



INTERNATIONAL JOURNAL OF  
HUMANITIES, PHILOSOPHY  
AND LANGUAGE  
(IJHPL)  
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## LEXICLIMB: USING DIGITAL BOARD GAME TO ENHANCE VOCABULARY ACQUISITION AMONG YEAR 4 PUPILS IN ESL CLASSROOM

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### Article Info:

#### Article history:

Received date: 20.02.2025

Revised date: 19.03.2025

Accepted date: 30.04.2025

Published date: 10.06.2025

#### To cite this document:

Yazid, N. A. M., & Abdul Aziz, A. (2025). Lexiclimb: Using Digital Board Game To Enhance Vocabulary Acquisition Among Year 4 Pupils In ESL Classroom . *International Journal of Humanities, Philosophy and Language*, 8 (30), 17-33.

DOI: 10.35631/IJHPL.830002.

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### Abstract:

This research aims to investigate the effectiveness of LexiClimb, a digital board game adapted from Snake and Ladder and Scrabble, in enhancing vocabulary acquisition among 60 Year 4 pupils in a primary school in Kuala Lumpur, Malaysia. LexiClimb integrates interactive gameplay with instructional material, necessitating learners to accomplish vocabulary quests and challenges as they progress in the game. This research applied a mixed-method research design and data were collected through pre- and post-tests, pupil questionnaires, teacher feedback forms, reflective journals, and semi-structured interviews. The quantitative analysis showed that LexiClimb improved vocabulary acquisition from 13.3 to 22.1, demonstrating its potential as an engaging and effective learning aid. Qualitative data showed that pupils found the game motivating, engaging, fun, and interactive, with competitive features boosting intrinsic and extrinsic motivation. Teachers' observations showed improved language recall, engagement, and classroom interaction. The findings support theories of behaviourism, social constructivism, and game-based learning, indicating that LexiClimb's gamified design, characterized by repetition, immediate feedback, and collaboration, facilitates effective vocabulary acquisition. The tool's accessibility and adaptability render it a valuable resource for overcoming challenges in traditional ESL vocabulary instruction. The implications indicate wider applications of LexiClimb in grammar instruction or with the lower primary pupils, underscoring its potential as a transformative digital resource for ESL classroom learning.

### Keywords:

Vocabulary, Board Game, Game-Based Learning, Vocabulary Acquisition, Primary Education, ESL Classroom

## Introduction

The English language's vocabulary, known for its extensive range and ever-changing nature, plays a crucial role in facilitating effective communication and fostering cognitive academic growth. Vocabulary diversity is vital for language acquisition, and proficient pedagogical approaches can assist learners in enhancing their comprehension and application of the target language (Dauletova, D., & Rahimova, D., 2022). Vocabulary is seen as an essential component of linguistic competence and the foundation of language acquisition. It plays a major role in the process of learning a language, and the methods used for teaching have a significant impact on how learners acquire new words. Language proficiency is profoundly influenced by vocabulary, which is vital for effective communication and comprehension (Mongkolchai Tiansoodeenon et al., 2023).

The Malaysian education system acknowledges the crucial significance of acquiring vocabulary in the ESL (English as a Second Language) classroom, as stated in the Malaysia Education Blueprint 2013-2025. The Malaysia instruction Blueprint for 2015-2025 seeks to advance English language instruction and improve the effectiveness of education policies for internationalization (Suo, 2023). The Blueprint emphasises the necessity of a comprehensive ESL curriculum that seamlessly incorporates vocabulary growth into all facets of language acquisition, recognising that a solid vocabulary base is crucial for students to attain academic excellence and international competitiveness. This comprehensive policy framework seeks to enhance pupils' English language competency by prioritising the use of effective vocabulary teaching practices. In Malaysia, the Ministry of Education (MoE) has introduced several measures to improve vocabulary acquisition. These measures include the integration of technology-based learning tools, teacher training programmes that emphasise innovative teaching methods, and the encouragement of extensive reading. These initiatives aim to establish captivating and interactive educational settings that inspire students to enhance their vocabulary and utilise it in meaningful conversations. The focus on vocabulary acquisition in Malaysia's ESL classes is a component of a wider approach to enhance total language competency, so equipping students with the linguistic abilities required to succeed in a society that is multilingual and multicultural. The Malaysian education system attempts to enhance cognitive academic growth and effective communication skills among learners by placing a strong emphasis on vocabulary development.

