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Applying AI-enhanced digital games in teaching English vocabulary

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ABSTRACT

The current study examines the perspectives of EFL university teachers regarding the application of AI-enhanced digital games in teaching English vocabulary. This study was conducted in the first semester of the 2025-2026 academic year. It examines the challenges that EFL university teachers encounter when utilizing AI-enhanced digital games in vocabulary instruction and the suggestions they offer for overcoming them. To achieve these objectives, the study employs two tools for data collection: a questionnaire and a structured interview. The questionnaire targets 60 EFL teachers at various Saudi universities. Moreover, ten experienced teachers are selected to respond to the interview questions. Data analysis of both the questionnaire and the interview indicates that teachers have positive attitudes about using AI-enhanced games in teaching English vocabulary. They view AI-enhanced digital games as a successful teaching method for enhancing student motivation and engagement by promoting a sense of autonomy and competence. The findings further demonstrate the importance of AI-enhanced games in transforming conventional learning activities into engaging and interactive experiences. The findings also indicate that teachers face numerous obstacles when attempting to use these games, including technical difficulties, inadequate training, a lack of technological proficiency, and insufficient time for students to interact with one another. Given these challenges, the study recommends offering teachers a brief training workshop on these AI-enhanced games or tools prior to their implementation. It also proposes providing ongoing technical support, allocating time for teachers' development and experimentation with tools, and incorporating evaluation standards to assess the impact of educational games on both short- and long-term student outcomes.

KEYWORDS: AI enhanced games, perspectives, teachers, teaching, vocabulary

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1. Introduction

According to Travers (2011), vocabulary is an important feature in learning a foreign language, as it serves as the foundation of effective communication both in oral and written forms. According to Schmitt (2000) and Nation (2001), vocabulary is also important in language use; there is a negative link between the knowledge of vocabulary and broad speaking ability. A comprehensive vocabulary will help students to express themselves accurately and clearly, reinforcing communication quality while minimising any potential for misunderstanding. According to Nation (2001), vocabulary paves a path of helping students learn in the reading, speaking, writing and listening skills by forming the basis for efficient language input as well as output strategies. According to Ahmed et al. (2024), the foundation of writing accomplishment is having an adequate knowledge of vocabulary. They explain that failure of EFL undergraduates to organize paragraphs in writing can be traced to lack of vocabulary and grammatical weaknesses. Moreover, Ahmed (2025) asserts that EFL university learners are unable to write well if they fail to possess adequate vocabulary as a tool for improving writing skills. Therefore, extra vocabulary helps students perform better academically so that they can comprehend challenging content and communicate their ideas effectively. Black & Wright (2024) argue that the old approaches seem not to be working anymore. For example, vocabulary lists, and direct instruction are comprised of only a small number of the target terms which is a disadvantage when striving for wide ranging knowledge. Loucky (2013), cited in Skripsi and Salam (2024) believes that conventional vocabulary learning techniques often underestimate the lexical processing depth. Accordingly, many EFL learners have problems with vocabulary as they do not get enough exposure to the second language input (e.g. other language learning environments). EFL learners "experience problems mastering and using new vocabulary in an authentic setting mainly on account of the lack of native-speaking interaction and access to genuine linguistic material" (Laufer, 2001). For Ra'uf, (2020), as cited in Ahmed et al. (2025), most of EFL learners encounter problems of English engagement because they lack knowledge of vocabulary. Language learning receives a significant contribution from AI as one of the solutions that enable adaptive and personalized educational experiences. According to Ng et al. (2023), cited in Abu Qbeita (2024) AI-based technologies such as intelligent tutoring systems and automated assessments support personalized learning experiences along with immediate feedback for improving student learning and engagement. AI helps students learn by_providing them with exercises and opportunities to practice that they may not receive through other methods. With the development of ICT, computer games now have been part of EFL instruction as well. Ying and Ismail (2022) have pointed out that it has been widely researched that digital games can enhance learners' motivation, awareness, and decision-making. The evolution of technology has paved the way for digital games in EFL learning. Ying and Ismail (2022) argue that several research studies have demonstrated the effect of digital games on learner's motivation, understanding, as well as their decision-making process. For Sadeghi et al. (2023) as cited in Skripsi & Salam (2024), interactive education platforms may contribute to the acquisition of vocabulary by the inclusion of gamified features stimulating motivation, engagement and successful learning strategies. Gamified instruction creates a dynamic educational environment that reinforces the scoring system, which motivates learners to increase their vocabulary achievement with constant feedback in learning. Furthermore, deHaan et al. (2010) as cited in Alshabeb (2024), find that the use of a music video game was far more beneficial to learners' memory for new language compared to traditional study methods. According to Bin Faleh et al. (2011), digital games have developed high potential for enhancing vocabulary learning in recent decades. Reinders (2012) argues that video games provide a medium for venturing into new things without fear within an unreal world.

