CHAPTER II

LITERATURE REVIEW

This chapter consists of elaborations regarding the theoretical framework, previous research studies, the conceptual framework, and the research hypotheses that underpin this study. It outlines the primary concepts, including reading comprehension, descriptive text, multimedia learning, and 360-degree Virtual Reality (VR) videos, which serve as the foundation for conducting this research.

A. Theoretical Framework

1. Reading Comprehension

Comprehension skills refer to the ability to make sense of written material through a series of activities between the reader, the text, and the reading context (Snow, 2002). In EFL learning, this skill is central since it helps the learners comprehend the texts well. It is not only about word decoding but also entails a whole set of complicated processes that include drawing on previous knowledge, inference-making, integrating information from different parts of the text, among other evaluation processes (Grabe & Stoller, 2020).

a. Reading Comprehension Components

The reading comprehension component consists of several aspects that are interrelated and work in an integrated way in the process of understanding the text. According to Grabe and Stoller (2020), there are several main components in reading comprehension, which are as follows:

- **Word Recognition**

The ability to identify words quickly and accurately while understanding their meanings within the context of the text.

- **Vocabulary Knowledge**

The ability to identify words quickly and accurately while understanding their meanings within the context of the text.

- **Syntactic Processing**

The ability to understand sentence structure in order to obtain the right meaning.

- **Discourse Structure Awareness**

The ability to understand the relationship between parts of a text so that the overall meaning can be understood in its entirety.

- **Inferencing (Drawing Inferences)**

The ability to infer conclusions or derive meanings that are not explicitly stated in the text. Together, these components operate simultaneously to help readers achieve a thorough and in-depth understanding of the text.

b. Indicator of Reading Comprehension

In the process of conducting quantitative research, it is necessary to assess the reading skills with the help of clear indicators that are considered to be operational. In accordance with the views of Brown (2004) and Grabe (2009), the indicators of reading comprehension are as follows:

• Identifying Main Ideas

It is the ability to identify the main idea or the primary message that the author is going to express in a paragraph or in the whole text.

• Identifying Specific Information

It is the ability to find explicit information in the form of details and facts.

• Understanding Vocabulary

It is the ability to understand the meaning of specific words and phrases in their context.

• Making Inferences (Drawing Conclusions)

It is the ability to understand implicit meanings, ideas, or conclusions expressed by the author.

These indicators are usually used to measure the reading skills because all of them together can define the level of students' comprehension.

2. Descriptive Text

a. Definition of Descriptive Text

Descriptive text is a kind of discourse whose purpose is to describe a certain person, place, animal, or object in such a way that makes readers visualize the object (Derewianka & Jones, 2016). Gerot and Wignell (1994) state that the social function of descriptive text is to describe the specific person, place, or thing using descriptive and informative language. Knapp and Watkins (2005) note that the main purpose of descriptive text is to present the characteristics and attributes of a certain object so that readers get specific information about it. Thus, the descriptive text helps to create a specific image of the object.

b. Generic Structure of Descriptive Text

The generic structure of descriptive text consists of two main elements. The following description of descriptive text is given by Derewianka & Jones (2016):

• Identification

It is the part of the text where the specific object, person, creature, or place that is described is introduced or identified as an opening background for readers to have a first insight.

• Description

It is the part of the text where the specific information about the characteristics, features, qualities, behaviors, and other attributes of the object is provided.

c. Language Feature of Descriptive Text

The linguistic characteristics of descriptive texts include the following aspects (Gerot & Wignell, 1994):

- **Use of Simple Present Tense:** The main tense used to state factual descriptions.
- **Use of Adjectives:** Used to describe and modify the traits or attributes of the objects.
- **Use of Linking Verbs:** Employing linking verbs such as *is, are, has,* and *have* to connect the subject with its description.
- **Use of Specific Participants:** Focusing on a specific object, person, or place (e.g., *Bandung Zoo, Angel Falls*) rather than a general one.
- **Use of Descriptive Details:** Providing detailed behavioral or structural information to clarify the subject.