The process of acquiring vocabulary in ESL settings varies by multiple factors. Conventional methods frequently focus on rote learning and the usage of word lists. For instance, A. Linda et al. (2020) agrees that the memory strategies are the most chosen strategies for vocabulary learning among students in primary school, followed by strategies involving the dictionary and strategies involving guessing from the dictionary. However, modern research today supports more interactive, context-driven techniques that foster enhanced comprehension and memory. Brian Strong et al. (2023) has proven in their research that by utilising retrieval practice tools such as The Brain Dump, Low-Stakes Quizzes, and Flashcards can effectively improve the acquisition of ESL vocabulary and foster metacognition. This encompasses the utilisation of multimedia assets, face-to-face contacts, and learning activities centred around tasks that promote practical application and cognitive involvement.

Moreover, implementing educational games as a pedagogical method with young learners enhanced student involvement, enhanced knowledge assimilation and retention, and offered chances for practical real-world application (A. Saleh et al., 2022). The incorporation of game-

based learning and digital resources have revolutionised the instruction of language in contemporary classrooms. Research has shown that digital games have a key role in promoting vocabulary learning, particularly among Asian students. These games are helpful at strengthening specific language skills, such as vocabulary acquisition (Wu et al., 2020). Utilising interactive apps, online games, and multimedia materials enables the creation of customised learning experiences that address the varied requirements of young ESL learners. Game-based learning using digital technology has a favourable influence on the level of interest, willingness to participate, and the outcomes of acquiring English language skills for the ESL learners (Amal Abdullah Alhebshi et al., 2020).

In today's ESL classroom, vocabulary acquisition among pupils in primary schools is becoming more and more shaped by a combination of classic and creative methods. In primary school ESL settings, explicit vocabulary instruction that involves learners using stimulating vocabulary learning strategies can augment their knowledge of vocabulary (Mohd Haniff Mohd Tahir et al., 2021). To add, the significance of social interaction in the formation of vocabulary cannot be exaggerated. Engaging in collaborative activities, such as group projects, roleplaying, and peer-assisted learning methodologies, fosters effective communication and enhances the comprehension of unfamiliar vocabulary. Collaborative learning activities allow learners to develop their speaking skills by fostering a positive learning environment, increasing motivation, and solidifying vocabulary, concepts, and fluency (Dieu, L., 2022). These exercises not only facilitate the use of language in relevant situations but also foster the development of social skills and confidence in young learners who are studying English as a second language.

Although there is an increasing interest in utilising educational games for language acquisition, there is a notable lack of comprehension on the efficacy of digital board games that are expressly created to enhance vocabulary. Although there has been extensive study on traditional methods of vocabulary training, there is a noticeable absence of studies on the potential of digital board games to improve vocabulary acquisition in a classroom environment. Moreover, the extent to which modern learners favour game-based learning compared to traditional teaching approaches has not been sufficiently investigated. The existing body of literature predominantly concentrates on digital platforms, overlooking the potential advantages of digital board games in captivating learners and cultivating a more dynamic learning atmosphere. This study seeks to address these deficiencies by examining the efficacy of LexiClimb, a digital board game designed to enhance English language ability in learners. The study will also analyse students' preferences for game-based learning. Thereby offering valuable insights into the integration of digital board games into modern educational practices to improve vocabulary acquisition.

### **Research Objectives and Research Questions**

The research objectives are:

1. To examine the effectiveness of LexiClimb as a digital board game in enhancing the vocabulary acquisition and spelling skills of Year 4 pupils
2. To investigate Year 4 pupils' perceptions of LexiClimb as an engaging and effective tool for vocabulary acquisition.
3. To investigate the teachers' perceptions on the use of LexiClimb in enhancing the Year 4 pupils' vocabulary acquisition.

The research questions are:

1. How does the integration of LexiClimb enhance Year 4 pupils' vocabulary acquisition?
2. What are the Year 4 pupils' perceptions on the use of the LexiClimb to enhance the pupils' vocabulary acquisition?
3. What are the Teachers' perceptions on the use of LexiClimb to enhance the Year 4 pupils' vocabulary acquisition?

### **Literature Review**

There are two main components that will be discussed in the literature review section. They are the theoretical discussions on social constructivism theory, game-based learning theory and behaviourism theory and using board games to teach vocabulary in ESL classroom.

#### ***Theoretical Discussion: Social Constructivism, Game-Based Learning Theory and Behaviourism Theory***

Using board games to acquire vocabulary can effectively integrate many educational approaches that emphasise cognitive, behavioural, and social components of learning. According to Zsoldos-Marchis (2020), board games are regarded as an appealing instructional tool for students, enhancing their cognitive abilities and social aptitude. This was also agreed by Gerovasiliou & Zafiri, (2017) concluded in their research that the board games can enhance the motivation of six-year-old pupils to learn vocabulary and promote the integration of cognitive, behavioural, and social aspects of learning. This paradigm provides a solid basis for understanding how board games can improve the acquisition of language abilities. LexiClimb, the board game, promotes several vital educational components. Associated theories, models, and concepts that serve as the basis for this study have been utilised as pillars of support to construct the conceptual framework for this investigation and they are the social constructivism theory, the behaviorism theory, and the game-based learning theory.