Regarding vocabulary learning, Majdoub (2021) cited by Nurzahirah (2023), points out that points, rewards and upgrade motivate students to learn as many new words as possible for them to win the game. As Rasti-Behbahani (2021) notes in Razali et al. (2025), the digital game-based vocabulary learning is useful to motivate and engage the students in a repeated practice with variety, which are critical principles to successful language learning. Regarding Li (2021), students' self-esteem is enhanced in digital game-based vocabulary learning where WhatsApp status allowed the video gamers more ability to share their vocabulary progress record achievements. Li et al. (2024) suggest a positive association between virtual learning games and students' commitment to learn. Alibakhshi et al. (2025) study the effects of web-based video games on young language learners' vocabulary development. Based on the findings, teachers have favorable attitude regarding these games for vocabulary learning owing to them being able to generate motivated and engaging environment among

students. Second, Alenezi (2023) investigates teachers' views on AI-empowered gamification and its impact on motivation, engagement and learning achievement of EFL learners. Findings suggest that teachers perceive gamification with AI improvement to create effective and transformative learning spaces. Survey results reveal widespread agreement among respondents on the merits of AI-enabled gamification for student engagement and learning outcomes. Teachers also share that AI-powered gamification brings teachers and students deeper into the material, enhances problem-solving skills, and aids with retention of information. Alsakaker (2025) reports that student enjoyment of educational games is augmented when AI is incorporated and provides teachers with useful information. They can leverage AI-powered data analytics to see how well students are doing, identify areas where they might improve and alter the ways they teach accordingly. Jomaa and Mahri (2025) explore teachers' beliefs concerning the use of AI vocabulary training tools in EFL context in Oman. Results show that English teachers held positive attitudes towards the potentials of using AI tools in learning English, particularly for vocabulary development. Supporters of the tools, say they are both effective and fair because they get students to be active for their education.

However, these studies generally focus on the overall use of digital games, rather than a specific method for teaching vocabulary in English Language classrooms--particularly in higher education--such as tertiary level education in Saudi Arabia. The earlier work studied the effect of games in general on students learning outcomes, rather than that of AI-enhanced games specifically. Filling this gap, the present study conducts research focusing on EFL teachers' attitudes towards the use of AI-driven digital games in teaching English vocabulary. In exploring such viewpoints, this research aims to offer useful findings regarding the ways AI learning tools may be incorporated into EFL classroom in Saudi Arabia as well as renewing the pedagogical approach and enhancing students' competence towards the new global world. The present study seeks to address the following questions:

a. What are EFL university teachers' views on AI-added digital games in English vocabulary teaching?

b. What problems do EFL university instructors encounter in the implementation of AI-enhanced digital games for vocabulary teaching?

c) What suggestions do EFL university teachers recommend for overcoming such challenges?

2-Methodology

Research Design

This research is a mixed-method one which explores EFL university teachers' perspectives regarding using AI-enhanced digital games in teaching English vocabulary. This multidimensional approach combines quantitative and qualitative methods of data collection, to enable exhaustive coverage on the issue.

