

CHAPTER 2

LITERATURE REVIEW

This chapter presents a brief explanation of the theories that support the research. The theories relate to vocabulary acquisition, game-based learning, and other areas of learning.

A. Theoretical Framework

1. Vocabulary Acquisition

Vocabulary is a core component of language competence because it highlights learners' ability to express ideas, comprehend messages, and engage in communication. It serves as the foundation for developing the four language skills (listening, speaking, reading, and writing) and is therefore essential for overall proficiency (Milton, 2009). In linguistic terms, vocabulary refers not merely to a collection of words to memorize but encompasses knowledge of form, meaning, and usage. Learners must understand how words are pronounced or written (form), what they mean in different contexts (meaning), and how they function grammatically and pragmatically in sentences (use) (Nation, 2001). Building on this understanding, vocabulary learning focuses on how learners acquire, practice, and retain new words in meaningful contexts. There are two key processes involved in mastering vocabulary: vocabulary learning and vocabulary acquisition, each of which involves different ways learners internalize new words.

Vocabulary acquisition, on the other hand, is defined as the process through which learners gradually internalize and retain new lexical items. This process involves moving from initial exposure to deeper understanding and, eventually, toward active use. Meara (1980) and Nation (2001) defined vocabulary acquisition as the gradual accumulation of knowledge through repeated encounters with words in context. Unlike vocabulary learning, it may be structured and intentional, but acquisition is typically implicit and unconscious, reflecting how learners pick up new words without direct instruction (Ellis,

2008). According to Krashen (1989), vocabulary acquisition occurs naturally when learners are exposed to comprehensible input in contexts slightly above their current proficiency level. Learners pick up new words not through memorization, but through repeated exposure and contextual understanding. Each exposure reinforces different aspects of word knowledge (its form, meaning, collocations, and pragmatic use), contributing to long-term retention. For instance, a learner might first notice the word “*harvest*” while reading, then hear it in a video game, and later use it when writing a sentence. Each encounter strengthens connections between meaning and uses without explicit instruction.

The distinction between vocabulary learning and vocabulary acquisition lies primarily in the degree of awareness and intentionality. Vocabulary learning involves conscious effort, such as studying word meanings or practicing usage. According to Schmitt (2010), vocabulary learning is an incremental process, meaning that learners gradually deepen their knowledge of a word through repeated exposure in varied contexts. For instance, learners may first recognize a word passively (receptive knowledge) and later develop the ability to use it accurately in communication (productive knowledge). Traditional methods such as word lists and flashcards have long been used to enhance vocabulary learning; however, they are often criticized for being decontextualized and monotonous, which limits retention and motivation (Laufer, 2005). In contrast, vocabulary acquisition occurs incidentally as learners engage in meaningful activities like reading, watching videos, or playing games.

This distinction is crucial for the present study. While previous studies like Wicaksono et al. (2024) and Ramanujam and Ismail (2024) confirmed that platforms like Roblox can improve vocabulary, they also revealed that such improvement does not primarily occur through deliberate study. Instead, learners develop vocabulary through interaction, gameplay, and contextual exposure. For example, players often encounter unfamiliar words, attempt to understand them through context, and use strategies such as asking peers or using translation tools to clarify meaning.

2. Game-Based Learning

Game-Based Learning (GBL) emphasizes the use of game elements to enhance learning outcomes by combining entertainment with pedagogy. According to Landers (2014), GBL is effective because games naturally incorporate features such as goals, rules, feedback, and rewards that enhance learner motivation and engagement. Gee (2008) further elaborated on how video games create powerful learning environments, arguing that good games embody key learning principles that teachers can also apply in classrooms. In other words, good games are designed around the same pedagogical principles that effective teachers use, where learners construct knowledge through experience, exploration, and interaction.

Gee (2013) proposed that well-designed video games embody a set of learning principles, often summarized into sixteen key principles, including identity, interaction, production, risk taking, customization, agency, well-ordered problems, challenge and consolidation, just-in-time information, situated meaning, pleasantly frustrating experiences, system thinking, exploration and rethinking goals, the use of smart tools and distributed knowledge, cross-functional teams, and performance before competence. These principles are grounded in the idea that learning occurs most effectively through goal-driven experiences, social interaction, feedback, and reflection.