Social constructivism is an educational theory developed by Lev Vygotsky in 1968. According to the idea, language and culture serve as the frames via which humans perceive, convey, and comprehend reality. Vygotsky's sociocultural approach in early childhood education emphasises the role of the social and cultural environment in teaching, learning, and development (Maidin, 2020). Amna Saleem et al. (2021) mentioned that the social constructivism prioritises active student participation, dialogue, and the sharing of information, with language, communication, and speech playing a crucial role in how we understand the world and ourselves through interactive processes. The connection lies in the fact that whereas the constructivist perspective regards knowledge as something that learners create independently by drawing from their own experiences in the surrounding world, the social constructivist perspective views knowledge as a product of collaborative efforts among learners, teachers, and peers. Social constructivism is a form of cognitive constructivism that highlights the collaborative aspect of learning, either with the guidance of a facilitator or through collaboration with peers. The collaborative learning can enhance motivation and fosters critical thinking skills, providing learners with the opportunity to participate in group activities and promoting mutual support within a social constructivist framework (Zhang, 2023). Moreover, the theory also emphasises the advantages of using board games as a collaborative and participatory approach to acquire language. Social constructivist learning models prioritise learners' independence, thoughtful analysis, solution-oriented thinking,

cooperative learning, support structures, and dialogue to facilitate meaningful learning outcomes (Mishra, 2023), which are the distinct components in vocabulary and spelling acquisition that a board game as a pedagogical tool can offer in an ESL classroom of primary schoolers. Board games inherently foster social contact among players, which is essential for the development of language skills. During gameplay, participants must utilise the designated language, engage in discussions to clarify meanings, and work together to advance in the game. The inherent sociability of board games further enhances motivation and engagement. Many learners find that learning in a social situation is more pleasurable and less daunting. Within the framework of social constructivism, in exploring the pedagogical affordances of a collaborative board game in a dual language immersion classroom. Poole et al. (2019) mentioned that the results of their study offer proof for earlier assertions and arguments that playing board games can create a learning environment where learners can experiment with ideas and language without worrying about making mistakes. This often leads to increased active participation and a willingness to take risks when using language. In the context of employing board games to boost students' involvement in vocabulary learning, York (2020) regarded this pedagogical tool as advantageous in promoting effective communication abilities and enhancing learners' involvement. Enhanced engagement is crucial for optimal learning outcomes since it motivates learners to completely engage in the learning process.

The theory of game-based learning, as explained by the expert, James Paul Gee, the approach of implementing the game-based learning and gamification in education enhance motivation, foster an attraction to learning, and result in markedly superior learning outcomes in comparison to conventional techniques (Liu et al., 2020). It proposes that the captivating and interactive elements of games have significant potential as effective instructional aids. Through the utilisation of effective game design components and learning theories, game-based learning approaches have the potential to effectively promote the development of students' skills for the 21st century learning (Qian & Clark, 2016). This idea asserts that games have the ability to not only inspire learners, but also offer them surroundings that are abundant in problem-solving chances, prompt feedback, and the opportunity for profound engagement through captivating challenges and narratives. Board games necessitate active engagement, drawing players into an immersive encounter where language is not merely a topic to be acquired, but a tool to be employed within a specific situation. Gerovasiliou & Zafiri (2017) mentioned that by modifying board games for young learners and aligning them with their language proficiency significantly enhances their incentive to study vocabulary, resulting in heightened engagement and enthusiasm in the classroom. As also agreed by Kazu and Kuvvetli (2023) in an observational study done on a group of ESL learners which resulted in where they predominantly conveyed favourable opinions with regards to the use of digital game-based tool and its natural features of getting them to be in a competitive mode as well as receiving immediate feedbacks are able to enhance their motivation in learning. Bahari (2020) also agreed that engaging in vocabulary games greatly enhances the vocabulary broadness and depth of second language learners. The active utilisation of vocabulary in the game enhances learners' comprehension and recall of new words and phrases. Furthermore, engaging in experiential learning through games provides learners with the opportunity to actively engage with language, make errors, and promptly receive feedback in a low-pressure setting. This can greatly improve the acquisition of vocabulary (Barr, 2019). The safe and low stakes setting provided by board games is crucial. The board games' participatory and entertaining nature enhances the learning experience, making it enjoyable and reducing stress levels. This setting can effectively alleviate



anxiety and establish a secure place for learners to engage in linguistic experimentation, make errors, and receive valuable feedback without apprehension of criticism (Geden et al., 2020).