Participants and Sampling

The study targets language teachers at different Saudi universities and is carried out in the first semester of 2025/2026. A Google Form questionnaire is circulated randomly to 75 EFL teachers and out of these 60 teachers respond. An additional 10 teachers who have had prior teaching experience are chosen for subsequent interviews.

Instruments for Data Collection

The study uses two tools to collect data:

Questionnaire

An online survey is utilized to collect context and quantitative data on EFL university teachers' attitudes towards AI-based digital games for English vocabulary instruction. The questionnaire contains 13 questions, which are adjusted in two main sections. Section 1 examines teachers' background relevant to AI games use in education, and Section 2 investigates their perspective toward the integration of AI-enhanced digital games for vocabulary learning. Answers in this section are based on a 5-point Likert scale from Strongly Agree to Strongly Disagree. The questionnaire is disseminated online (Google Form) to make it easily accessible and easier to collect the collected information. The Google Form link is distributed in email and WhatsApp groups to potential participants. Several questions in the questionnaire have been modified from literature reviews used

by Jomaa et al. (2025), who also examined and established reliability of the tool.

Interview

This study gathers its qualitative data using a structured interview process. It focuses on ten EFL tertiary teachers' experiences and views of using AI-enhanced digital games for teaching vocabulary. More precisely, the interview intends to investigate challenges EFL university teachers encounter in using these games and their suggestion to solve those challenges. Interviews are predominantly face to face or by video conference, according to teacher availability and preference. All interviews are audio-taped (with permission) and transcribed for analysis.

Data Analysis Procedures

Data collected from the questionnaire are quantitatively analyzed through frequency and percentage to depict EFL teacher's perceptions. Structured interviews are thematically analyzed based on the qualitative data. After transcription of the audio recordings, responses are clustered by themes and are analyzed within the framework of this study.

Validity and Reliability

Four experienced teachers further assess and approve the questionnaire items and interview questions in terms of content validity with reference to the research objectives.

Ethical Considerations

To maintain anonymity of the information presented, participants are made aware that answers would be utilized for educational purposes only. Detailed instructions and procedures regarding the completion of the questionnaire and interviews are presented to provide consistency in data collection. After receiving the questionnaire link, respondents proceed to complete the survey at their convenience.

3-Findings and Discussion

Questionnaire Analysis

This part sheds light on questionnaire analysis to answer RQ1 and RQ2 as the following tables show:

Section (1) Teachers' Background Information & Experience with AI-Enhanced Digital Games

The sample consists of 60 teachers. The descriptive data includes gender, job title, years of teaching experience, frequency of using AI-enhanced digital games for vocabulary instruction, and the tools most frequently employed.

Table 1: Gender Distribution

Categories	Frequency	Percentage
Male	38	63.33
Female	22	46.67
Total	60	100%

Table 1 shows that out of the 60 participants, 38 were male (63.33%) and 22 were female (46.67%). This indicates a slightly higher representation of male teachers.

Table 2: Job Titles

Categories	Frequency	Percentage
Teaching assistant	4	6.66 %
Lecturer	13	21.66 %
Assistant professor	35	58.33 %
Associate professor	5	8.33 %
Professor	3	5%
Total	60	100%

As seen in Table 2, most respondents are Assistant Professors (35; 58.33%), followed by Lecturers (13; 21.67%), Associate Professors (5; 8.33%), Professors (3; 5.0%), and Teaching Assistants (4; 6.67%). This distribution

shows that the sample is heavily skewed toward mid-career academics, with limited representation from full Professors.

Table 3: Years of Teaching Experience

Categories	Frequency	Percentage
1- 5 years	3	5%
6-10 years	12	20%
11-20 years	30	50%
More than 20 years	15	25%

Table 3 indicates that most respondents (30; 50.0%) have 11–20 years of experience, followed by 15 teachers (25.0%) with over 20 years, 12 teachers (20.0%) with 6–10 years, and 3 teachers (5.0%) with 1–5 years. The mode and median are both 11–20 years. Using midpoints, the estimated average teaching experience is about 15.75 years. With 50% of respondents having 11–20 years of experience and 58.33% being Assistant Professors, the sample is dominated by mid-career academics. This demographic is likely more open to innovation than senior faculty.

