CHAPTER II
LITERATURE REVIEW

A. The Concept of Grammar Understanding

1. Definition of Grammar Understanding

Grammar consists of the set of rules and conventions that govern how language functions; every language possesses its own grammatical system. grammar is the distinction between restrictive and amplifying relative clauses (Martin, 1976). Individuals who speak the same language can communicate effectively because they instinctively understand how to use these rules to convey meaning. Native English-speaking students already have an internal grasp of English grammar they can identify word sounds, meanings, and how to construct sentences that make sense. However, although they may speak fluently, they still require instruction to develop strong writing skills (Hans & Hans, 2017). Despite its essential role, mastering grammar is often regarded as one of the most challenging aspects of language learning, especially for English as a Foreign Language (EFL) students. Because of its abstract nature and intricate rules, students often face difficulties in comprehending grammar.

While grammar involves understanding form, teaching it solely through the presentation of rules is insufficient, as grammar encompasses much more than just structural accuracy (Karagul & Yuksel, 2014). Grammar can be defined as the branch of language study concerned with word forms (morphology) and their typical arrangement within phrases and sentences (syntax). Historically, the term covered nearly all aspects of language study excluding word meanings but today it is more commonly separated from the study of pronunciation (phonology) and semantics (the meaning of words). Grammar represents the system of word formation and sentence structure specific to a particular language at a particular point in time (Bloom & Reenen, 2013).

Grammar is an important part of communication, by using correct grammar we can get our ideas across clearly and effectively. It can also help us

understand other people's ideas better. In the increasingly complex digital age, mastering good grammar is even more important. This is because digital communication requires the use of precise and effective language. By mastering good grammar, we can communicate more smoothly and efficiently digitally. Clear and concise communication becomes challenging without a solid understanding of grammar. Numerous learners, whether in formal educational settings or informal environments, struggle to construct accurate sentences because of insufficient grammatical knowledge (Chandra Segaran & Hashim, 2022).

In this research, grammar understanding focuses on tenses, i.e. the 3 basics of tenses. Tenses or what is commonly called the tense in English is a pattern of every sentence in English, so that we wasknow when a situation or action occurs or is carried out by the subject of the sentence in question even though the sentence is not given time (Rahman et al., 2021). Warriner (1977) explains that tenses are an important and fundamental element to learn. Tenses are used to show the circumstances around an event's occurrence. The time shown can be past, present, and future (Mauliddiyah, 2021).

2. Character of Grammar Understanding

The ability of students to comprehend and use grammar principles to create coherent and accurate sentences is known as grammar comprehension. According to this study, grammar understanding is crucial for learning English, particularly for high school pupils studying tenses. One aspect of grammar that must be mastered is tense. Simple present, present perfect, simple past, simple future, and other tenses are among the sixteen tenses that are utilized in English classes (Khairunnisa Dwinalida & sholeh setiaji, 2024).

Understanding tenses is very important in language learning. It is directly related to the accuracy and clarity with which information is conveyed. This research is only shown in 3 tenses, such as Past Tense, Present Tense and Future Tense.

1. Simple Past Tense

The past tense is one of the English verb tenses used to describe actions, events, or situations that occurred and were completed in the past. The simple past tense follows specific structures and patterns that learners must understand. Within this tense, sentences can be categorized into two types: verbal and nominal. As noted by Azar & Hagen (2017), there are several sentence structures associated with the simple past tense (Khairunnisa Dwinalida & sholeh setiaji, 2024).

Table 2.1
The pattern of S*imple Past Tense*

Verbal Forms	
Affirmative	Subject + Verb 2 + Object/Complement
Negative	Subject + Did + Not + Verb 1 + Object/ Complement
Interrogative	Did + Subject + Verb 1 + Object/ Complement?
Nominal Forms	
Affirmative	Subject + To be 2 (was/were) + Complement
Negative	Subject + To be 2 (was/were) + Not + Complement
Interrogative	To be 2 (was/were) + Subject + Complement?