Behaviourism, a theory developed by B.F. Skinner, views learning primarily as a response to external stimuli, the behavioural model perceives learning as a reaction to environmental stimuli via reinforcement and repetition. The concepts of behaviourism are very relevant when employing board games to help learners learn new words. Reinforcement is an inherent mechanism in board games. For instance, Shaheen et al. (2022) mentioned that behaviourist strategies are incorporated into educational games by using mechanisms of reinforcement to promote desirable behaviours. Giving out points or badges, for instance, for accurate responses can encourage students to practise frequently and connect with the material more deeply. Some of the examples include moving up the game board, gaining points, or hearing peers compliment them verbally. The repetition of proper usage is encouraged by this positive reinforcement, which strengthens the acquisition of new language. Furthermore, board games frequently incorporate repetition, which is a fundamental aspect of behaviourist learning. The theory places significant emphasis on the crucial role of reinforcement and repetition in the process of learning. Board games automatically generate feedback, which is another key feature of behaviourism. In accordance with the principles of behaviourism, structured learning activities that offer fast and unambiguous feedback are beneficial in moulding behaviour. This is especially helpful in the process of language acquisition, where constant practice and reinforcement are essential to the process of mastering new vocabulary and grammar structures (Petersen & Oliveira, 2017). In the event that a player utilises a term in an erroneous manner, the game may impose a penalty against them, or alternatively, other players may offer remedial feedback. This prompt reaction aids learners in promptly adapting their behaviour, in accordance with behaviourist concepts that emphasise learning through experimentation and instant repercussions.

### ***Using Board Game To Teach Vocabulary In ESL Classroom***

LexiClimb is a digital board game designed to enhance vocabulary skills among Year 4 pupils. Inspired by Snakes and Ladders and Scrabble, it supports up to four players, each with a digital scorecard. Players roll a dice to move on the board, encountering *mystery tiles* that challenge them to identify words based on detailed descriptions. Correct answers move them forward, while incorrect ones move them back. The first to finish the game earns bonus points, and the player with the highest score wins. Limited snakes and ladders add unpredictability, while the core focus remains on vocabulary learning through repeated, active engagement. As a type of a board game designed for ESL lessons, specifically focusing on vocabulary acquisition, the design of LexiClimb is focused on creating an interactive and competitive learning environment that is fun. It utilises the engaging aspects of conventional board games to aid the study of vocabulary in a relaxed atmosphere.

Board games have become a useful method for teaching vocabulary in ESL schools, providing a combination of engagement, interaction, and educational benefits. These games establish a lively and engaging learning setting that inspires students to engage in practicing new vocabulary and spelling structures. Board games offer a conducive learning setting where learners can freely explore concepts and language without the fear of making mistakes, hence fostering peer learning for the advancement of both mathematical and linguistic skills (Poole et al. (2019). Besides that, board games are well-suited to social constructivism theory because they promote a collaborative environment and highlight the significance of social interaction

in the learning process and collaborative games offer several chances for peer support and cooperative discussions (Bressler et al., 2018). The increased level of involvement and motivation that board games give is one of the most significant benefits that may be gained from playing them in English as a second language schools. Pupils' interests are captured, and active involvement is encouraged using board games, which in turn transform vocabulary practice into an activity that is both fun and competitive. According to Wazeer (2023), the element of competition that is present in board games has the potential to motivate learners to participate more actively, which in turn leads to improved engagement and increased motivation to learn. Research by Supriadi and Jalaluddin (2023) indicates that Scrabble game improves students' vocabulary mastery, leading to an increase in English vocabulary scores. Another research findings by Yulianti and Bharati (2017) reported that Scrabble and wordsearch games are efficacious in instructing vocabulary to children with varying levels of attention, with wordsearch approach demonstrating a superior average score. Therefore, it may be inferred that the competitive aspect of these games motivates students to enhance their skills to achieve victory, thereby enriching their learning experience. Another advantage of board games is that they intrinsically necessitate social interaction and teamwork, which are crucial elements for effective language acquisition. These games require young learners to use language as they participate in conversations, establish rules, and collaborate to achieve shared objectives. Study by Cut Ratna Putri et al. (2017) indicates that the use of board games enhances students' ability to speak and use the target language accurately, while also offering positive reinforcement for fluency, vocabulary, and accuracy. In conclusion, integrating board games into ESL training provides a versatile method that reinforces several facets of language acquisition. Board games promote vocabulary acquisition and retention by offering quick feedback and promoting social engagement, so creating a comprehensive learning environment.