Table 4: Frequency of Using AI-Enhanced Digital Games

Categories	Frequency	Percentage
Never	6	10%
Rarely	9	15%
Sometimes	18	30%
Often	17	28.3%
Always	10	16.7%
Total	60	100%

As shown in Table 4, the frequency distribution reveals that 6 teachers (10.0%) never use AI enhanced games, 9 (15.0%) rarely, 18 (30.0%) sometimes, 17 (28.33%) often, and 10 (16.67%) always. The mean score (0=Never to 4=Always) is 2.27, which lies between 'Sometimes' and 'Often'. Notably, 27 respondents (45.0%) reported frequent use (Often or Always), while 15 (25.0%) use them rarely or never.

Table 5: AI-Driven Digital Tools for Vocabulary Instruction

Game /tool	Frequency	Percentage
Quizlet	42	70%
Kahoot	36	60%
Duolingo	18	30%
Wordwall	33	55%
Custom AI-based games	15	25%
ChatGPT Games	12	20%
Others (e.g. Bamboozle, Quizizz)	21	35%

Table 5 shows that teachers use a range of tools, often select multiple platforms. The most frequently used are Quizlet (42; 70.0%), Kahoot (36; 60.0%), and Wordwall (33; 55.0%). Other tools include Duolingo (18; 30.0%), custom AI-based games (15; 25.0%), ChatGPT games (12; 20.0%), and others such as Bamboozle or Quizizz (21; 35.0%). The total responses across tools were 177, yielding an average of approximately 2.95 tools per teacher. The average usage score (2.27) suggests teachers are adopting AI-based games at a moderate-to-high level, between 'Sometimes' and 'Often'. The dominance of Quizlet, Kahoot, and Wordwall indicates a preference for familiar, easy-to-use platforms that integrate smoothly into classroom practice. The lower adoption of custom AI-based games (25%) and

ChatGPT-powered games (20%) suggests barriers such as novelty, lack of training, or concerns about academic integrity.

Section (2) Teachers' perspectives about the use of AI-enhanced digital games in teaching vocabulary.

Table 6: Teachers' perspectives about the use of AI-enhanced digital games in teaching vocabulary

NO	Items	1		2		3		4		5	
		F	P	F	P	F	P	F	P	F	P
6	Teaching vocabulary using AI enhanced digital games is more interesting.	3	5%	6	10%	9	15%	24	40%	18	30%
7	Teaching vocabulary using AI enhanced digital games improves vocabulary retention.	2	3.3%	5	8.3%	11	18.3%	25	41.7%	17	28.3%
8	Teaching vocabulary using AI enhanced digital games is practical, effective and beneficial for my students.	2	3.3%	7	11.7%	12	20%	32	38.3%	16	26.7%
9	Teaching vocabulary using AI enhanced digital games creates a more comfortable virtual environment for learners to study.	4	6.7%	8	13.3%	14	23.3%	21	35%	13	21.7%
10	Learners are more motivated to learn vocabulary when they are taught through AI enhanced digital games.	2	3.3%	6	10%	10	16.7	24	40%	18	30%
11	I believe the advantages of using AI enhanced digital games for vocabulary teaching over the traditional method are faster teaching pace, more personalized teaching methods, and more engaging and interactive sessions, etc.	3	5%	9	15%	15	25%	21	35.%	12	20%
12	I have not encountered any challenges or difficulties when using AI enhanced digital games for vocabulary teaching.	7	11.7%	13	21.7%	15	25%	15	25%	10	16.7%

13	I would recommend AI enhanced digital games for vocabulary teaching to fellow educators.	4	6.7%	8	13.3%	13	21.7%	20	33.3%	15	25%

As Table 6 shows, this section of the questionnaire aims to shed light on EFL university teachers' perspectives about the use of AI-enhanced digital games in teaching vocabulary.