2. Simple Present Tense

Present Tense is an English tense used to express a current event, habit, general fact or permanent state. Present Tense uses the first verb form (V1) in positive sentences and is often accompanied by adverbs of time such as 'every day', 'always' or 'now'.

Learners with a solid grasp of the simple present tense demonstrate a clear understanding of its structure, rules, and usage. They are able to use it effectively in everyday conversations, accurately express routine

actions and general facts, and correctly form both questions and negative sentences (M. Dzaki Sholihin et al., 2023).

As cited in (Abdul, 2016), Azar explains that the simple present tense is commonly used to describe actions or situations that happen regularly, consistently, or habitually. These events occur in the present, have occurred in the past, and are expected to continue in the future. The simple present tense follows various sentence patterns, which include different structures depending on the context (Fatmawati et al., 2023).

Table 2.2
The pattern of Simple Present *Tense*

Nominal Form
S+ to be 1(are, am, is) + Complement
S + to be 1(are, am, is) + not + Complement
To be 1(are, am, is) + S + Complement?
Verbal Form
S + Verb 1 + (s/es) + O/C
S + Do/does + not + Verb 1 + O/C
Do/does + Verb 1 + O/C?

3. Simple Future Tense

The future tense is an English tense used to express events that washappen in the future. There are several ways to form the future tense, depending on the context and the meaning you want to convey.

The simple future tense is formed by placing the auxiliary verb was(or its contracted form) before the base form of the main verb. For example, "I wasarrive tomorrow" or "I won't leave on Wednesday" (Alberto Ardiansyah et al., 2022)

11

Table 2.3

The pattern of Simple *Future Tense*

Nominal Form
Subject + was + Complement (adjective/noun/adverb)
Subject + wasnot (won't) be + Complement
Was+ Subject + be + Complement?

Verbal Form
Subject + was+ Verb 1
Subject + wasnot (won't) + Verb 1
Was+ Subject + Verb 1?

B. Concept of Game Based Learning

1. Definition of Game Based Learning

Game-based learning is commonly defined as a form of gameplay designed with specific educational goals in mind. While it is often associated with digital games, this is not always the case. According to Plass et al. (2015), designing educational games requires a careful balance between delivering instructional content and maintaining engaging gameplay. Game-Based Learning (GBL) is an instructional strategy that incorporates elements from both digital and physical games into learning activities to boost student motivation and participation. These activities help foster a dynamic learning environment that can enhance students' academic performance.

The GBL platform integrated with generative AI is a research initiative that merges game-based learning principles with generative technologies of the digital era. It serves as a framework for developing game-based learning systems. Designed to support instructional management, the platform enables learners to actively engage and interact with real-time activities through gamified experiences (Muengsan & Chatwattana, 2024).

Research highlights that successful implementation of game-based learning (GBL) depends on several key factors, including a solid understanding of games, the ability to assess their educational value, and the skill to align them with specific learning objectives. Educators must thoughtfully consider the pedagogical foundations behind their instructional design. For instance, they may incorporate commercial games, utilize purpose-built educational games, adapt or personalize existing games, or even develop new ones tailored to specific learning contexts (Tinterri et al., 2023).

Game-based learning (GBL) activities can foster an engaging and stimulating educational environment that supports improved academic performance. GBL offers several advantages for learners, such as promoting collaboration, encouraging active learning to enhance problem-solving in clinical settings, and strengthening clinical reasoning and decision-making abilities (Xu et al., 2023). GBL fosters critical thinking and problem solving abilities in students while improving their understanding of difficult ideas by providing an engaging and dynamic learning environment. By enabling students to apply theoretical information in practical, practice-oriented circumstances, it also promotes experiential learning.