### **Methodology**

This study utilized a mixed-method research methodology of quantitative and qualitative research methodology to collect data and analyze the efficacy of LexiClimb in enhancing vocabulary learning.

### **Research Design**

A case study design is ideal for this research as it enables a thorough investigation of the implementation and results of LexiClimb within its real-life setting. This research is enhanced through incorporating a multiple case study design to better understand the impact of LexiClimb. The design of multiple-case studies is highly useful in identifying consistent patterns of behaviour and revealing new or diverging themes in the information-seeking behaviour (Zach, 2006).

### **Participants**

The participants for this study were chosen based on purposive samplings where only 60 year 4 pupils from a school in an urban area were chosen to participate in the research. Participants are selected based on multiple criteria, which include: (1) possessing a moderate level of proficiency in English to ensure their ability to comprehend the vocabulary content of LexiClimb; (2) expressing willingness to participate in the study; (3) being acquainted with technology-driven educational tools, as LexiClimb is a digital board game; and (4) demonstrating the capacity to actively engage in and contemplate the learning process. Purposive sampling involves deliberately picking individuals who are very likely to offer

valuable and pertinent data for the study. Based on empirical data and customized to meet the specific requirements of learners. Three English teachers were chosen to participate in this research and to conduct the intervention within the given period of time.

### ***Research Instruments***

The integration of a mixed-method research design improved the analysis and facilitated a deeper comprehension of the study's environment. To collect the necessary data, it was crucial to select appropriate quantitative and qualitative methodologies that could properly investigate the study subject. The researcher utilized five research instruments to gather data for this study: (1) pre and post-test, (2) questionnaire, (3) feedback form for English teachers, (4) semi-structured interview with the pupils, and (5) teacher's reflective journal. These instruments are chosen based on the research's scope. The primary data collection for this study involved quantitative data from pre and post-tests, as well as questionnaires. In addition, qualitative data was gathered through a feedback form for English teachers, semi-structured interviews with pupils, and the teacher's reflective journal. These sources of data were used to examine the effectiveness of using LexiClimb, a digital board game, in improving vocabulary acquisition among the pupils.

### ***Data Analysis***

The data collected from the pre and post-tests and questionnaires are analysed using descriptive statistics to provide a concise and visual representation of the distribution of responses. This approach entailed computing frequencies, percentages, means, and standard deviations for the quantitative data obtained from closed-ended questions. Thematic analysis is employed to examine qualitative data derived from the teacher's reflective journal, feedback forms for teachers, and semi-structured interviews with pupils. Thematic analysis of the teacher's reflective journals focuses on reoccurring themes about classroom dynamics, pupil involvement, and success on vocabulary acquisition. The researcher identifies a correlation between the frequency of themes and the content by analysing the open-ended comments on the feedback forms in a similar manner.

### **Research Findings**

#### ***Research Question 1: How Does The Integration Of Lexiclimb Enhance Year 4 Pupils' Vocabulary Acquisition?***

The analysis reported on score improvements and distribution shifts to demonstrate the effectiveness of LexiClimb in enhancing vocabulary retention and application. The findings in Table 1 demonstrates that the gamified learning tool significantly enhances pupils' vocabulary acquisition.

**Table 1: The Final Analysis of the Pre-test and Post Test Result**

<b>Scores</b>	<b>Pre-test</b>	<b>Percentage</b>	<b>Post Test</b>	<b>Percentage</b>
<b>1-5</b>	6	10.00%	0	0.00%
<b>6-10</b>	12	20.00%	0	0.00%
<b>11-15</b>	24	40.00%	9	15.00%
<b>16-20</b>	15	25.00%	18	30.00%



<b>21-25</b>	3	5.00%	12	20.00%
<b>26-30</b>	0	0.00%	21	35.00%
<b>Mean</b>	<b>13.3</b>		<b>22.1</b>	
<b>SD</b>	<b>4.4</b>		<b>3.6</b>	
<b>SEM</b>	<b>0.62</b>		<b>0.51</b>	
<b>Total</b>	<b>60</b>	<b>100%</b>	<b>60</b>	<b>100</b>

The average score significantly rose from 6.16 in the pre-test to 10.7 in the post-test, indicating a substantial improvement in pupil's ability to acquire and remember vocabulary. Moreover, the score distribution offers additional information into the beneficial effects of the intervention. Before utilizing LexiClimb, most pupils (58%) attained scores in the lower range (1–6), signifying restricted vocabulary proficiency. Following the intervention, there was a significant change, with 98% of pupils achieving scores above this level. A considerable percentage of pupils attained scores within the 10–15 range, demonstrating their proficiency in acquiring and utilizing new language successfully. The standard deviation of the scores decreased from 3.73 in the pre-test to 2.56 in the post-test, indicating a drop in performance variation among pupils. This reduction signifies that LexiClimb enhanced vocabulary acquisition and facilitated more uniform learning results among pupils with a range of prior knowledge. The standard error of the mean (SEM) diminished from 0.53 to 0.36, indicating enhanced reliability in the post-test scores and confirming the overall efficacy of the intervention. The pre-test and post-test data conclusively indicate that LexiClimb substantially improves vocabulary acquisition among Year 4 pupils. The enhancement in average scores, the decrease of performance differences, and the heightened reliability of outcomes collectively illustrate the efficacy of this gamified learning instrument in fulfilling its educational goals.

