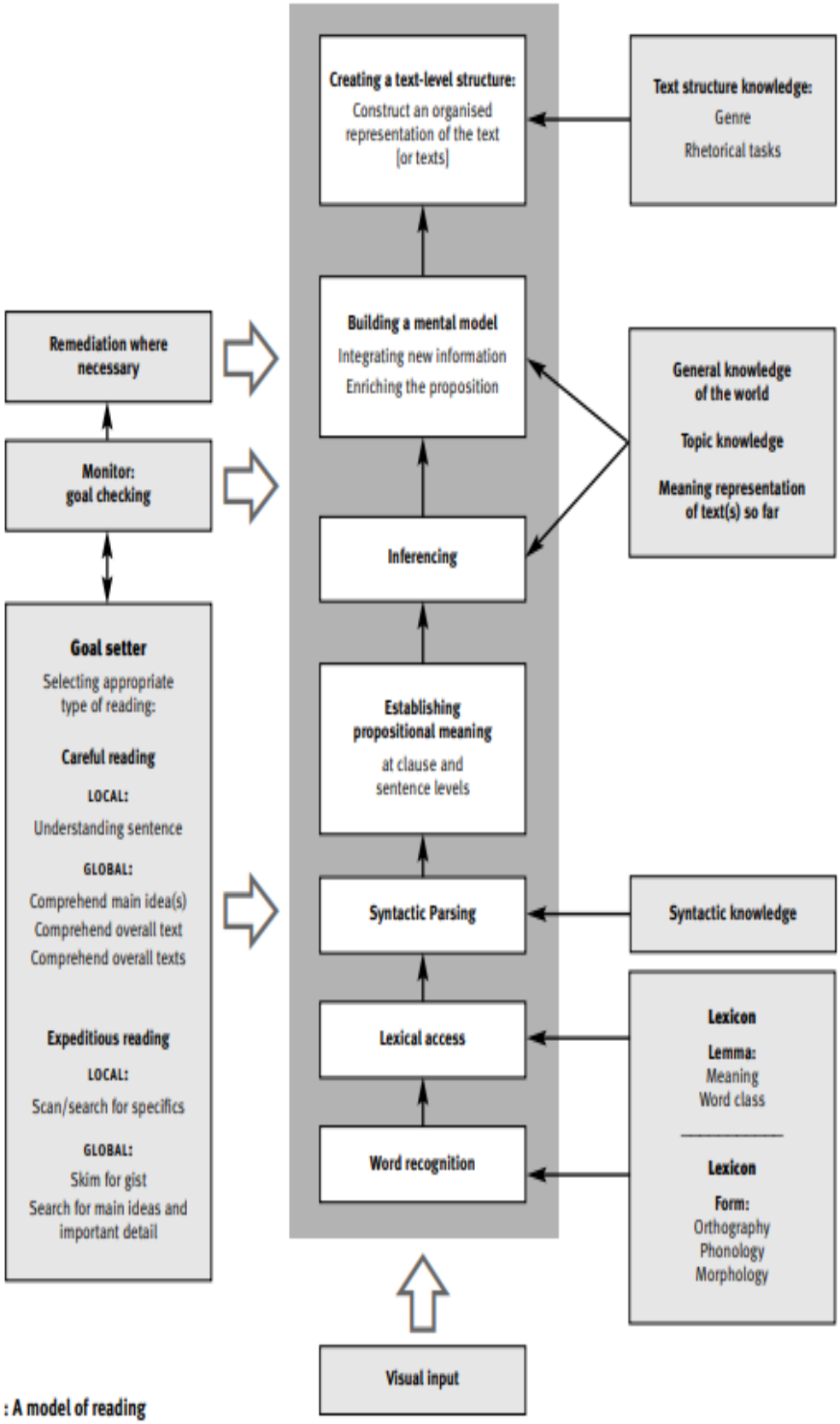


Figure 1 : A model of reading

(Weir & Khalifa 2008, p.4).

1.2.4 Literal vs. Inferential Understanding

Literal and inferential comprehensions are both necessary to comprehend texts thoroughly. Literal comprehension is the basic understanding of a text, including facts and information that are explicitly stated. Inferential comprehension, on the other hand, involves making inferences based on those pieces of information using one's prior knowledge (Burke, 2021). Specifically, inferential understanding deals with what should be inferred beyond the verbal explicit representation of the text, whereas literal comprehension focuses on the semantic meaning of words, sentences, and paragraphs.

To understand the literary themes expressed in narratives, both types of comprehension are crucial. It is quite challenging to engage in an inferential understanding of a text without accurate comprehension of its literal meaning. Understanding the story, location and characters of a novel is an example of literal comprehension while distinguishing its keywords, ideas, context, and relevant clues in the text is an example of inferential understanding.

One should also note that the two forms of comprehension, literal and inferential, are complementary and necessary for learning from texts. For example, if readers understand the text literally but fail to construct its inferential understanding, they are less likely to understand the underlying meaning of the text and grasp the intentions of the author. Another example is when readers fail to understand the text literally despite having acceptable inferencing skills. Comprehension, in this case, would not be accurate as literal understanding, which is the basic level of text comprehension, did not occur (Cain & Oakhill, 2014).

Previous studies have discussed the strategies involved in literal and inferential comprehension of texts. Careful reading, reviewing, and detecting important aspects in the text are all methods for improving literal comprehension, whereas making inferences, drawing conclusions and monitoring coherence between the textual information and one's background

knowledge are thought to contribute to readers' inferential understanding of texts (Hall et al., 2019).

Comprehending the script of a novel is necessary to understand its literary themes. Readers can understand essential story details, including characters, setting and plot if they have a robust linguistic knowledge. Without accurate perception of these literary elements, understanding the subtle meaning and significance of narratives might be inaccessible. Readers may make incorrect inferences or generate early conclusions about the story resulting in a superficial or cursory understanding of the novel.

In *Things Fall Apart,* for instance, it may be difficult to fully comprehend the tragedy of Ikemefuna's fate, a young child who was held captive by Okonkwo's village, and the themes of the novel without careful understanding of the events surrounding his capture which were explicitly stated in the story. Simultaneously, inferring the conflict between traditions, change, the power of fear, and the human cost of imperialism is fundamental for complete comprehension and ultimate appreciation of the novel. Readers need inferential understanding to grasp the literary themes and the deeper messages conveyed in a story. The inferential understanding allows one to understand themes and abstract elements, while the literal deals with the comprehension of plot, setting and characters. Accordingly, it can be concluded that both types of understanding are essential in comprehending the deeper implications and messages embedded in the text.

1.3 Vocabulary Knowledge

1.3.1 The Lexical Quality Hypothesis

The lexical quality hypothesis is a theory proposed by Perfetti and Hart in 2002. This hypothesis entails that skilled reading is based on the quality of a reader's lexical representations which are compiled through experience with language and reading. These

representations are categorized based on their orthographic, phonological, and semantic nature in readers' minds. The hypothesis emphasizes the importance of these components in understanding written input.

The lexical quality hypothesis suggests that high-quality word representations are essential for effective reading comprehension (Perfetti & Hart, 2002). Lexical data are presented in three different forms in readers' minds, mainly orthographic, phonological, and semantic representations. Orthographic representation refers to the visual form of a word, including its spelling and letter patterns. Skilled readers have well-detailed orthographic representations that allow them to recognize words fluently and accurately.

Phonological representation is the mental representation of separate (phonemes) and connected sound units (syllables) of a particular word. Skilled readers can accurately and quickly decode words as they have clear phonological representations.; a proficient reader, for instance, may automatically recognize the word "cat" based on its phonological structure (pronunciation) without exposure to its orthographic shape. Words' semantic representations in readers' minds involve their meanings as well as the semantic relationships they have with other terms and concepts. Skilled readers possess well-defined semantic mental models that help them comprehend words in different linguistic contexts and connect various pieces of information during reading (Perfetti & Hart, 2002).

Understanding the lexical quality hypothesis is fundamental for identifying the role of vocabulary knowledge in reading comprehension. This is mainly because it suggests that skilled reading depends on high-quality word representations that include specific information about the spelling, sound, and meaning of words. According to this hypothesis, readers with huge vocabulary knowledge and effective word recognition skills are more likely to be proficient readers. Meanwhile, readers with low-quality word representations may encounter many difficulties in comprehending written texts. Therefore, by emphasizing the significance of high-

quality word representations in skilled reading, the LQH provides a framework for understanding how vocabulary knowledge contributes to successful reading comprehension (Perfetti & Hart, 2002).