In language learning, game-based learning (GBL) is frequently used to support students in mastering grammar, a subject often viewed as difficult and uninteresting. Educational games designed for this purpose enable learners to strengthen their grammar skills progressively through engaging, repetitive challenges of varying difficulty. Incorporating competitive features and reward systems further enhances student motivation to persist in their learning. Among the key benefits of GBL are the promotion of collaborative awareness, opportunities for active learning, and the development of critical thinking skills such as problem-solving, clinical reasoning, and decision-making.

In line with this, incorporating online quiz platforms such as *Kahoot!*, Quizizz, and Wordwall.net into grammar instruction can enhance both intrinsic and extrinsic motivation among students. These tools help make lessons more

engaging and meaningful, allowing students to grasp grammar concepts in a more enjoyable and less repetitive way (Chandra Segaran & Hashim, 2022).

Game based learning platforms (GBPs) like *Kahoot!* serve as effective tools for enhancing the learning experience for both educators and students (Mihat et al., 2024). Researchers have utilized the *Kahoot!* application to evaluate its effectiveness in supporting grammar comprehension (Ningtias et al., 2023).The results indicated that students found *Kahoot!* helpful in maintaining focus during online lessons, which in turn contributed to improved learning outcomes. Moreover, the majority of students reported positive experiences using the platform. *Kahoot!* was specifically designed to promote student engagement and active participation in language learning, while also enabling teachers to deliver more meaningful and comprehensive language instruction (Chandra Segaran & Hashim, 2022).

2. *Kahoot!*

Kahoot! is a game-based learning platform that allows educators, trainers, or presenters to create interactive quizzes, discussions, and surveys that can be played in real-time by participants using digital devices such as smartphones, tablets, or computers. *Kahoot!* is designed to increase student engagement, motivation, and participation in the learning process through a fun and competitive environment. Typically, *Kahoot!* quizzes are presented in the form of multiple-choice questions, with a time limit for each item. Participants respond using their own devices, and scores are awarded based on the accuracy and speed of their answers. Results are displayed instantly through a leaderboard, encouraging positive competition among learners.

It resembles a *PBL* questionnaire with one question displayed at a time and four answer choices to choose from. The question and answer options are displayed on a shared screen, and students can select their answer using their personal device. Typically, Kahoot games have a time limit and a live

leaderboard showing the points earned and ultimately the game's winner (Maraza-Quispe et al., 2024).

Figure 2.1 The picture of kahoot!

Kahoot stands out as a popular tool that increases classroom interaction and learning experience. In order to increase student motivation and create a vibrant and competitive learning atmosphere, Kahoot! uses game design elements like graphics, music, noises, points and competitive leaderboards (Özdemir, 2024).

Furthermore, Kahoot! aligns with the principles of constructivist learning theory, which emphasizes that learners actively construct their own knowledge through interaction and engagement. By integrating game mechanics such as point systems, countdown timers, music effects, and colorful visuals *Kahoot!* transforms *PBL* drill-and-practice activities into dynamic, learner-centered experiences that foster both intrinsic and extrinsic motivation (Wang & Tahir, 2020).

Students who used *Kahoot!* during grammar instruction demonstrated higher levels of concentration and retention compared to those taught via conventional methods. This is attributed to the immediate feedback, time-bound challenges, and social elements embedded within the platform. These factors help reduce boredom and increase focus, particularly in subjects like grammar, which are often considered monotonous when taught *PBL*ly (Bicen & Kocakoyun, 2018).

In addition, *Kahoot!* supports differentiated learning, allowing teachers to tailor question difficulty and pacing. It is especially beneficial for language learning contexts where grammar concepts require repetition, attention to form, and quick recognition of errors. The ability to repeat games, view question-by-question breakdowns, and analyze individual or class-wide performance further enables teachers to conduct formative assessments effectively.

Moreover, Kahoot! enhances not only cognitive engagement but also emotional and behavioral engagement. The platform promotes active participation and collaboration among students, even when working individually (Licorish et al., 2018). The competitive yet low-stakes nature of the game helps reduce anxiety and supports a positive classroom climate where students are more willing to take risks and learn from mistakes.