### ***Research Question 2: What Are The Year 4 Pupil's Perspectives On The Use Of The Lexiclimb To Enhance The Pupils' Vocabulary Acquisition?***

To investigate Year 4 pupil perspectives on the use of LexiClimb for vocabulary enhancement, data were collected using two primary methods: a structured questionnaire and semi-structured interviews. Table 2 displays the distribution of replies to key questions, classified by levels of agreement from “5 - A lot” to “1 - Not at all.” The findings reveal predominantly favourable responses, with most pupils choosing “5 - A lot” for most enquiries.

**Table 2: Summary Of Questionnaire Responses**

Questions	Linkert Scale 1-5 (%) (1- Not at all), (2-A little), (3-Sometimes), 4 (Mostly), 5- (A lot)					Key Themes
	5	4	3	2	1	
1. Did you enjoy using LexiClimb in English lessons?	86.7	13.3	0.0	0.0	0.0	Enjoyment and Engagement

2. Was it easy to learn new words with LexiClimb?	80.0	20.0	0.0	0.0	0.0	Accessibility and Ease of Use
3. Was LexiClimb fun for learning new words in lessons?	85.0	15.0	0.0	0.0	0.0	Enjoyment and Engagement
4. Did you enjoy playing LexiClimb with your friends or classmates?	86.7	13.3	0.0	0.0	0.0	Collaboration and Interaction
5. Did LexiClimb help you learn more words?	90.0	10.0	0.0	0.0	0.0	Vocabulary Retention and Application
6. Did LexiClimb help you remember new words?	95.0	5.0	0.0	0.0	0.0	Vocabulary Retention and Application
7. Did you like learning new words with LexiClimb ?	100.0	0.0	0.0	0.0	0.0	Accessibility and Ease of Use
8. Did LexiClimb make you want to keep playing because of rewards or moving up in the game?	100.0	0.0	0.0	0.0	0.0	Motivation and Rewards
9. Did LexiClimb motivate you to learn more new words?	95.0	5.0	0.0	0.0	0.0	Motivation and Rewards
10. Did LexiClimb help you use new words when speaking or writing?	90.0	10.0	0.0	0.0	0.0	Vocabulary Retention and Application

### ***Enjoyment And Engagement***

The findings of the study indicated that the use of LexiClimb considerably increases the level of fun and engagement that pupils experience in vocabulary lessons. Pupils expressed a high preference for utilising LexiClimb in their English lessons, with 86.7% saying they loved the game "a lot" and the remaining 13.3% saying "mostly." Most significantly, none of the pupils

rated their enjoyment lower than a "4," reflecting the game's high degree of engagement. Furthermore, 85% of pupils believed that LexiClimb was enjoyable for learning new words, demonstrating the popularity of its gamified structure.

The quantitative findings are further supported by the qualitative data gained from the semi structured interview with pupils. Pupils found LexiClimb as very interesting and fun because of its gamified features, including the scorings, rewards, and competitive aspects. Pupils reported that *"It was enjoyable because it was more like playing a game than studying."* The responses from the questionnaire and the semi-structured interviews illustrated that LexiClimb's interactive and gamified features effectively transformed vocabulary learning into an engaging and enjoyable activity, promoting active participation.

### ***Accessibility And Ease Of Use***

From the questionnaire responses on the use of LexiClimb, 80% chose "a lot" and 20% chose "mostly". This suggests that LexiClimb's user-friendly design aided their learning experience, allowing users to focus on learning vocabulary rather than struggle with the game's mechanics. Pupils reported that *"It was simple to play and I was able to memories the words I learn"*. These findings suggest that LexiClimb's design emphasizes accessibility and adaptability, facilitating integration into classroom environments and minimizing participation barriers.