Detailed Item Analysis (6–13) and Interpretation:

- Item 6: Attractiveness
  - Results: Mean = 3.800, SD ≈ 1.122, Agreement = 70.0%.
  - Interpretation: A high agreement rate (70%) reflects that most teachers view AI-enhanced games as more engaging than traditional methods. This is attributed to competitive elements, challenges, and illustrative graphics, which increase attention and commitment to the learning task.
- Item 7: Retention
  - Results: Mean = 3.833, SD ≈ 1.035, Agreement = 70.0%.
  - Interpretation: The 70% agreement supports the notion that teachers associate games with improved retention via spaced repetition and presenting vocabulary in diverse contexts. Games designed to reintroduce vocabulary in narrative or behavioral ways are more effective than rote memorization.
- Item 8: Efficiency & Usefulness
  - Results: Mean = 3.768, SD ≈ 1.009, Agreement = 69.6%.
  - Interpretation: Overall positive evaluation of usefulness, with experimental differences among teachers. Some note that educational gain requires more preparation time, while others benefit from automated assessment tools saving grading time. Efficiency evaluation depends on available resources and technical support.
- Item 9: Safe Learning Environment
  - Results: Mean = 3.517, SD ≈ 1.162, Agreement = 56.7%.
  - Interpretation: Moderate agreement (~56.7%) indicates potential concerns about privacy, content control, or student behavior in virtual environments. Games with teacher monitoring and clear privacy options are likely to gain more trust.
- Item 10: Motivation
  - Results: Mean = 3.833, SD ≈ 1.067, Agreement = 70.0%.
  - Interpretation: High agreement indicates the effectiveness of games in increasing student motivation. Elements such as progressive levels, immediate rewards, and short tasks boost engagement and encourage repeated attempts for deeper learning.
- Item 11: Personalization
  - Results: Mean = 3.500, SD ≈ 1.118, Agreement = 55.0%.
  - Interpretation: Moderate agreement reflects varied opinions on how well games can be personalized compared to traditional methods. Effective personalization depends on software features: whether it analyzes student performance and suggests suitable activities or only provides a fixed set of exercises.
- Item 12: Implementation Difficulties
  - Results: Mean = 3.133, SD ≈ 1.258, Approx. 41.7% reported no difficulties.
  - Interpretation: Notable variation; about one-third (33.3%) experienced difficulties. Common issues include poor infrastructure (internet, old devices), lack of technical training, and time needed to customize games.
- Item 13: Willingness to Recommend
  - Results: Mean = 3.567, SD ≈ 1.188, Agreement = 58.3%.
  - Interpretation: Moderate willingness to recommend (~58.3%) suggests teachers may endorse the technology but with conditions such as training, technical support, and clear effectiveness evidence.

In conclusion, data analysis indicates that teachers exhibit highly favorable attitudes toward the use of AI-enhanced digital games in the instruction of English vocabulary. The frequency of actual usage is less than that of attitudes, suggesting the presence of implementation barriers. Educators are inclined to endorse AI games to colleagues, facilitating wider implementation. Support and training are essential for addressing the challenges encountered by certain educators.

Interview Analysis

Interviews were conducted with ten teachers to get EFL teachers' perceptions about AI-based digital games for teaching English vocabulary at the university level. The results generated several valuable insights to answer RQ1, RQ2 and RQ3. The interview questions are tackled as follows:

Question (1*): How do you feel about the application of AI-enhanced digital games in teaching vocabulary?*

Findings of the interviews show that most interview participants consider integration with AI- enhanced digital games as an effective pedagogical approach for teaching vocabulary. It is generally thought to provide multiple benefits with respect to learning. These advantages can be summarized as:

(a)Enhancing vocabulary retrieval and comprehension: AI-enhanced digital games can provide rich environments for students to practice vocabulary in context.