1.3.2 Empirical Evidence on the Contribution of Vocabulary Knowledge to Reading Comprehension

The LQH discusses multiple findings about the contribution of vocabulary knowledge to reading comprehension. These findings validate the importance of this theory in reading research. The pioneers of the LQH proposed an empirical study on whether vocabulary knowledge improves individuals' ability to comprehend texts. Perfetti and Hart (2002) compared the vocabulary of skilled and less skilled adult readers. The findings revealed that more proficient readers had larger vocabulary account than less proficient ones. The difference was more significant when readers were asked to recognize unfamiliar words. The researchers argued that these findings support the idea that proficient readers have high-quality word representations that include detailed information about the spelling, sound and meaning of words.

Qian (2002) examined the relationship between reading skills and vocabulary knowledge, with an emphasis on the breadth and depth of vocabulary knowledge and their independent contributions to reading comprehension. The researcher used four measuring tools: vocabulary size test, vocabulary depth test, TOEFL and a reading comprehension test. The obtained findings revealed that vocabulary depth is as important as vocabulary size in predicting performance on professional reading. Furthermore, the scores of the three vocabulary measures tested; synonymy, polysemy, and collocation supported the process of predicting the performance on the reading comprehension measure. The study was conducted in the context of an English as a Foreign Language test.

1.4 Working Memory

1.4.1 Definition of Working Memory

The term 'working memory' was first proposed by Baddeley and Hitch (1974) in their model that describes working memory as a limited capacity which stores and manipulates data. Baddeley viewed working memory as a cognitive system responsible for the temporary storage of knowledge. This system is important for executing complicated cognitive processes including learning and understanding. According to their working memory model, this system comprises three elements: a phonological loop, a visuospatial sketchpad, and a central executive. The phonological loop oversees repeating and preserving mentioned verbal information. The visuospatial sketchpad also repeats and preserves visual and spatial data. The central executive serves as the control centre of working memory as it directs individual's attention towards specific tasks and coordinates the activities of the other two components. (Baddeley & Hitch, 1974).

1.4.2 Assessing Working Memory Capacity

The simple and complex span tasks were created by cognitive psychologists to assess working memory capacity and cognitive processing. The capacity of an individual's working memory has limits, and it varies from one person to another.

A complex span task is a cognitive activity used to measure individuals' working memory capacity. This task deals with the processing and storage of information. In the complex span task, participants are presented with a series of words, letters, or numbers in a computer screen. These are called the to-be-remembered items which constitute the storage component. Between every two items, participants are required to perform a cognitive task, whether reading (reading span), counting (counting span) or calculating arithmetic equations (operation span) (Case et al., 1982; Daneman & Carpenter, 1980; Turner & Engle, 1989). This stage is referred to

as the processing component. In the end, participants must write down the to-be-remembered items in the specified order, either forward or backwards.

Complex span tasks are quite popular and widely used among second language acquisition and cognitive psychology researchers. However, performing such tasks might add more cognitive load to participants. For example, the operation span task has been found to be highly correlated with the reading span task, counting span task and other WMC measures. This suggests that complex span tasks are reliable measures of WMC and can be used interchangeably with other WM measures (Conway et al., 2005).

Working memory capacity can also be assessed using another type of cognitive test called the simple span task. The task involves showing participants a set of numbers (digit span) or letters (letter span), and they are required to recall them in the specified order. The theory underpinning this type of tasks states that working memory capacity is only responsible for storage functions. Simple span tasks are useful as they can offer quick evaluation of working memory capacity (Conway et al., 2005).

The digit span task is a commonly used cognitive task among reading researchers to measure working memory capacity. This task is easy to administer and score which make it a useful tool for assessing this cognitive ability. The digit span task has been used in a wide range of research contexts. Accordingly, it is considered as a practical device for assessing working memory capacity and can offer valuable information regarding individuals' cognitive abilities (Conway et al., 2005).

1.4.3 Empirical Evidence on the Contribution of Working Memory Capacity to Reading Comprehension

Daneman and Carpenter's (1980) study sought to explore the connection that relates working memory capacity with reading comprehension. The researchers created a theory

stating that differences in individuals' reading comprehension levels might be explained by differences in working memory capacity. To examine this hypothesis, the researchers conducted a test with a large number of processing and storage items in order to assess the connection between working memory capacity, processing and storing functions and general reading ability. Twenty college students were required to read a number of sentences loudly and then retain the final word of each sentence. The number of the last words that were successfully remembered by the participants ranged from two to five. The researchers also found a significant correlation between measures of reading comprehension and the scores of the reading span test. Precisely, readers with a longer span outperformed readers with a shorter span in the reading comprehension test.

The findings demonstrated that readers with a longer span were more likely to remember the main ideas of the text than readers with a shorter span in the reading comprehension test. Overall, this study contributes to the understanding of how working memory capacity may affect participants' reading comprehension performance. It indicates that ineffective reading comprehension might restrict the amount of information that should be retained in readers' minds which makes it difficult for readers to understand the material they are reading.

Conclusion

In conclusion, this chapter has highlighted the substantial importance of vocabulary knowledge, working memory capacity, and reading comprehension in the overall process of understanding narratives. The examination of reading comprehension, vocabulary knowledge, and working memory has revealed their critical roles as essential components in the comprehension process. This theoretical part is considered as a solid foundation for the practical part of the research (chapter two).

CHAPTER TWO

Data Analysis and Interpretation

Chapter Two: Data Analysis and Interpretation

Introduction

The present chapter is empirical in nature and is divided into four main sections. The first section provides a thorough description of the research methodology followed in conducting this study. These include the research approach, sample, sampling technique, data collection methods, data collection procedure and data analysis procedure. The second section presents the descriptive statistics of the obtained data, including the Mean, Standard Deviation, Skewness, Kurtosis', and their standard error values. The third section involves conducting inferential statistics to answer the research questions. After examining the normality of the distribution of participants' scores on the different tests used in the present research, a parametric Pearson Correlation Coefficient test was conducted to measure the intersection between the variables. The obtained results were interpreted and compared to the findings of previous similar studies.

2.1 Research Methodology

2.1.1 Research Type

This research is a correlational study which focuses on determining the direction, strength, and the significance of the correlation between four variables, including comprehension of literary themes, vocabulary knowledge, working memory capacity and learners' general reading ability.

2.1.2 Research Sample

This study targets Master one students of the English Language Department at Hamma Lakhdar University of El-Oued. The mean age of the sample is 24.5 years old, and it ranges from 20 to 54. Based on their responses to the background questionnaire, 53% of the participants speak two languages, while 40% of them speak three languages, and most of them have been learning English for more than ten years, starting from the age of 12. The level of the

participants is upper-intermediate according to the estimation of their language teachers. There are two reasons for approaching this sample. First, Master one students have dealt with the novel *Things Fall Apart* multiple times as part of the scheduled modules in third year and master one levels. The researchers did not want to add more cognitive loads to the participants. Accordingly, they have selected a sample that, presumably, has already read this novel. Second, as the study contains a range of tests, the researchers selected a sample that can respond to these tests to ensure the completion of this study.

2.1.3 Sampling Technique

Convenience sampling was employed in this research. Intact groups in the department were contacted and invited to participate in the study. The tests were administered within the timeframe of the programmed sessions. Random sampling was not possible in this research as it requires more commitment on behalf of the participants, and this might be difficult regarding their restricted timetable.

2.1.4 Data Collection Methods

This study is based on direct testing. Four tests were designed and administered, including reading comprehension test, vocabulary test, digit span task and literary themes comprehension test.

2.1.4.1 Background Questionnaire

Participants were required to complete a questionnaire which contained four questions related to their age, gender, linguistics background and their experience learning English. The background questionnaire was necessary to accurately describe the sample of the study (See Appendix A).

2.1.4.2 Reading Comprehension Test

A reading comprehension test from Cambridge IELTS 6 Academic was used to measure participants' general reading ability. A typical IELTS reading test contains three texts followed by 40 corresponding questions which need to be completed in sixty minutes. However, because completing such tests requires developing a number of strategies, such as speed reading, and usually candidates take enough time preparing for this test, in the present research participants were given only two texts with 23 related questions to be answered in sixty minutes. Participants gained one score for each correct answer. The rationale for using this test is that it has been tested for validity and reliability by Cambridge University. In addition, the test covers a variety of tasks, such as multiple-choice items, fill in the gaps, short answer questions and matching items that are deemed to be necessary to tap into readers' inferential and literal understanding of texts (See Appendix B).