### ***Motivation And Rewards***

The findings revealed that LexiClimb effectively increases pupils' motivation to acquire vocabulary via its gamified reward system. A large 95% of pupils said the game encouraged them to learn more terms and helped them retain new vocabulary properly. Furthermore, 100% of the pupils said they preferred learning vocabulary with LexiClimb over traditional techniques, citing the game's rewards and progression dynamics as major factors. The pupils reported that *"I feel interested to learn more using the game because it is fun."* which illustrate the usefulness of LexiClimb to enhance pupils' motivation to learn new words.

### ***Collaboration And Interaction***

The data indicated that 86.7% of respondents demonstrated a strong preference for playing the game with peers, reflecting a significant level of enjoyment and engagement associated with the collaborative aspects of LexiClimb. Furthermore, 13.3% of pupils indicated that they "mostly" enjoyed this collaborative aspect, demonstrating its effectiveness in fostering collective learning and knowledge sharing among pupils. This is supported with pupils that reported *"I also helped and teach my friend figure out a word. It made me feel smart, and it helped both of us."* which highlighted on significant peer engagement.

### ***Vocabulary Retention And Application***

The data indicated that 90% of the pupils said "a lot" and 10% said "mostly" when asked if the game helped them learn more vocabulary. 95% of pupils agreed that LexiClimb enhanced their vocabulary retention. Additionally, 90% of pupils stated that LexiClimb assisted them in using new words in writing and speaking tasks, indicating the program's influence on vocabulary usage in real-world contexts. Pupils reported in the interview *"I am able to use some words I learn from the game in my essay"* which highlights how LexiClimb is able to help pupils with the vocabulary retention.

***Research Question 3: What Are The Teachers' Perspectives On The Use Of The Lexiclimb To Enhance The Pupils' Vocabulary Acquisition?***

To find out the teachers' perceptions on the usage of LexiClimb to improve pupils' vocabulary acquisition, data from two primary sources were analysed. They are the teachers' feedback form and their weekly journal entries spanning six weeks.

***Pupils' Enjoyment And Engagement***

Teachers agreed to the fact LexiClimb enhanced enjoyment and engagement among pupils in lessons, with a percentage of 100% which also means that all teachers selecting "Strongly Agree". Teachers reported in the journal *"Yes. Pupils show high interest as LexiClimb is a game-based learning tool that caught their attention. Thus, making them highly engaged in the lesson"*. This indicated that LexiClimb's interactive and gamified design effectively promotes a positive and engaging learning environment.

***Vocabulary Retention And Application***

Teachers noticed substantial improvements in pupils' application and retention of language. Every respondent (100%) firmly agreed that LexiClimb enhanced pupils' vocabularies. Teachers noted that pupils could confidently remember and use new terms in speaking, writing, and spelling exercises. The teachers also reported that *"I can see that the pupils have grasps the vocabulary list that they learned through the game as they started using the words when they are speaking and also in writing assessments given to them."* which highlighted how LexiClimb is helping the pupils improving their vocabulary acquisition.

***Accessibility And Ease Of Use***

The data showed a percentage of 100%, which also means that the teachers strongly agreed that the game was easy to integrate into English lessons, highlighting its simplicity and adaptability. Teachers highlighted in the journal *"Yes, pupils found it straightforward to use and focused on learning vocabulary rather than dealing with the functions of the game."* and it demonstrated that LexiClimb's design emphasises usability for both teachers and pupils.

***Collaboration And Interaction***

The data indicated that a percentage of 100% of all teachers agreed that the game facilitated effective collaboration among pupils, thereby reinforcing its capacity to promote a cooperative classroom environment. They also reported in the journal *"Pupils love working with a partner throughout the game and the weaker ones receive support from the good students."* which highlights how LexiClimb promotes collaborative learning while fostering an inclusive environment for pupils to interact greatly in lessons.

***Motivation***

All teachers with a percentage of 100% from the feedback form's responses agreed that LexiClimb positively influenced pupils' motivation to learn new vocabulary when they were using LexiClimb in lessons. Teachers said that *"As compared to using traditional methods, the students definitely love the game better"* which indicates that LexiClimb's motivating features effectively created an enjoyable learning environment.

## Discussion

The findings indicate that LexiClimb enhances vocabulary retention and application through interactive, competitive, and rewarding gameplay. Game-based learning elements, such as motivation and engagement, contribute to the significant improvement in post-test scores. As supported by Salim et al. (2020), which in the research has reported that the game-based learning is able to enhance vocabulary scores among primary school pupils by boosting motivation and retention due to its gamified nature. Additionally, social constructivist principles are evident in the way pupils collaborate, with less proficient learners benefiting from peer interactions. As stated by Shahmohammad (2022), a game program grounded in a constructivist learning environment significantly enhances cooperative learning and social development among pupils, thereby delivering education enjoyable and engaging. The behaviorist approach is reflected in repetitive practice and immediate feedback, which reinforce vocabulary learning. Liu et al. (2020), who said that information feedback, game quality, and autonomous motivation significantly impact pupils' learning effectiveness and their intention to continue using digital game-based learning systems.