(b) Improving educational results: many of the participants consider that AI enhanced digital games are efficient for improving educational results. These games allow learners to develop their language skills in context through interactive gaming and instant feedback. AI based games are effective for learning vocabulary, and they leverage personalized and engaging gameplays. They can motivate and retain students better and improve language learning ability more effectively due in part to their game-like features as well as immediate feedback.

(c) Enhancing student motivation and participation: AI-driven digital games enrich vocabulary learning by enhancing engagement and participation. Teachers, on the other hand, think that games help learners to feel more competent and autonomous, which drives motivation. Additionally, these games have multiple learning options: quizzes, games or flashcards which can be used in different methods based on the type of learner. This diversity also keeps learners motivated and interested. Respondents reported that AI-driven digital games greatly increase students' involvement and motivation in vocabulary learning. Video games such as Duolingo or Quizlet keep learners engaged and motivated through interactive means of reinforcing language. Teacher 5 says, "*My students love using Duolingo*!". And as Teacher 3 testifies, "They have fun with this app." Because its playful and competitive nature is a good way to keep them motivated and active in the learning process. Teacher 2 also says, "*I think that AI-enhanced digital games (eg: Quizlet) are effective in getting motivated students*. They receive a feeling of completion when they finish a game or quiz in the name of learning."

(d) Giving instant feedback: Digital games powered with the AI provides instant feedback by means of scoring and reward which is beneficial for students. Correction of word use helps them correct their errors and learn to apply the words correctly. Teacher 1 highlights that Duolingo gives instant feedback on right and wrong answers through which students can track their positive performances and detect error patterns. This approach gives students immediate feedback and keeps them motivated to learn. Teacher 4 remarks on the benefits of quizlet which has a progress chart (counting the words learnt and ones that need to be re-studied). This feature assists in keeping learners focused and motivated.

(e) making learning more interesting and fun: As one educator commented, "gamified learning environments could be effective in increasing student motivation and positive attitudes towards learning". The interactivity of such games effectively turns passive learning into an active experience, which can promote and maintain students' engagement.

(f) Improving problem-solving abilities.

The incentives at each level keep players motivated while simultaneously as well as developing their problem-solving skills.

(g) Meeting students' emotional needs: Failure is a condition for success and students are likely to experience repeated failures, from which they obtain many valuable lessons. The sense of achievement that

comes with finishing a level and moving onto the next one outweighs any negativity caused by repeated failures. Furthermore, immediate reinforcement of performance can serve as an effective motivator that results in better performance on future attempts. Students learn that mistakes and failures are not cast iron; they open avenues to skills and knowledge. But in conventional classrooms, turning failure into a positive is not easy. Digital games that are enhanced with the AI can transform negative emotions into positive experiences.

Question (2) What difficulties do you face when utilizing AI-based digital games in teaching vocabulary?
The results of the thematic analysis of interviews with university EFL teachers suggest that many challenges exist when practicing AI-enhanced games for vocabulary teaching. The following is an overview of these challenges:

(a) Reduced human interaction: Teachers who rely too much on AI could reduce the appeal of real people talking to learners and will influence users how important or unimportant it is for them to socialize in language learning. Obvious lack of human involvement became a major issue, with the lack of "human touch" and "teacher-like feedback."

(b) Technical problems and faults: There are technical limitations/ failures in AI implementation that obstruct the learning process and affects student experience adversely.

(c) Distraction from real learning: AI-boosted games may distract learners' attention away from real vocabulary learning.

(d) Alignment with learning goals: The lexical content of AI-boosted games may not be well-aligned to the pre-set educational goals.

(e) Challenges in language acquisition assessment: It is non-trivial to assess language acquisition through AI-enhanced games. Several teachers do not have training on how to effectively use AI-enhanced gaming platforms for vocabulary learning.

Question (3): *What would you like to suggest for overcoming such challenges you have experienced when using AI-enhanced digital games in teaching vocabulary?*

To deal with these challenges, the participants offer the following suggestions:

(a) Comprehensive training for teachers: For the smooth transition to gamified learning, proper training should be given to teachers.