2.1.4.3 Vocabulary Knowledge Test

The vocabulary test was taken from English Current, a website for English as second language learners and teachers. Intermediate (B1) and upper-intermediate (B2) test items were adopted by the researchers to measure participants' vocabulary knowledge. The test contained 30 sentences with missing words. Each sentence was followed by four potential answers, and the participants were required to select the most appropriate word option to fill in the sentence gap. Participants had twenty minutes to complete the vocabulary test. Each correct answer was assigned a score of one (See Appendix C).

2.1.4.4 Working Memory Test.

A simple span task, namely the digit span, was used to measure participants' working memory capacity. Participants were required to recall a series of numbers that are presented in front of them in PowerPoint slides in a forward order. The test consisted of 16 trials; the first two trials contained two items each. The number of the to-be-remembered items

increases as the test proceeds, and hence its difficulty increases, reaching nine items in the last two trials. For example, in the first trial, participants were presented with two digits 4 and 3 sequentially on a screen. Afterward, they have been asked to write down the numbers they have seen in a forward order. In the last trial, participants were successively exposed to nine digits 3, 7, 1, 6, 2, 5, 9, 4 and 8. Thereafter, they have been required to recall the items they have been presented to in the same order in which they have appeared.

A score of one was assigned to each successful trial; failure to recall only one digit in a trial resulted in losing the assigned score for that trial. The highest score that participants could obtain in this test is 16, corresponding to the number of trials. Due to some technical issues and time limits, the digit span task was group administered. Specifically, all participants of the same group were simultaneously presented with the trials, instead of inviting each participant to perform the test individually using a computer screen (See Appendix D).

2.1.4.5 Literary Themes Test

The literary theme's comprehension test was designed by Dr. Mehellou, the teacher of the English-Speaking World Literature module (E.S.W.L.). The test consists of three questions; each question discussed a specific theme in Chinua Achebe's *Things Fall Apart*. Participants were required to identify those themes and explain them in a form of a paragraph separately. Approximately, thirty minutes were assigned to the students to finish the test. The importance of this test is to enlarge one's comprehension of literary themes, and simultaneously measure their performance on related questions. Understanding literary themes helps learners comprehend novels as well as authors' intentions for composing a particular piece of writing (See Appendix E).

2.1.5 Data Collection Procedure

After designing the different data collection tools and seeking permission from

the teachers who agreed to allocate some time from their programmed sessions to participants to complete the tasks of this research, the researchers approached the target sample and thoroughly explained to them the nature, objectives, and the procedures of the study. They have been also informed that their contribution to this research is completely voluntary. The participants were allowed to ask clarification questions if necessary. The time of the testing took only three sessions for each group. Instructions on how to complete each test were given by one of the researchers conducting this study.

2.1.6 Data Analysis

The Statistical Package for the Social Sciences (SPSS) software was used for analysing the collected data. Pearson Correlation Coefficient (*r*) is calculated to determine whether there is a connection between the variables, i.e., vocabulary knowledge, working memory, general reading ability and understanding literary themes. This statistical test can help identify the strength, direction, and significance of any observed relationship between the measures. This software eases the process of analysing and interpreting quantitative data as it provides a variety of tools and features for data organization, analysis, and visualization.

2.2. Descriptive Statistics

Table 2.1 below presents the descriptive statistics of participants' scores on reading comprehension, vocabulary knowledge, digit span and literary themes tests. Participants' average performance on reading comprehension is 9.36 (*SD* = 4.14). Specifically, approximately, 40.69 % of the test items were answered correctly by the majority of the participants (*Min* = 2, *Max* = 19). Similar percentages are found for the WM and literary themes measures, accounting for 41.56 % (*M* = 6.65, *SD* = 5.08, *Min* = 0, *Max* = 16) and 44.73 % (*M* = 6.71, *SD* = 3.92, *Min* = 0, *Max* = 15) respectively. However, participants showed a better performance on the vocabulary test compared to the other tests as 66.17 % of the test items were answered correctly by them (*M*

= 19.85, *SD* = 6.47); participants' performance on this test ranges from 8 to 30; the latter is the maximum score participants could obtain in the vocabulary test. The standard deviations indicate that the scores are relatively spread out around the mean, with a greatest variation observed for the WMC component.

Table 2.1

Descriptive Statistics of Participants' Scores on Reading Comprehension, Vocabulary Knowledge, Digit Span and Literary Themes Tests

	N	*M*	*SD*	*Skewness*	*SE*	*Kurtosis*	*SE*
RC	*76*	*9.36*	*4.14*	*.28*	*.27*	*-.76*	*.54*
VOC	*56*	*19.85*	*6.47*	*.07*	*.31*	*-1.28*	*.62*
Digit span	*76*	*6.65*	*5.08*	*.31*	*.27*	*-.88*	*.54*
Lit.Themes	*73*	*6.71*	*3.92*	*.12*	*.28*	*-.60*	*.55*

Note. *N*=Number of participants; *M*=Mean (Average score); *SD*= Standard Deviation; *SE*= Standard Error.

2.3 Assessing Normality

In order to decide the nature of the statistical test that needs to be performed to answer the research questions, i. e., parametric or non-parametric statistical test, the normality of the distribution of data should be examined.

According to Pallant (2020), normally distributed data occurs when most of the data points are set around its mean value forming a relatively bell-shaped or symmetrical curve. The normality of data can be assessed either statistically or graphically. In the present research both ways are considered, the former by applying a rule of thumb of dividing skewness and

kurtosis values by their standard errors and the latter through analysing histograms and normal QQ plots.

To measure the normality of the distribution of the reading comprehension test scores, the Skewness and kurtosis values were divided by their standard errors. The attained values fall within a typical of range of ± 2 indicating a relatively normal distribution of scores. The obtained value for skewness was more than 1 (skewness/SE = 1.03) indicating fairly positively skewed data, which means that the distribution has a tail in the right side, while more scores are clustered towards the left. This also indicates that most participants scored relatively well on the reading comprehension test. Kurtosis shows (kurtosis/SE = 1.40) that the data has a platykurtic distribution which has a smaller peak when compared to perfectly normally distributed scores (see *Figure 2.1* below).

Figure 2.1

Histogram of Reading Comprehension Scores

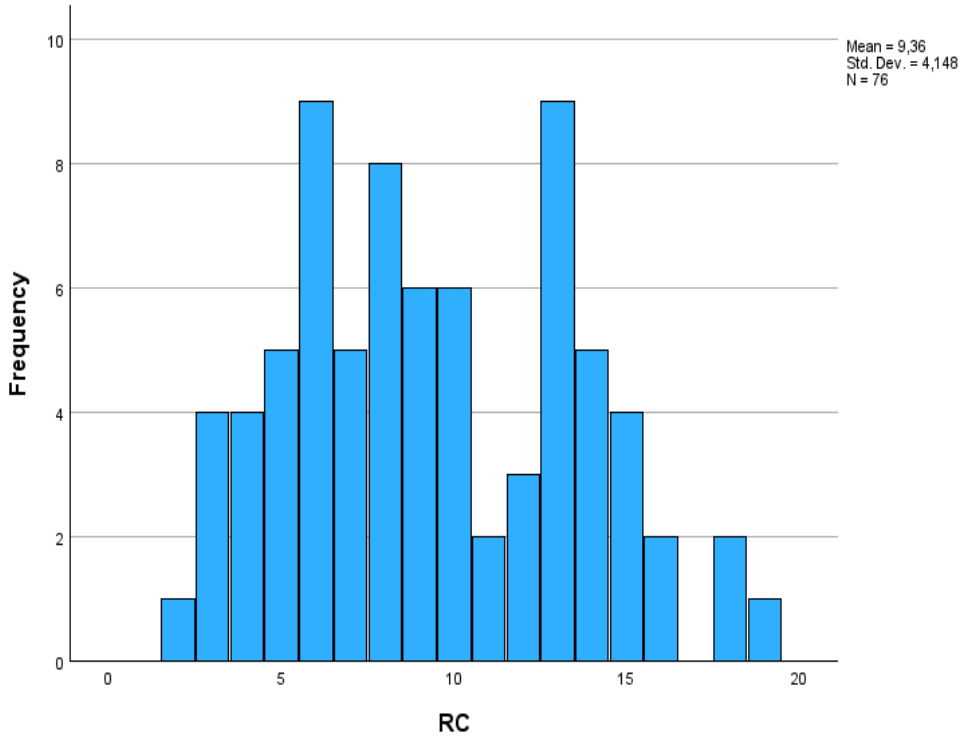
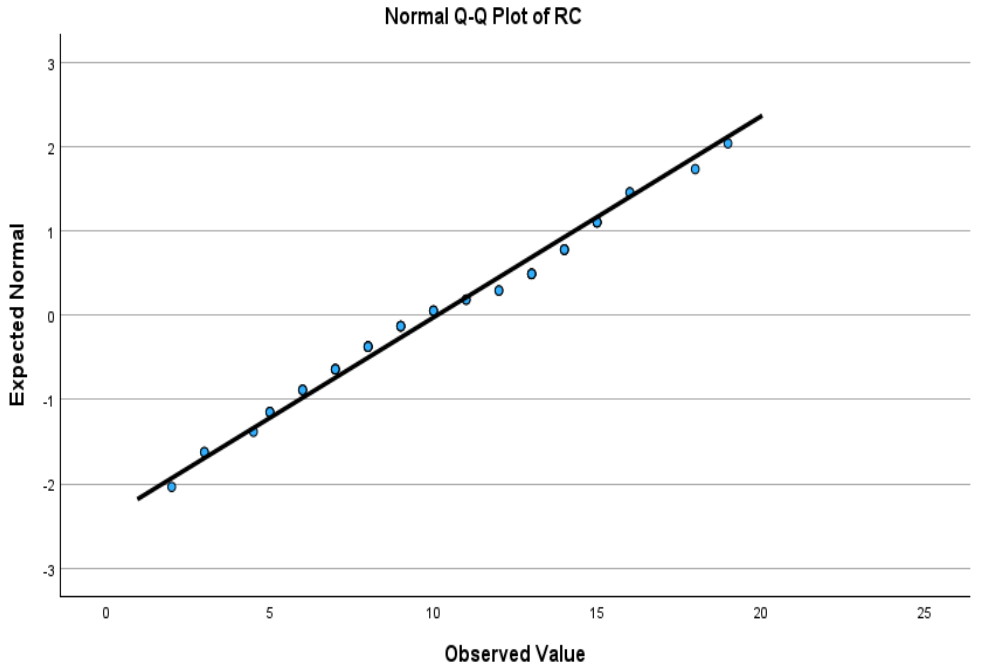