Therefore, *Kahoot!* is more than a simple quiz tool it is an innovative educational technology that merges assessment and engagement. In the context of grammar instruction, it provides a powerful means to reinforce language rules in a way that is accessible, enjoyable, and pedagogically sound.

C. SMAN 3 Bengkulu City

SMAN 3 Bengkulu City is one of the publicsenior high schools that has a variety of student backgrounds, especially in terms of English language skills. Based on initial observations, many students in this school face difficulties in learning grammar, which is one of the basic components in mastering English. This challenge is mostly caused by the conventional learning methods that tend to be monotonous, thus making students feel less motivated to learn. The implementation of Game Based Learning supported by AI at SMAN 3 Bengkulu City aims to improve students' understanding of English grammar. This research, at this high school wasexplore how GBL can have a positive impact on students' grammar skills. This school was chosen because it has a

varied background of students with learning difficulties, especially in grammar mastery.

This research aims to examine the implementation of Digital era (AI)-based Game Based Learning (GBL) in improving students' understanding of grammar at SMAN 3 Bengkulu City. The implementation of GBL in this school was explored through several approaches, including an evaluation of students' motivation, engagement and learning outcomes after using game-based learning methods.

Some of the underlying reasons for choosing SMAN 3 Bengkulu City as the object of research include:

1. Student Condition:

    Students at SMAN 3 Bengkulu City have varying levels of English language skills. There are students who show great interest in English, but most have difficulty in learning grammar. This factor provides an opportunity to evaluate the effectiveness of GBL in improving grammar comprehension among students with diverse abilities.

2. *PBL* Learning Methods:

    So far, English learning methods in schools still focus on the *PBL* approach, where teachers give explanations and students follow written exercises. This method is considered to be unable to attract students to learn more about grammar, which is often considered complicated. The implementation of GBL is expected to be an alternative to increase students' involvement in the learning process.

3. Technology Support:

    SMAN 3 Bengkulu City has adequate facilities in terms of educational technology, making it possible to implement AI-based GBL. With access to computer devices and internet connection, the application of technology in learning can be optimised.

This research wasuse GBL supported by Digital era to personalise grammar learning. Each student wasfollow a game module tailored to their

ability level, where the AI wasprovide feedback and improvement suggestions automatically. This feedback wasallow students to learn grammar at a pace and difficulty level that suits their abilities, and minimise repeated errors through adaptive learning.

The aspects reviewed in this case study include:

1. Student Motivation and Engagement:

    The research measure the extent to which GBL can increase students' motivation and engagement in learning grammar. This can be seen from how often students are actively involved in the game, as well as their desire to complete each challenge given in the game.

2. Student Learning Outcomes:

    This research also measure the improvement of students' learning outcomes in grammar comprehension after using GBL. A Pre-test and Post-test was conducted to see any significant differences in grammar comprehension among students who use GBL compared to those who continue to learn using *PBL* methods.

3. The role of Digital era (AI):

    One focus of this research is to explore the role of AI in learning through GBL. AI is expected to provide automatic customisation of materials based on students' performance, so that they are always at the appropriate level of challenge. The use of AI in this game is also expected to provide immediate feedback that helps students correct grammatical errors quickly and precisely.

Methodological Approach: This research was utilise both quantitative. Data collection was done through:

1. Pre-test and Post-test:

To measure students' understanding before and after the use of GBL.

2. Treatment with Students:

To get Implementation GBL on students' learning process in learning grammar.