(b) Engaging game design: AI-enhanced games for students are expected to be interesting, interactive and supportive of concrete educational goals such as improving vocabulary knowledge.

(c) Student interest: Instructors must consider their students' choices and interests while choosing AI-enriched games for learning new words.

(d) Games should match students' learning style and be employed at home or school settings.

(e) Cost Factors: In selecting AI-enhanced games for vocabulary teaching, cost should be a consideration. They should best select free or cheap alternatives that provide great benefits for language knowledge. One explanation given by Teacher 10 was, I try to find games that won't cost anything or are inexpensive and give me some bangs for the buck when it comes to vocabulary development. Likewise, Teacher 9 commented, "I have taken price into consideration, but I would choose the most effective game with provision for learning rather than financial considerations."

(f) Games must include customization options and flexibility for instructors to tailor the game to their students' abilities and requirements.

Discussion of Results

The results indicate that the usage rates of AI-enhanced games for vocabulary teaching encompassed Quizlet, Kahoot and Wordwall respectively in order; however, Quizlet was implemented most frequently (70%). This preference demonstrates that teachers value intuitive systems that are both broadly available and adaptable across different educational settings. Additionally, tools such as Duolingo or ChatGPT games and custom-built AI-driven applications go used less often which is probably since teachers have not heard of them or they take too much time to customize. As for the comparison between teaching English vocabulary using traditional methods and AI-enhanced games, participants mentioned that AI-enhanced games provided an excellent experience to them, made them feel more effective at language learning, encouraged their engagement, grabbed attention. In

addition, the analysis of the questionnaire reveals that AI based digital games develop students' motivation and engagement. Results of the qualitative data indicate that teachers see AI enhanced digital games as an effective pedagogical strategy to increase students' motivation and engagement through offering a sense of autonomy and competence.

Although participants held positive attitudes with respect to the use of AI-driven digital tools for vocabulary learning, this research also pinpointed issues on the ground in which educators face while implementing technology. Assessment by questionnaire revealed 33.3% of respondents had experienced problems or barriers and that 41.7% detected none. Technical training and the time it took to tailor existing games were listed as major barriers. Qualitative data also underlined wider problems in terms of technology challenges, lack of teacher training, low digital literacy and less face-to-face interaction. These results support previous studies that indicated bad integration into the teaching, technical limitations and inadequate teacher training as major barriers to the incorporation of AI-based games. There is a need for more complete training on the effective use of AI-enhanced games for both teacher and student. This training may save time, make better use of resources and have effect on students learning motivation and so on, thus language teaching environment will be improved.

4- Conclusion

This study utilizes a mixed-methods approach to explore the perceptions of EFL university teachers toward AI-enhanced digital games for teaching English vocabulary. The results confirm the preference to user-friendly platforms like Quizlet, Kahoot and Wordwall, well-regarded for their contribution in motivating students and with good outcomes of learning vocabulary. The findings show that teachers have a positive attitude towards using AI-based games in teaching vocabulary. However, it is important to be cautious in the generalization of these results because there are some limitations such as collecting data from only teachers' perspectives. It is recommended for future studies to investigate the attitude of teachers and students toward integrating AI-incorporated game in teaching English vocabulary. Another drawback of this study is that the data collected is only from questionnaires or interviews and in future work, a pre- post-test could be used to evaluate whether AI-enhanced games improve student vocabulary learning effects. The study indicates that AI-enhanced games in the English vocabulary training greatly increase student engagement, learning performance and language proficiency. This fact highlights the benefits of integrating technology in teaching and learning, particularly in relation to AI-based gaming approach as a successful method to increase student engagement and enhance their language competence in the digital age.

This study adds to the body of literature on AI-enhanced digital tools for vocabulary learning by showing some significant gains in students' motivational orientation, engagement, and learning outcomes and at the same time highlighting the teacher-related challenges that may affect these results. The changing education landscape reveals that the introduction of AI-enhanced games in teaching methods has significant potential to enhance learning experience.

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