Figure 2.2

Normal QQ Plot of Reading Comprehension Scores.



The histogram (*Figure 2.1*) shows two peaks; the test scores of 9 and 6 were obtained by nine participants. The number of participants who obtained the lowest and highest scores are similar; only one participant got a score of 2 (*Min* = 2), and one participant scored 19 as the highest score. As it can also be shown in *Figure 2.1*, there is a small dip in the middle of the histogram as a total number of two participants obtained a score of 11. The normal Q-Q plot also shows no outliers in the reading comprehension test scores (see *Figure 2.2* below).

Concerning the vocabulary test scores, the obtained value of dividing skewness by its standard error (skewness/SE = 0.22) suggests a normally distributed data as it falls within the required range of normality of ± 2. However, the value obtained for kurtosis slightly exceeded this acceptable range (kurtosis/SE = 2.06), indicating flatter and scattered distribution compared (see *Figure 2.4* below) to a typical bell-curved distribution. Therefore, the vocabulary scores' distribution is platykurtic with a lower peak and more spread-out tails compared to a

perfect normal distribution (see *Figure 2.3* below). *Figure 2.3* also shows that 50% of the participants attained a score ranging from 20 to 30 on the vocabulary test. However, approximately 22% of them had a score of 15 compared to only 14 % of them who obtained a score of 30.

Figure 2.3

Histogram of Vocabulary Knowledge Test Scores.

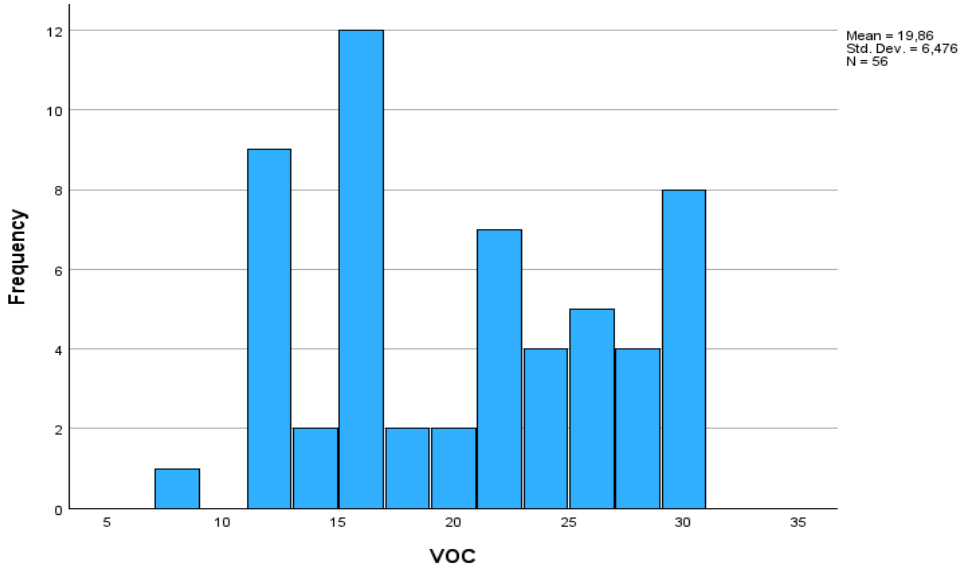
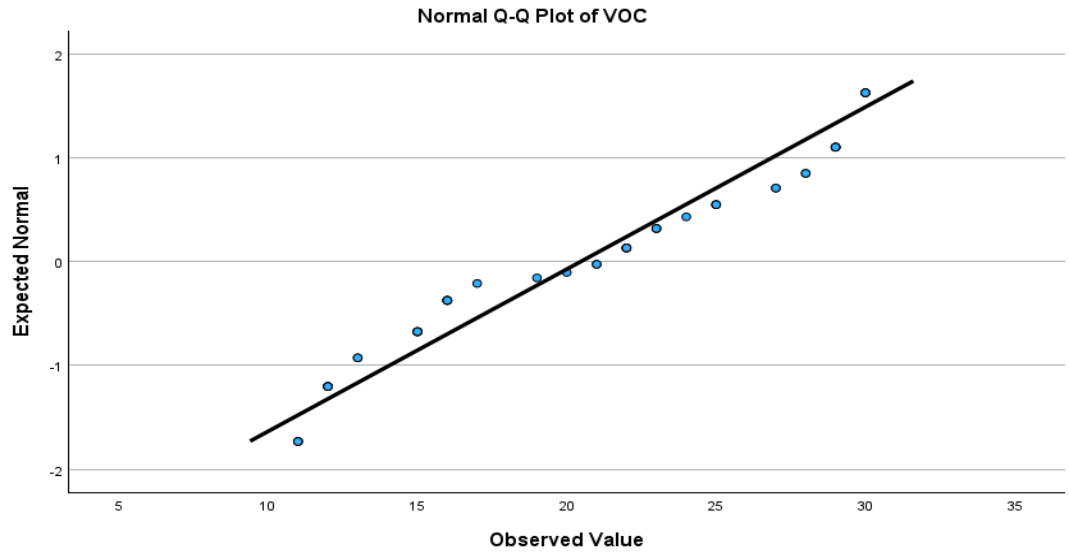


Figure 2.4

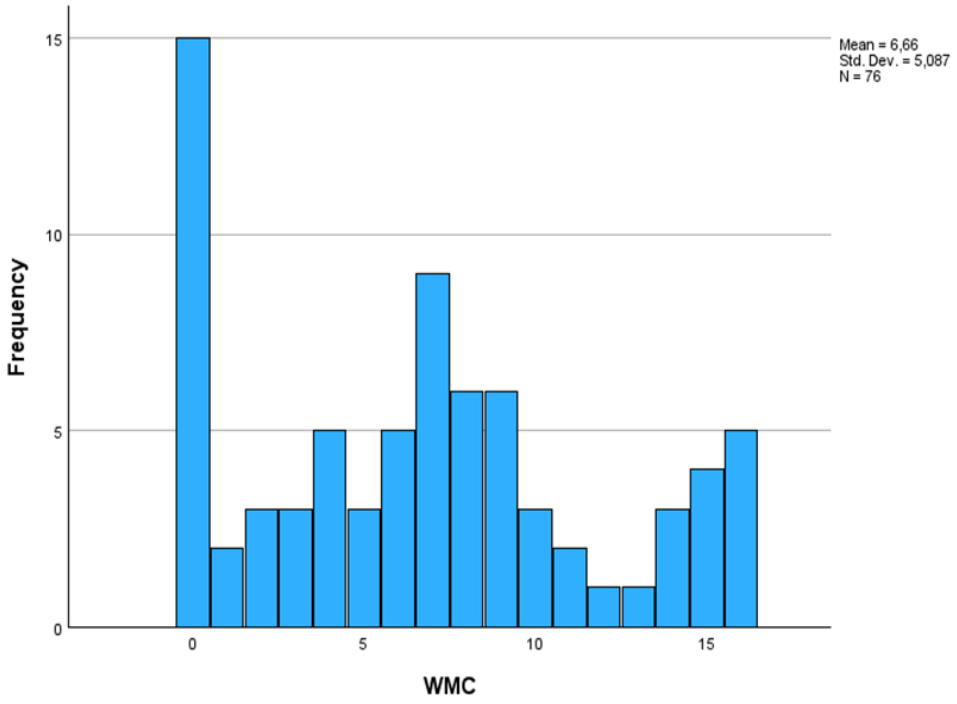
Normal QQ Plot of Vocabulary Knowledge Scores.