However, rather than adopting all sixteen principles as rigid analytical categories, this study synthesizes several core aspects of these principles into a more focused set of indicators, namely motivation, enjoyment, interaction, reflection, situated meaning, and learning context. These indicators are selected because they capture the most relevant cognitive, social, and affective dimensions of learning emphasized in Gee's (2008) framework and make the data more manageable for thematic analysis. In this way, the indicators function as analytical lenses derived from, rather than directly stated in, Gee's (2008) theoretical principles, which are explained as follows:

- a. Motivation

Motivation refers to the internal or external factors that encourage the participant to engage with the game and continue interacting with English vocabulary. Statements categorized under this indicator reflect how interest and engagement drive continued exposure to language during gameplay.

b. Enjoyment

Enjoyment refers to the participant's emotional responses to gameplay, including fun, challenge, excitement, or satisfaction. Data on enjoyment demonstrate that emotional involvement supports incidental learning.

c. Interaction

Interaction refers to communicative exchanges between the participant and other players, developers, or online communities. This includes trading, chatting, asking for help, or responding to system messages.

d. Reflection

Reflection involves the participant's conscious efforts to evaluate or clarify vocabulary after gameplay. This includes guessing meanings, checking unfamiliar words using AI or social media, and revisiting language encountered during the game.

e. Situated meaning

Situated meaning refers to how vocabulary is understood through contextual cues such as visuals, icons, actions, and game mechanics. This indicator emphasizes experiential learning, where language meaning emerges from interaction with tasks and visuals.

f. Learning context

Learning context describes the environmental and situational conditions that shape vocabulary exposure, including repeated gameplay, cross-platform use, and social media environments. This indicator focuses on how frequency, familiarity, and contextual repetition contribute to incidental vocabulary acquisition.

According to Gee (2013), several positive impacts are observed in high-quality video games. Firstly, games present well-ordered problems and challenges that match learners' current skill levels rather than isolated facts,

ensuring they progress step by step with appropriate tools to solve them. Pacheco-Velazquez et al. (2024) support this by showing that serious games that structure tasks progressively help learners develop strategies and reflection. As players advance through levels, they engage in a cycle of hypothesis testing and reflection that mirrors the inquiry-based learning process observed in formal education.

Secondly, games lower the cost of failure, allowing players to take risks, explore alternatives, and try different strategies without fear of severe consequences. Failure in a game environment is reframed as a part of the learning process rather than a negative outcome. As Liu et al. (2023) found, even students who failed to complete the game still demonstrated significant learning gains, indicating that meaningful progress can occur through failure-based experiences. This continuous feedback loop fosters resilience and adaptability, which are key traits for lifelong learning. Similarly, Gao et al. (2024) show that repeated exposure to trial-and-error situations trains cognitive flexibility, attention control, and adaptive reasoning, enabling players to apply learned strategies to new, unfamiliar tasks.

Ivgin and Akcay (2024) highlighted that integrating educational content into digital game environments improves students' academic performance, concentration, and collaboration. This is because games simulate authentic problem-solving contexts where learners actively construct meaning and apply knowledge, rather than passively receiving information. Overall, Game-Based Learning (GBL) provides an interactive and experiential approach to education, where learning occurs through doing, reflecting, and adapting.

3. Vocabulary Acquisition through Game-Based Learning

Vocabulary acquisition is a central component of second language learning, as vocabulary knowledge directly influences learners' ability to comprehend and communicate effectively (Nation, 2001). Traditional vocabulary teaching often relies on rote memorization and drills, which may lead to disengagement and limited long-term retention. To address these challenges, researchers have increasingly turned to Game-Based Learning (GBL) as a promising approach.

GBL facilitates vocabulary acquisition by embedding new words within meaningful, interactive contexts. In these environments, learners engage in gameplay tasks, such as quests, puzzles, or simulations, where vocabulary is encountered naturally as they achieve goals, solve problems, or interact with others. For example, a study by Sutrisno (2023) found that digital games significantly contributed to incidental English vocabulary acquisition among young learners; learners retained new words through gameplay exposure. Moreover, Chowdhury et al. (2024) argued that digital games provide authentic contexts for vocabulary acquisition, enabling learners to encounter words naturally as they perform in-game tasks.

Al-Sofi (2024) found that game-based learning activities significantly enhanced vocabulary acquisition among Saudi university students majoring in non-English fields, suggesting that GBL can be effective even in higher education EFL settings. Similarly, Gavharoy (2024) reported that B1-level language learners who participated in game-based vocabulary interventions showed noticeable gains in vocabulary acquisition and use, along with heightened motivation and enjoyment.

One of the key mechanisms at work in GBL for vocabulary acquisition is incidental learning, the process by which learners acquire new words without deliberate memorization by being immersed in meaningful activities where the target vocabulary is embedded (Hulstijn, 2013). Setiawan et al. (2025) investigated factors influencing incidental vocabulary acquisition in EFL students and found that repeated exposure, meaningful context, and learner engagement were critical to retention. In a game-based context, repeated exposure to vocabulary through gameplay, the environment's interactive affordances, and motivation induced by game mechanics combine to create favorable conditions for incidental acquisition.