D. Previous Study

There are several previous studies regarding the use of game-based learning (GBL) and digital tools to improve students' learning outcomes, especially in grammar understanding and motivation. Therefore, the author refers to several relevant studies. The first study is from Irma Rahmawati and Todo Sibuca (2021), entitled "Penelitian Eksperimen Siswa Kelas Delapan SMP PGRI Kalimulya." This study focuses on the use of web-based learning games as learning media. Using an experimental method, the researchers found that web-based games significantly enhanced students' motivation, understanding, and academic achievement. These findings indicate the potential of integrating game-based tools into classroom learning environments.

The second study is from Vivi Aries Ningtias et al. (2023), with the title "*Kahoot!* Application Effectiveness to Increase English Grammar Mastery." This research also employed an experimental approach and examined the effectiveness of *Kahoot!* as an interactive tool for learning English grammar. The results revealed that using *Kahoot!* made the learning process more interactive and engaging, which boosted student motivation and fostered collaborative learning. Therefore, *Kahoot!* is seen as a powerful tool to enhance grammar mastery in a fun and effective way.

The third study is conducted by Maosen Xu et al. (2023), titled "Game-Based Learning in Medical Education." This study applies an experimental design to examine how GBL impacts clinical education. The findings show that GBL improves not only knowledge retention but also clinical skills and student engagement. Although the context is in medical education, the general

conclusion supports the broader applicability of GBL in improving educational outcomes.

The fourth study by Ayu Eka Meiliawati et al. (2024), titled "Penggunaan Media Berbasis Artificial Intelligence (AI) untuk Pembelajaran," is a literature review that discusses the role of AI-based media in enhancing learning. The study concluded that such media increase student motivation, personalize learning experiences, and provide real-time feedback. These elements are crucial in supporting individual student needs and improving learning effectiveness.

Another relevant study is from Warid Mihat et al. (2024), titled "*Kahoot!* in Higher Institution: A Comparative Study." This study compares student perceptions regarding the use of *Kahoot!* as a game-based learning platform in higher education settings. The results showed that *Kahoot!* effectively increased motivation and engagement, although it had some technical and time-related challenges. Nonetheless, the study supports its continued use in educational contexts.

Lastly, a study by Maxyn Leitner et al. (2023), titled "Designing Game-Based Learning for High School AI Education," uses a design-based research method. It highlights that integrating GBL into AI education for high school students enhances their understanding and interest in AI concepts, while also promoting critical thinking skills. This study demonstrates the long-term benefits of well-designed GBL in complex subject areas.

Table 2.4

Conclusion of previous *research*

No	Researcher's Name	Title	Result	Conclusion
1	Irma Rahmawati, Todo Sibuca	Penelitian Eksperimen Siswa Kelas Delapan SMP PGRI Kalimulya	Web-based learning games improve students' motivation, understanding,	Web-based games are effective in enhancing student

			and academic achievement	learning outcomes
2	Vivi Ariesma Ningtias et al.	*Kahoot!* Application Effectiveness To Increase English Grammar Mastery	*Kahoot!* makes learning more interactive, increasing motivation and collaborative learning	*Kahoot!* is an effective tool for increasing grammar mastery through interactive learning
3	Maosen Xu et al.	Game-based Learning in Medical Education	GBL improves clinical skills, knowledge retention, and student engagement	Game-based learning is effective in medical education contexts
4	Ayu Eka Meiliawati et al.	Penggunaan Media Berbasis Artificial Intelligence (AI) Untuk Pembelajaran	AI-based media increase motivation, personalize learning, and provide real-time feedback	AI-based educational tools enhance personalized and efficient student learning
5	Warid Mihat et al.	*Kahoot!* in Higher Institution: A Comparative Study	*Kahoot!* increases motivation and engagement, despite technical and time limitations	Despite some limitations, *Kahoot!* proves beneficial in higher education settings
6	Maxyn Leitner et al.	Designing Game-Based Learning for High School AI Education	GBL increases understanding and interest in AI concepts, promoting critical thinking skills	GBL design supports effective teaching of complex AI topics in high school

E. Theoritical Framework

At this stage, identify the problems faced by students in understanding English grammar. Many students find it difficult to learn grammar due to monotonous and uninteresting learning methods. This is in contrast to *PBL*

21

learning approaches that present learning that tends to be monotonous and boring for some students, especially secondary school students. As a result, they often feel pressured and lack confidence in using English, especially in grammar (Meiliawati et al., 2024). The weaknesses of *PBL* methods such as lectures and practice questions make it difficult for students to understand grammar concepts in depth, thus reducing their motivation and interest in learning.