The digit span test demonstrates another positive outcome as its skewness value is .31, but when divided by its standard error (*SE* =.27), the result of 1.14 indicates a slightly positively skewed distribution (see *Figure 2.5* below). Applying the same rule for kurtosis (kurtosis/*SE* = -1.62); the obtained value denotes a platykurtic distribution. This means that the distribution has a flatter peak and more dispersed scores compared to a symmetrical distribution, with fewer scores falling in the tails and more scores clustering around the mean. A platykurtic distribution is characterized by few extreme scores and a uniform distribution of scores. Together, the skewness and kurtosis values suggest that the distribution of the digit span test scores is relatively symmetrical with a tendency towards lower scores.

Figure 2.5

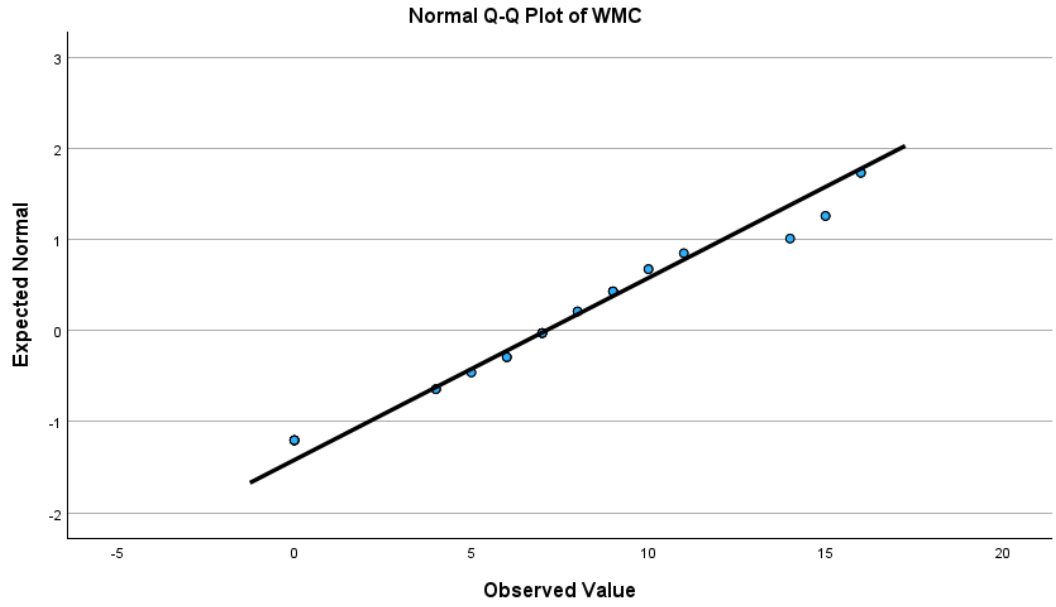
Histogram of the Digit Span Task (Working Memory Capacity).



As displayed in *Figure 2.5*, around 20% of the participants had a score of 0 in the digit span task, against 42% of them who attained a score between 5 and 10, which is around the average score of the test. This indicates that almost half of the sample has a moderate capacity of working memory. No outliers can be seen in the distribution as shown in *Figure 2.6* below.

Figure 2.6

Normal QQ Plot of the Digit Span Task (Working Memory Capacity).



According to the descriptive statistics (see Table 2.1), the skewness of the literary themes test is 0.12 and its standard error is 0.28 (skewness/SE = 0.42). These values indicate an almost perfect symmetrical distribution. The kurtosis of the literary themes test (-1.09) is leptokurtic. This implies that this distribution has a high peak and thick tails, suggesting that the data has more extreme values (see *Figure 2.7* below).

Almost 30% of the participants have a test score of 5, which is below the average score of the test. These students present the peak of the histogram. It should be noted that two thirds of the sample obtained a test score of 7.5 or less, which means that the performance of the sample on this test was quite poor due to lack of revision and understanding of the novel itself. *Figure 2.8* below shows the absence of outliers from the dataset of the test.

Figure 2.7

Histogram of Literary Themes Test Scores.

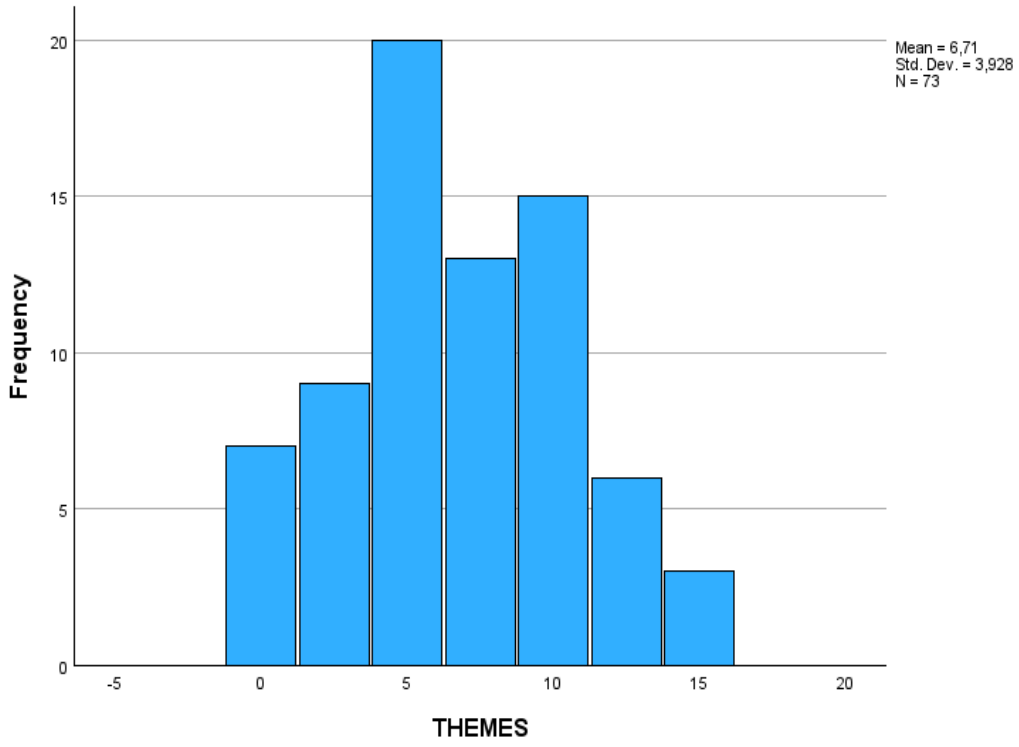
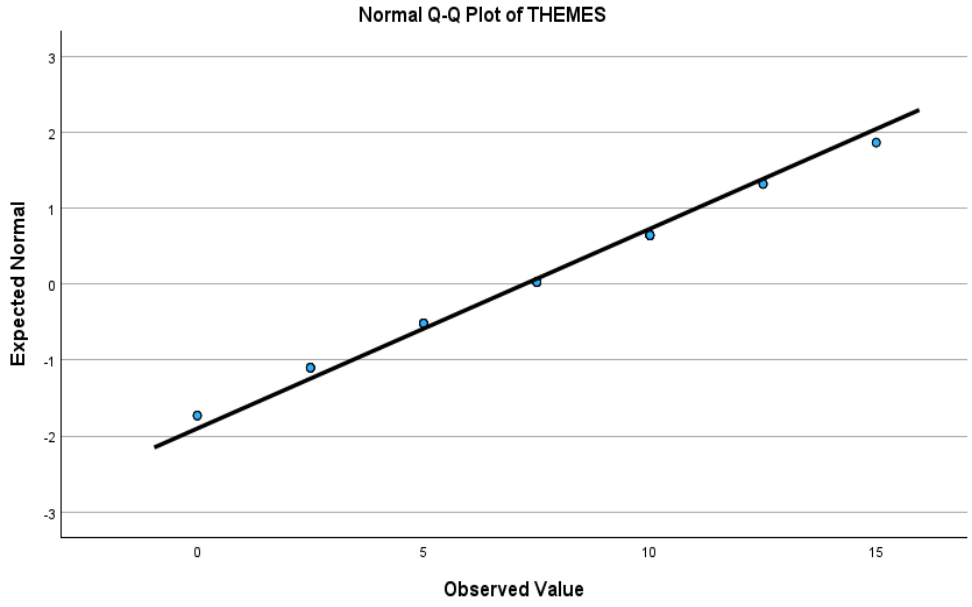


Figure 2.8

Normal QQ Plot of Literary Themes Test Score.