In addition to incidental exposure, GBL offers some specific affordances for vocabulary acquisition. For instance, Chen et al. (2019) found that learners who engaged with a mobile vocabulary learning app incorporating gamified assessments and peer-ranking systems significantly outperformed those using a

non-gamified version. The study further revealed that engagement with game elements such as feedback, competition, and interactive challenges positively correlated with vocabulary acquisition. Furthermore, the elements of fun, challenge, reward, and feedback loops in games increase learners' willingness to spend more time on language tasks, thereby increasing opportunities for vocabulary acquisition. Moreover, in games, learners can experiment, fail, retry, and receive scaffolding through game mechanics. This repeated exposure to vocabulary across various situations supports deeper acquisition (Gao et al., 2024).

However, GBL for vocabulary acquisition also presents challenges. As Sutrisno (2023) pointed out, although learners acquire vocabulary in game contexts, many of these words are specific to the game environment. They may not transfer easily into broader language use. Additionally, for GBL to be effective, the game must align vocabulary acquisition with the learners' level, provide scaffolding, embed vocabulary in meaningful tasks, and include feedback mechanisms. Poorly designed games may not produce significant gains (Qian & Clark, 2016).

4. Vocabulary Acquisition through Grow a Garden on Roblox

Among the many digital platforms available, Roblox has gained attention for its educational potential due to its participatory, creative, and interactive environment. Originally designed as an entertainment platform, Roblox has evolved into a user-generated digital ecosystem where players can not only play games but also design, publish, and learn through immersive simulation. Recent studies have identified its growing use in educational contexts, particularly for language learning and the development of 21st-century skills (Khalil & Haqdad, 2023). As such, Roblox-based games like Grow a Garden offer fertile ground for understanding how incidental learning can occur in playful, goal-oriented virtual settings.

Figure 2. Grow a Garden Game Interface



Grow a Garden (GAG) is a free-to-play life-simulation and farming-based game on the Roblox platform, officially released in March 2025 by a young developer known as BMWLux, later joined by Splitting Point Studios, led by Jandel Madsen and Do Big Studios (Notopoulos, 2025). Players can also complete quests and participate in seasonal events to earn free seeds, gears, pets, decorative items, and event-limited items. In Figure 2, the interface is designed to be intuitive and visually engaging, combining colorful graphics, icons, and labeled menus to guide players through different game functions. Key elements such as “SEEDS,” “GARDEN,” and “SELL” were clearly displayed at the top of the screen, indicating the primary actions players can perform. These labels not only organize gameplay activities but also expose players to commonly used vocabulary in context, allowing them to associate words with specific actions. The game also includes a feature called “Guide” that helps new players understand gameplay mechanics, farming techniques, and available upgrades. Social interaction is another integral component of Grow a Garden. Through the Trade system, players can exchange items, crops, or pets, promoting collaboration and communication within the gaming community. In addition, the “Shop” and “Market” features allow players to explore new content, purchase decorative items, and enhance their garden aesthetics, thereby enhancing creativity and personalization.

Within this environment, “Grow a Garden” stands out as an example of an informal game-based learning space where learners may incidentally acquire English vocabulary through playful, goal-oriented activities. The game places players in a virtual farming world where they plant, water, and harvest crops to earn in-game currency. These actions naturally exposed players to domain-specific English vocabulary that appears in textual commands and item labels. Because players must understand these words to progress, vocabulary acquisition occurs implicitly through task engagement rather than explicit study.

In the context of Grow a Garden (GAG), vocabulary acquisition is closely tied to the player’s interaction with in-game content and objectives. The game requires players to manage tasks such as planting seeds, watering crops, selling produce, and upgrading their gardens, all of which introduce a range of lexical items related to nature, the economy, and daily activities. This process aligns with the experiential learning principle, which holds that learners acquire language through direct interaction and meaningful engagement (Kolb, 2014). By associating vocabulary with specific actions or goals, players also retain it more effectively through repeated use in context. Calvo-Ferrer and Belda-Medina (2021) indicated that vocabulary can be acquired incidentally, i.e., without explicit instruction through video game play. Their study found that playing an online multiplayer game provided exposure to new L2 vocabulary, supporting incidental acquisition.

Game-based learning research consistently finds that motivation and engagement are key drivers of vocabulary acquisition in digital game contexts. For example, a study on game-based vocabulary retention by Zhong (2024) found that increased motivation led to more frequent word repetition, improving retention. With GAG, the enjoyable “*Grow your garden*”, “*Unlock rare items*”, “*Trade and Upgrade*” loop keeps players returning; such ongoing engagement means extended exposure to vocabulary and more opportunities for incidental acquisition.