In this digital age, technological advancements offer a variety of opportunities to address educational challenges. Digital era (AI) enables the development of applications and teaching methods that are more flexible and meet the needs of students. The use of AI in education allows for the analysis of student needs and sensitivity levels, allowing for the personalization of instruction for each individual. The term Game Based Learning (GBL) refers to a methodology that uses game elements in education to make learning more engaging and dynamic. With GBL, the learning process using digital games allows students to actually learn by playing, unlike the usual way of learning where the subject has to sit and read a book. Even reading a manual is often not necessary in the first place when the subject is playing, and learning, through digital games (Hidayat, 2018).

This phase focuses on implementing AI-based game-based learning at SMAN 3 Bengkulu City and observing its effects on students' grammar comprehension. This study wasexamine how GBL that is based on AI can help students understand language more effectively and increase their motivation to learn. After implementation, the data obtained from the study was analyzed to determine the method's effectiveness. The results wasshow whether or not GBL based on AI contributes significantly to students' understanding of tata bahasa and identify the factors that contribute to and hinder learning.

This study consists of two variables, namely the independent variable (X) and the dependent variable (Y). The independent variable is Game-Based Learning on Digital era, while the dependent variable Grammar understanding

student's at grade 11th grade SMAN 3 Bengkulu City. The purpose of this research is to find out whether the use of Game Based Learning on Student's Grammar Understanding in era Artificial Intellengent. The following graph illustrates the conceptual framework of this research as follows:

Game Based Learning on Digital era (**X**)	→	Grammar Understanding student's at grade 11th SMAN 3 Bengkulu City (**Y**)
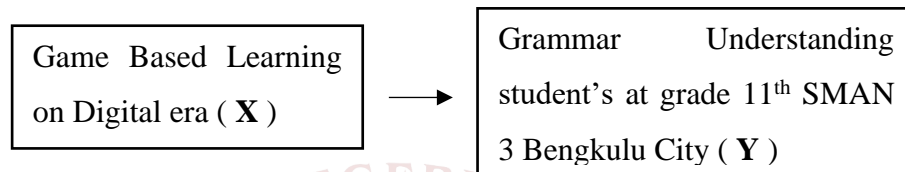
F. Research Assumption

Assumptions or basic beliefs in research are initial hypotheses that have not been proven but are believed to have an impact in the research context. This assumption serves as a basis that directs the researcher to explore the phenomenon under study and helps focus on the key aspects to be test.

Based on the definition of assumptions above, this study assumes that the use of Game Based Learning can significantly affect the grammar of grade 11 students of SMAN 3 Bengkulu. Through learning by playing, it is expected that students wasmore easily understand the tenses learned. The use of Game Based Learning is also predicted to improve their grammar ability to use it in daily sentences.

In addition, the learning process that utilizes games with Digital era technology such as *Kahoot!* is believed to increase students' motivation, because this media is very close to their daily lives and provides a more interesting learning experience compared to *PBL* teaching methods.

G. Hypothesis

The formulation of this research hypothesis can be explained below:

1. Alternative Hypothesis (Ha): There is a positive and significant effect of using Game Based Learning on Digital era (X) on Student's Grammar Understanding at 11th Grade (Y) at SMAN 3 Bengkulu City.
2. Null Hypothesis (Ho): There is no positive and significant effect of using Game Based Learning on Digital era (X) on Grammar Understanding Student's at 11th Grade (Y) at SMAN 3 Bengkulu City