2.4 Inferential Statistics and Hypotheses Testing

After the assessment of normality, it can be clearly seen that the principle of normality has been observed in almost all tests. This was demonstrated both numerically (by dividing skewness and kurtosis values by their standard errors) and visually (through histograms and normal QQ plots). Accordingly, a parametric inferential statistic, specifically a Pearson correlation coefficient test, is conducted to test the research hypotheses and answer the research questions.

One of the most important concepts in inferential statistics is statistical significance. According to Salkind (2017), statistically significant correlations between variables are due to systematic cause rather than change or random sampling error. Generally, there are two levels at which results can be significant, including $p \leq .01$ and $p \leq .05$. If the p value is higher than .05, then the correlation is not significant, and the null hypothesis is more plausible to be accepted than the alternative hypothesis.

Table 2.2

Correlation between Reading Comprehension, Vocabulary Knowledge, Working Memory Capacity and Literary Themes Variables.

Variables		**RC**	**VOC**	**WMC**	**THEMES**
RC	**Pearson**	1	.373**	.109	.221
	P value		.005	.369	.058
VOC	**Pearson**	.373**	1	.157	.117
	P value	.005		.276	.395
WMC	**Pearson**	.109	.157	1	-.045
	P value	.369	.276		.701

Note. *RC*= Reading Comprehension test; *VOC= Vocabulary Knowledge test;* WMC=Working Memory Capacity test; *THEMES*= Literary themes test.

$^{**}P < 0.01$

Table 2.2 above demonstrates the correlation coefficients between the four variables of the present research. According to the table, there is a significant positive correlation between reading comprehension and vocabulary knowledge test scores (r = 0.373, N =56, p = .005), indicating that changes in the reading comprehension level is associated with changes in the same direction of vocabulary knowledge level. Particularly, an increase in reading comprehension is associated with an increase in vocabulary knowledge, and a decrease in reading comprehension level is associated with a decrease in vocabulary knowledge.

Approximately, 14 % of the variance in participants' reading comprehension scores is explained by the variance of their vocabulary knowledge scores. No statistically significant correlation was found between vocabulary knowledge and working memory capacity (r = 0.157, N = 56, p = .276), vocabulary knowledge and literary themes (r = 0.117, N = 56, p = .395), literary themes and reading comprehension (r = 0.221, N = 73, p = .058), literary themes and working memory capacity (r = - 0.045, N =73, p = .701), and working memory capacity and reading comprehension (r = 0.109, N = 76, p = .369).

From the Pearson correlation coefficients shown in Table 2.2 above, the alternative hypothesis (**H1:** There is a statistically significant positive correlation between learners' vocabulary knowledge and their reading comprehension level) of the first research question (**RQ1**: What is the relationship between learners' vocabulary knowledge and their general reading ability?), is accepted and the null hypothesis is rejected (**H0:** There is no statistically significant correlation between learners' vocabulary knowledge and their reading comprehension level). However, for RQ2 and RQ3 which investigate respectively the correlation between learners' vocabulary knowledge and their understanding of literary themes and between

working memory capacity and literary themes comprehension, the null hypotheses which state that there is no statistically significant positive correlation between the variable are accepted and the alternative hypotheses are rejected.

2.5 Contextualizing the Research Findings

The findings of the present research are consistent with the results of a number of studies. Zano and Phatudi (2019), for instance, examined the relationship between vocabulary knowledge and reading comprehension among high school learners of English as the first additional language (EFAL) in South Africa (grade 11). The study used a quantitative research method design and involved three tests to measure participants' vocabulary knowledge and reading comprehension. The findings revealed a positive association between the two variables and indicated that vocabulary depth is a stronger predictor of reading comprehension skills than vocabulary breadth. The researchers suggested that EFAL educators, students, and curriculum designers should integrate both dimensions of vocabulary knowledge into English teaching and learning as this has the potential to improve students' reading comprehension skills.

Similarly, a metanalysis conducted by Jeon and Yamashita (2014) examined the strength of the correlation between L2 reading comprehension and other ten variables including, vocabulary knowledge, word decoding, grammar knowledge, L1 reading comprehension, working memory capacity, phonological awareness, orthographic knowledge, morphological knowledge, listening comprehension and metacognition in the L2 context. In line with the results of the present research, a significant positive correlation was found between L2 vocabulary knowledge and L2 reading comprehension.

However, the strength of this correlation is more significant than the magnitude of the correlation found in the present research. In Jeon and Yamashita's (2014) study, L2 vocabulary knowledge explained around 62 % of the variance in L2 reading comprehension

scores and it was its strongest predictor after L2 grammar knowledge, compared to only 14% of shared variance between reading comprehension and vocabulary knowledge in the present research.

However, the findings of the present research contradict Jeon and Yamashita's (2014) results concerning the working memory component as they have found that working memory explained 17% of the variance in L2 reading comprehension. In the present research, no significant correlation was found between learners' general reading ability and their working memory capacity using the digit span measure.

Another study was conducted by Manihuruk (2020) to explore the relationship between EFL learners' vocabulary knowledge and reading comprehension in Indonesia. In the study, two tests, developed by Davy and Davy (1984), were employed to measure participants' reading and vocabulary abilities. The first tool involved a 25 multiple-choice items test which was designed to evaluate participants' knowledge of word meanings, synonyms, and antonyms. The second measure consists of 25 multiple-choice items to assess participants' reading comprehension level. The reading comprehension test was designed to assess learners' ability to identify the main topic of texts, uncover supporting facts, skim-read the text, make inferences, and comprehend word meaning in different contexts.

The study's findings demonstrated a link between reading comprehension skills and vocabulary mastery among the participants. The correlation coefficient of Spearman's was performed as the assumptions of parametric tests were violated in this study, corresponding to *rs* = 0.339, which revealed there was a moderate positive relationship between vocabulary knowledge and reading comprehension of learners in the English Education Department of Kristen university in Indonesia (Manihuruk, 2020).

As far as working memory is concerned, Chrysochoou and her colleagues (2011)

discussed the relationship between children's working memory capacity and their reading comprehension subskills at Aristotle University of Thessalonik. Specifically, the researchers wanted to investigate how the component of working memory relates to various aspects of reading comprehension, such as verbal recalls and inferential skills. The study sought to highlight the essential role that working memory plays in reading comprehension and provide implications for educational interventions. Tests were conducted on children with an average age of nine years. The researchers assessed Baddeley and Hitch's working memory model (1974) using three recall tasks (words, nonwords and digits) and a word listmatching task. They also assessed the central executive component of working memory with three tasks (listening, counting and backward digit recall task).

In contrast to the present research, the obtained findings of Chrysochoou et al. (2011) study revealed a positive significant correlation between participants' working memory capacity and their reading comprehension subskills. The reason for this misalignment might be explained by differences in the population and data collection methods. This study was conducted among children with an average age of nine, while the present research targeted adult readers with an average age of 24. The combination of data collection methods used by the researchers to measure children's vocabulary knowledge and reading comprehension level was an advantage as it provided more detailed results compared to the present research.

Another recent study conducted by Slattery and McAvinue (2021) examined the contribution of working memory capacity and sustained attention to reading comprehension and word reading skills among children aged eight to ten years old using commonality analysis. In addition to offering a theoretically intriguing viewpoint on whether the different executive functions of working memory contribute in a distinct or overlapping manner to reading success, the research aims to highlight the cognitive processes involved in reading.

The obtained results indicated that cognitive faculties, such as working memory

and sustained attention, have a significant impact on children's reading comprehension level. The commonality analysis revealed that sustained attention and working memory had independent contributions to both word reading and reading comprehension skills. The study also showed evidence for an interaction between working memory and sustained attention in increasing children's level of reading comprehension, suggesting that the two skills may be integrated together in treatment interventions to support learners' reading comprehension performance (Slattery & McAvinue, 2021).