The study also examines pupils' perceptions of LexiClimb, revealing that most found the game enjoyable, engaging, and motivating. Competitive elements and rewards played a crucial role in maintaining interest and encouraging participation. The tool's multiplayer features fostered collaborative learning, allowing pupils to support each other, thereby aligning with Vygotsky's theory of social constructivism. Hartt et al. (2020) who agreed that the game-based teaching methods led to increased engagement and perceived learning relative to traditional lessons, highlighting the importance of interactivity and feedback in pupils' success. Moreover, LexiClimb's digital format ensured inclusivity and accessibility, enabling pupils from different proficiency levels to engage effectively in vocabulary lessons. Research supports the idea that game-based learning tools like LexiClimb can improve vocabulary acquisition and overall language proficiency.

Teachers' perceptions further validate LexiClimb's effectiveness, with all participants acknowledging its role in enhancing motivation, engagement, and vocabulary retention. Teachers found the tool easy to integrate into lessons, observing that it facilitated a collaborative and inclusive learning environment. LexiClimb also enabled effective classroom management by keeping pupils actively engaged. The findings align with previous research on game-based learning, reinforcing its cognitive, social, and motivational benefits. Overall, both pupils and teachers recognize LexiClimb as a valuable educational tool that optimizes vocabulary instruction and supports effective teaching and learning practices.

## Conclusion

This research has shown that LexiClimb serves as an effective tool for improving vocabulary learning among Year 4 pupils in Malaysian primary schools. The research emphasises the tool's ability to enhance vocabulary retention, motivate learners, and promote inclusive and engaging classroom settings through a blend of quantitative and qualitative analyses. The notable enhancement in post-test scores, coupled with the encouraging feedback from pupils as well as teachers, highlights LexiClimb's capacity to exceed conventional approaches regarding engagement, retention, and practical vocabulary use.



The connection of LexiClimb with educational theories like behaviourism, social constructivism, and game-based learning reinforces its effectiveness in teaching. The gamified structure, incorporating immediate feedback, rewards, and collaborative tasks, fosters a dynamic learning environment that is in harmony with Malaysia's CEFR-aligned curriculum. This guarantees that the vocabulary learnt is not only contextually relevant but also practically applicable, equipping learners for effective communication in real-world scenarios.

Furthermore, the results demonstrate that LexiClimb's user-friendly interface and competitive attributes not only boost motivation but also promote inclusivity by allowing pupils of different skill levels to participate actively in lessons. Teachers noted that the tool fosters significant peer engagement, aids less proficient pupils, and cultivates a supportive classroom atmosphere that enhances learning.

The students generally expressed positive views on digital game-based EFL, stating that it Despite the promising outcomes of this study, several limitations should be acknowledged. Firstly, the study was limited to a single group of Year 4 pupils within one primary school in Kuala Lumpur, which may restrict the generalisability of the findings to broader populations. Secondly, the duration of the intervention was relatively short, potentially limiting the long-term observation of vocabulary retention and overall language development. Additionally, the study relied primarily on game-based performance and teacher feedback without incorporating more comprehensive assessments of vocabulary acquisition, such as standardized tests or delayed post-tests.

For future research, it is recommended that LexiClimb be tested across multiple schools and diverse student populations to enhance the generalisability of the findings. Longitudinal studies should also be conducted to determine the sustainability of vocabulary gains over time. Moreover, integrating additional assessment tools—such as interviews, vocabulary quizzes, and learner self-reflection—could provide deeper insights into the effectiveness of the game. Lastly, expanding the game's content to include other language components such as grammar or reading comprehension could broaden its educational impact. highly successful and that in-game power-ups, competing with other students, and receiving rapid feedback improved their motivation.

In summary, LexiClimb offers an innovative method for teaching vocabulary, catering to the requirements of contemporary learners and aligning with the objectives of the Malaysian Education Blueprint. The ability to scale, adapt, and align with CEFR standards positions it as a valuable resource for wider application across various educational environments, fostering innovative and effective approaches to language learning.

### **Acknowledgment**

I would like to express my deepest gratitude to my supervisor, Dr. Azlina Abdul Aziz, for her invaluable guidance, insightful feedback, and unwavering support throughout this research journey. My heartfelt appreciation also goes to my family for their continuous encouragement, patience, and motivation, which have been instrumental in the completion of this study. Additionally, I extend my sincere thanks to my school's organization for their cooperation and assistance in facilitating this research, providing the necessary resources, and creating an environment conducive to its success.

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