These characteristics aim to clarify the description and assist the reader in building a mental picture of the object being discussed.

3. Multimedia Learning

Multimedia learning refers to the instructional method of using different media, including text, pictures, audio, and videos to help students understand better. According to the Cognitive Theory of Multimedia Learning by Mayer (2009), learning is enhanced when information is conveyed through two main channels, that is, visual and verbal. The theory claims that using both text and visuals helps the learners to form strong mental representations. Furthermore, current research on VR immersion suggests that engaging and immersive multimedia could increase student engagement and motivation as well as improve learning; however, this is only possible depending on the type of knowledge being acquired and the level of alignment between the immersive elements and learning goals (Yu et al., 2025).

4. Virtual Reality (VR)

Virtual Reality (VR) is the technology that allows the user to engage with the artificial environment. In education, VR technology is used to develop immersive and interactive learning experience for students. As suggested by Cabrera-Duffaut et al. (2024), the use of VR can help to enhance the learners' understanding as it provides more vivid visual representation. In their turn, Makransky and Petersen (2021) claim that using VR technology in learning enhances students' motivation, engagement, and learning outcomes. Among VR technologies, 360-degree VR videos are the most common and available since it allows exploring the environment without any special hardware.

In terms of reading instructions, 360-degree VR videos would be helpful for the visualization of textual information, especially descriptive texts, thus, helping to understand the material better. This is explained by Dual Coding Theory (Paivio, 1986) according to which processing the information simultaneously through visual and verbal channel makes it easier for the learners to comprehend and retain information. In this case, 360-degree VR videos would be obtained from YouTube, and used in the class through the interactive smartboard.

B. Previous Research

The use of technological advancements in teaching English language has been explored extensively, especially the introduction of VR and interactive multimedia. There is evidence that the incorporation of technological innovations can result in positive impacts on student engagement and learning outcomes. Cabrera-Duffaut et al. (2024) carried out a systematic review about applications of VR in higher education and concluded that VR technology provides immersive learning experience and promotes conceptual understanding among students. The study provides strong evidence about the potential application of VR in different educational settings, including language learning. Also, Makransky and Petersen (2021) showed through their meta-analysis that the use of VR in educational setting can increase motivation

and engagement of students. The results of this study imply that immersive learning can support the processes of cognition and increase understanding of the concepts.

In the field of language learning, Parmaxi (2023) revealed that the VR contributes positively to the development of language skills, including speaking and listening skills. However, the study revealed the lack of the research on the application of VR to improve reading skills, which opens the door for more research in this area. On the same line, Huang et al. (2022) concluded that the use of visual technologies, for instance, VR and AR technologies, improves the quality of language learning process through provision of contextualized learning materials. Visual media plays an important role in providing better comprehension of learning materials.

Furthermore, there is evidence in studies on reading instruction that the use of multimedia can improve reading comprehension. Mayer (2009) states that the integration of visuals and texts in multimedia learning helps in building better mental representation. This argument is reinforced by the results of Yu et al. (2025). They showed that immersive and interactive learning environments can improve learning outcomes and, depending on the nature of the material, decrease cognitive loads, but not always. Concerning English as Foreign Language (EFL) learning, Grabe and Stoller (2020) explained that there are different factors that contribute to reading comprehension, including vocabulary knowledge, inferencing skills, and comprehension of text structures.

Despite these positive findings, several limitations remain. First, most previous studies have concentrated on speaking and listening skills, whereas research investigating the application of VR in reading instruction is still relatively limited (Parmaxi, 2023). Second, many studies have adopted qualitative or descriptive research designs and therefore have not provided strong empirical evidence through quantitative analysis. Third, the majority of existing studies have been conducted outside the Indonesian context or at the higher education level, limiting the direct applicability of their findings to senior high school students in Indonesia. Fourth, the VR technologies

employed in earlier studies have generally involved complex systems, making them less practical for implementation in school settings.