Slattery and McAvinue (2021) findings contradict the results of the present study as they have found unique and shared contributions of working memory to successful reading comprehension. This inconsistency might be explained by differences in the used sample as Slattery and McAvinue's study was conducted among primary school students, whereas the present research focused on Master 1 students of English as a foreign language. However, a study conducted by Toumi (2020) in a context that is similar to the present research context revealed no statistically significant correlation between working memory capacity as measured by the operation span task and learners' reading comprehension level as measured by the Gates-MacGinitie test. Accordingly, it can be concluded that differences in the research population, context and data collection methods might account for the misalignment between the results of this study and the findings of the studies. However, it must be noted that the findings mentioned above are not discussed in connection with literary themes because no previous studies have considered this issue, to the best of the researchers' knowledge.

Conclusion

In conclusion, the present research provides empirical evidence on whether and how vocabulary knowledge and working memory capacity correlate to learners' reading comprehension in general and understanding of literary themes in particular. The obtained findings have implications for learners, teachers, as well as syllabus designers in terms of

exploring the true essence of incorporating vocabulary into their language learning, teaching strategies, and curricula plans in the future.

General Conclusion

Summary of the Findings

The results of the study revealed a significant positive correlation between participants' reading comprehension performance and their mastery of vocabulary ($r = .373$, $p = .005$), indicating that an increase in learners' reading comprehension level is associated with an increase in their vocabulary knowledge, and a decrease in the former is coupled by a decrease in the latter. The study also shows that there is no statistically significant relationship between reading comprehension, working memory and understanding of literary themes. Overall, it appears that establishing a correlation between one's lexical proficiency and their understanding of written materials is empirically confirmed. Undoubtedly, vocabulary instruction plays a crucial role in enhancing reading comprehension skills. However, more extensive studies are required for the multifaceted cognitive processes involved in reading and understanding literary works.

Practical Implications

The content of this research is believed to be meaningful for learners, teachers, and curriculum designers. The findings presented in this study have real-world implications for learners. Such knowledge assists them in their comprehension process as it is related to reading literary texts and grasping their essence. In addition, this study is likely to raise students' awareness concerning what contributes to the challenges they encounter during reading in the target language. Once learners become aware of their own comprehension issues, they will be responsible for addressing these issues and consequently improve their reading proficiency.

The present study is deemed useful for language educators as it provides them with insights into successful teaching strategies that might increase students' reading comprehension abilities. This will remind teachers that vocabulary is as important as other skills to achieve a

satisfactory reading comprehension performance. This research may help teachers prioritize language mastery skills in the classroom by including word exercises and games in their lesson plans.

For syllabus designers, the study's results may assist them in developing more effective curricula that support students' learning. This research may be consulted by syllabus designers to emphasize the function of vocabulary education by incorporating it into their course contents. The current study provides teachers with useful feedback on the effectiveness of the teaching strategies they are using in teaching narratives by highlighting students' learning issues, especially with regard to understanding literary works. Consequently, they readjust both the course content and their teaching approach.

Limitations of the Study

The current study faced multiple setbacks in the process of collecting data as it was challenging to elicit the best of each student's cognitive abilities due to time limits, lack of triangulation in data collection methods and lack of resources to accurately evaluate participants' skills.

In terms of the time frame of this study, it was difficult to collect data from the target sample due to the accumulation of exams and holidays at the end of the first semester and beginning of the second. The researchers were obliged to collect data in a time span of just two weeks, accounting for the absence of students. Therefore, the process was time-consuming.

Another shortcoming of this study is the lack of triangulation in the data collection methods; only one test for each skill. Most of the studies discussed in chapter two contained at least two or three measures for each skill in order to provide an accurate description of the variable under discussion. Another significant limitation is the availability of resources as most websites that contain relevant articles and books were not set for free.

Directions for Future Research

The findings of the present research showed that about 14% of the variance in participants' scores in reading comprehension is explained by the variance in their scores of vocabulary knowledge. This indicates that still 86% of its variance is not explained. It would be quite interesting if future research is designed to account for this remaining percentage and investigates the contribution of a large number of skills to reading comprehension. In addition, in this research, it is not clear whether vocabulary knowledge contributed to participants' literal understanding of texts or to their inferential understanding. Future research that addresses this issue is highly required.

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Appendices

Appendix A

Background questionnaire

We kindly request from you the following information:

Name: _____

Age: _____

Gender: _____

How many languages do you speak? _____

How long have you been learning English? _____

Appendix B

Reading comprehension test 1

Full name: _____

A Bullying can take a variety of forms, from the verbal -being taunted or called hurtful names- to the physical- being kicked or shoved- as well as indirect forms, such as being excluded from social groups. A survey I conducted with Irene Whitney found that in British primary schools up to a quarter of pupils reported experience of bullying, which in about one in ten cases was persistent. There was less bullying in secondary schools, with about one in twenty-five suffering persistent bullying, but these cases may be particularly recalcitrant.

B Bullying is clearly unpleasant and can make the child experiencing it feel unworthy and depressed. In extreme cases it can even lead to suicide, though this is thankfully rare. Victimized pupils are more likely to experience difficulties with interpersonal relationships as adults, while children who persistently bully are more likely to grow up to be physically violent and convicted of anti-social offences.

C Until recently, not much was known about the topic, and little help was available to teachers to deal with bullying. Perhaps as a consequence, schools would often deny the problem. 'There is no bullying at this school' has been a common refrain, almost certainty untrue. Fortunately, more schools are now saying: There is not much bullying here, but when it occurs, we have a clear policy for dealing with it.'

D Three factors are involved in this change. First is an awareness of the severity of the problem. Second, a number of resources to help tackle bullying have become available in Britain. For example, the Scottish Council for Research in Education produced a package of materials, Action Against Bullying, circulated to all schools in England and Wales as well as in Scotland in summer 1992, with a second pack, Supporting Schools Against Bullying, produced the following year. In Ireland, Guidelines on Countering Bullying Behavior in Post-Primary Schools was published in 1993. Third, there is evidence that these materials work, and that

schools can achieve something. This comes from carefully conducted 'before and after I evaluations of interventions in schools, monitored by a research team. In Norway, after an intervention campaign was introduced nationally, an evaluation of forty-two schools suggested that, over a two-year period, bullying was halved. The Sheffield investigation, which involved sixteen primary schools and seven secondary schools, found that most schools succeeded in reducing bullying.

E Evidence suggests that a key step is to develop a policy on bullying, saying clearly what is meant by bullying, and giving explicit guidelines on what will be done if it occurs, what record will be kept, who will be informed, what sanctions will be employed. The policy should be developed through consultation, over a period of time-not just imposed from the head teacher's office! Pupils, parents, and staff should feel they have been involved in the policy, which needs to be disseminated and implemented effectively. Other actions can be taken to back up the policy. There are ways of dealing with the topic through the curriculum, using video, drama, and literature. These are useful for raising awareness and can best be tied into early phases of development while the school is starting to discuss the issue of bullying. They are also useful in renewing the policy for new pupils or revising it in the tight of experience. But curriculum work alone may only have short-term effects; it should be an addition to policy work, not a substitute. There are also ways of working with individual pupils, or in small groups. Assertiveness training for pupils who are liable to be victims is worthwhile, and certain approaches to group bullying such as 'no blame', can be useful in changing the behaviour of bullying pupils without confronting them directly, although other sanctions may be needed for those who continue with persistent bullying. Work in the playground is important, too. One helpful step is to train lunchtime supervisors to distinguish bullying from playful fighting and help them break up conflicts. Another possibility is to improve the playground environment, so that pupils are less likely to be led into bullying from boredom or frustration.

F With these developments, schools can expect that at least the most serious kinds of

bullying can largely be prevented. The more effort put in and the wider the whole school involvement, the more substantial the results are likely to be. The reduction in bullying - and the consequent improvement in pupil happiness- is surely a worthwhile objective.

Choose the correct letter. A. B. C or D.

31- A recent survey found that in British secondary schools:

A- there was more bullying than had previously been the case.

B- there was less bullying than in primary schools.

C- cases of persistent bullying were very common.

D- indirect forms of bullying were particularly difficult to deal with.

32-Children who are bullied:

A are twice as likely to commit suicide as the average person.

B find it more difficult to relate to adults.

C are less likely to be violent in later life.

D- may have difficulty forming relationships in later life.

33- The writer thinks that the declaration 'There is no bullying at this school'.

A is no longer true in many schools.

B was not in fact made by many schools.

C reflected the school's lack of concern.

D reflected a lack of knowledge and resources.

34- What were the findings of research carried out in Norway?

A- Bullying declined by 50% after an anti-bullying campaign.

B- Twenty-one schools reduced bullying as a result of an anti-bullying campaign.

C- Two years is the optimum length for an anti-bullying campaign.

D- Bullying is a less serious problem in Norway than in the UK.

QUESTIONS 35-39

Complete the summary below Choose NO MORE THAN TWO WORDS from the passage for

each answer.

Write your answers in boxes 35-39 on your answer sheet.

What steps should schools take to reduce bullying? The most important step is for the school authorities to produce a 35 .....which makes the school's attitude towards bullying quite clear. It should include detailed 36 .....as to how the school and its staff will react if bullying occurs. In addition, action can be taken through the 37 .....This is particularly useful in the early part of the process, as a way of raising awareness and encouraging discussion On its own, however, it is insufficient to bring about a permanent solution. Effective work can also be done with individual pupils and small groups. For example, potential 38 .....of bullying can be trained to be more self-confident. Or again, in dealing with group bullying, a 'no blame' approach, which avoids confronting the offender too directly, is often effective. Playground supervision will be more effective if members of staff are trained to recognize the difference between bullying and mere 39 .....

Question 40 Choose the correct letter A, B, C or D.

Which of the following is the most suitable title for Reading Passage 3?

A- Bullying: what parents can do B- Bullying: are the media to blame?

C- Bullying: the link with academic failure D- Bullying: from crisis management to prevention

Appendix C

Vocabulary knowledge test

Full name:

Part one:

1. One day, I want to climb Mt. Everest. That's a goal I want to ___ .

a) achieve b) respect

c) invent d) acquire

2. Jack ___ did a thing at work today day. He spent most of his time chatting with the secretary.

a) seldom b) rarely

c) hardly d) slightly

3. Weather experts have ___ that next summer will be extremely hot.

a) reflected b) included

c) predicted d) prescribed

4. Lisa is ___ buying a pet but she's not sure what kind to get.

a) recalling b) considering

c) regretting d) counting

5. It is very ___ to shop on the Internet. All you need is a credit card.

a) polite b) convenient

c) enthusiastic d) foolish

6. Diamonds are ___ , which is probably one of the reasons they are valuable.

a) broad b) flexible

c) talented d) rare

7. John recently changed his ___ . He used to be an accountant, but now he's a real estate agent.

a) source b) mood

c) profit d) career

8. For a company to succeed, good management is ___ .

a) tough c) essential

b) broad d) affordable

9. I take the stairs in my apartment building because the elevators aren't ___ .

a) behind b) regular

c) honest d) reliable

10. Jean has a red stain on her carpet where she ___ wine.

a) spilled b) acquired

c) blamed d) baked

11. The Louvre is a famous museum in Paris that was designed by Chinese ___ I.M Pei.

a) plumber b) mechanic

c) architect d) interpreter

12. Forest fires can start naturally; for example, when ___ strikes the ground during a storm.

a) thunder b) gasoline

c) rubbish d) lightning

13. There is still some doubt among scientists about the ___ of global warming.

a) review c) cause

b) effort d) flood

14. Tim's job ___ communicating with newspapers and magazines about his company's products.

a) appreciates c) adores

b) regards d) involves

15. After two hours of hard training, the coach felt that his players ___ a break.

a) deserved c) encouraged

b) identified d) wasted

Part two:

1. Bill wrote a letter to his teacher to ___ his appreciation for all her hard work.

a) expose c) cover

b) express d) convert

2. Ron told an inappropriate joke during dinner that made everyone feel ___ .

a) grateful c) spiritual

b) clumsy d) awkward

3. The garbage bag in my kitchen really ___ . I should take it out.

a) floats c) slides

b) stinks d) matches

4. It's hard to ___ Brad. He's very rude and he likes to argue.

a) get along with c) catch up to

b) make up d) take apart

5. Janet dropped her ring in the ___ . Thankfully, it didn't go down the drain.

a) laundry c) sink

b) bulb d) vase

6. Johnathan had his ___ tested yesterday. The doctor said he needed glasses.

a) stamina c) vision

b) courage d) pressure

7. When hiking in the forest, Tina ___ a deer sleeping under a tree.

a) turned up c) came across

b) dropped off d) brought up

8. After ___ the woman's health, the doctor told her she was completely healthy.

a) infecting c) maintaining

b) assessing d) alternating

9. The clothing store H&M has recently ___ a new campaign targeting teenage girls.

a) gathered c) launched

b) wrapped d) injected

10. After Mark saw his test score, he was ___ . He thought that he had failed.

a) disabled c) relieved

b) exhausted d) meaningless

11. The car slowed down as it ___ the stop sign.

a) focused c) approached

b) trained d) wiped

12. Lisa wanted to talk to a cute guy on the train but she didn't have the ___ to start a conversation.

a) form c) courage

b) proof d) tolerance

13. Because of Ryan's skiing ___, he had to stay home in bed for one month.

a) ability c) trophy

b) injury d) security

14. Mike's body was covered in ___ from running in the hot sun.

a) powder c) sweat

b) mist d) spice

15. Sometimes children learn how to ___ from movies that contain bad language.

a) swear c) bother

b) compete d) emphasize

Appendix D

DIGITS FORWARDS

Item	First trial	√ or X	Second trial	√ or X	Total
A	43		16		
B	792		847		
C	5941		7253		
D	93872		75396		
E	152649		216748		
F	3745261		4925316		
G	82973546		69174253		
H	246937185		371625948		
				Forwards score:	

Wechsler, D. (2003a). Wechsler Intelligence Scale for Children, Fourth edition. *PsycTESTS Dataset*. https://doi.org/10.1037/t15174-000

Appendix E

Thematic study of Achebe's *Things Fall Apart*

Full name: _____

1. In the novel, Achebe uses terms and proverbs from his own culture/language such as chi, *egwugwu*, and *ilo*. Why is that?

_____

_____

_____

_____

2. Throughout the novel, especially in the first part, Achebe introduces different social and religious rules and traditions followed by the people of Umuofia. How does this inclusion of cultural aspects relate to postcolonial themes?

_____

_____

_____

3. With the coming of the missionaries to Umuofia and the surrounding villages, Okonkow's views about his traditions and the missionaries' become more violent. What theme do Okonkwo's view represent in this case?

_____

_____

_____

ملخص

من الواضح أن القراءة بلغة أجنبية تُعتبر مهمةً شاقة بالنسبة للكثير من المتعلمين مقارنةً بالقراءة بلغتهم الأم. على الرغم من محاولات الباحثين والمعلمين لتطوير فهم المتعلمين وتقديرهم للنصوص الأدبية، فإن العديد من المتعلمين يفشلون في بناء فهمٍ كامل لجوهر الروايات. الى يومنا هذا، لا توجد أدلة تجريبية كافية تتعلق بالعوامل التي تسهم في هذه التحديات. بناءً على افتراض أن معرفة المفردات اللغوية وسعة الذاكرة العاملة هما من أهم المكونات في فهم القراءة، يهدف هذه البحث إلى دراسة مساهمة هاتين المتغيرتين في فهم المواضيع الأدبية في رواية تشينوا آتشيبي "الأشياء تتداعى". تم إجراء الدراسة على 76 طالب ماستر مسجلاً في كلية الآداب واللغات قسم لغة إنجليزية في جامعة حمة لخضر بالوادي. تم استخدام أربعة مقاييس في هذه الدراسة. بما في ذلك اختبار معرفة المفردات، واختبار فهم القراءة، واختبار موضوعية ادبية، واختبار الذاكرة الرقمية. تم تصميم هذه الاختبارات لتقييم معرفة المشاركين بالمفردات اللغوية، وقدرتهم العامة على القراءة، وفهمهم للمواضيع الأدبية، وسعة ذاكرتهم العاملة على التوالي. أظهرت النتائج المتحصل عليها وجود ترابط

إيجابي معنوي بين معرفة المشاركين بالمفردات وأدائهم في فهم القراءة ($r = .373$ ،$p = .005$). مع ذلك، لم يتم العثور على ترابط إحصائي ذو دلالة بين المتغيرات المتبقية الأخرى. قد يكون للبحث الحالي آثار مهمة على مصممي المناهج الدراسية ومعلمي اللغة والمتعلمين، حيث يساعدهم في وضع خطط دراسية أكثر فعالية من خلال تضمين جوانب أكثر من مهارات استيعاب اللغة، واستخدام استراتيجيات تدريس فعالة قد تدعم المتعلمين في عملية فهم القراءة، وزيادة وعيهم تجاه قدرتهم العامة على القراءة على التوالي.

الكلمات المفتاحية: الأشياء تتداعى، المواضيع الأدبية، فهم القراءة، المفردات اللغوية، الذاكرة العاملة.