Based on these findings, it can be concluded that although VR and multimedia technologies demonstrate considerable potential for enhancing the quality of learning, a research gap remains regarding the use of 360-degree VR videos to improve reading comprehension, particularly of descriptive texts at the senior high school level. Therefore, this study was conducted to address these gaps while providing empirical evidence that contributes to the development of technology-based language learning.

C. Conceptual Framework

The present research develops a conceptual framework explaining the relationship between the independent variable, the use of 360-degree Virtual Reality (VR) videos, and the dependent variable, reading comprehension of descriptive texts of students. Such a relationship is based on relevant theoretical concepts and empirical evidence. According to the theory, reading comprehension is the process of building the meaning of something through the interplay of the reader and the text including the linguistic, cognitive processes, and prior knowledge of the reader (Snow, 2002; Grabe & Stoller, 2020). Concerning EFL instruction, the learners are likely to face the problem of comprehending reading material thus there is a need in the instructional media that would help them do it better (Nation, 2009).

As a possible solution, 360-degree VR videos as an instructional medium can be considered. The use of such a medium is justified in accordance with the Cognitive Theory of Multimedia Learning (Mayer, 2009) and the Dual Coding Theory (Paivio, 1986) suggesting that the combination of verbal and visual information helps the learner to build better mental representations thus contributing to reading comprehension. Besides, some previous studies have suggested that the Virtual Reality technologies and multimedia can be helpful to make learners more motivated and engaged thus making their learning experience better (Cabrera-Duffaut et al., 2024; Huang et al., 2022). At the same time, studies exploring the use of 360-degree VR

videos to foster reading comprehension, especially the comprehension of descriptive texts at senior high school level are still few (Parmaxi, 2023).

Therefore, the proposed conceptual framework suggests that the use of 360-degree VR videos as an instructional medium would result in the reading comprehension outcomes that would be different from those attained through traditional methods of teaching. Such a relationship can serve as a foundation to examine the differences in reading comprehension between the experimental and control groups.

D. Research Hypothesis

Hypotheses represent tentative solutions to research problems to be verified through empirical data collection and analysis. In quantitative research, hypotheses emerge from theories and are confirmed by empirical findings from previous studies (Creswell & Creswell, 2018). The following hypotheses for the current study are based on the Cognitive Theory of Multimedia Learning (Mayer, 2009), the Dual Coding Theory (Paivio, 1986), and existing literature on the use of Virtual Reality in teaching languages.

1. Null Hypothesis (H0)

There is no significant difference in reading comprehension skills of descriptive texts between students instructed with 360-degree VR videos and those instructed with conventional approaches.

2. Alternative Hypothesis (Ha)

There is a significant difference in reading comprehension skills of descriptive texts between students instructed with 360-degree VR videos and those instructed with conventional approaches.

This hypothesis stems from the assumption that the combined usage of visual and verbal information can lead to an improvement of reading comprehension skills. In accordance with the Cognitive Theory of Multimedia Learning (Mayer, 2009), learning becomes more effective with the use of multiple representations of information (visual and verbal), leading to the creation of more elaborate mental models of the material under consideration. Also, the Dual Coding Theory (Paivio, 1986) claims that processing of information via verbal and visual channels is more efficient for understanding and memorization.

In addition, previous empirical studies confirm the efficacy of Virtual Reality in enhancing students' learning experience. Cabrera-Duffaut et al. (2024) found that VR provides an opportunity for students to increase their engagement and improve their learning outcomes. Likewise, Makransky and Petersen (2021) found that VR-based instruction increases students' engagement and improves their academic outcomes, while Huang et al. (2022) concluded that VR and other visual technologies contribute to better language learning.

Based on the above theory and empirical framework, it can be hypothesized that there is a significant difference in reading comprehension of descriptive texts between students instructed with 360-degree VR videos and those instructed with conventional approaches.