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Enhancing EFL Learners' Self-Regulation Through Video Games: Teachers' Perception

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***Abstract*—This study delved into the multifaceted perceptions of a diverse group of 130 teachers regarding the utilization of video games as a means to augment and bolster learners' self-regulation capabilities. With meticulous attention to detail, the researchers administered a meticulously designed questionnaire to the participants, meticulously capturing a nuanced understanding of their perspectives. The intriguing outcomes of this study unequivocally revealed a prevailing consensus among the teachers, asserting their firm belief in the potential of video games to exert a profoundly positive influence on learners' self-regulation capacities. The profound implications emanating from these compelling findings proffer a tantalizing glimpse into the untapped potential of video games as an efficacious pedagogical tool, poised to revolutionize the landscape of education by nurturing and cultivating learners' self-regulation skills.**

***Index Terms*—self-regulation, video games, English language learning, technology in language learning**

I. Introduction

The COVID-19 pandemic has led to significant alterations in the daily routines of educational institutions and English as a foreign language (EFL) instructors. The pandemic has compelled schools to shut down abruptly, whilst teachers have had to adapt rapidly to changes in their teaching and learning approaches. This situation has challenged educators' ability to leverage novel educational tools and immediately convert course content into remote lesson plans, which can be challenging even for those with digital fluency. Moreover, students have reported feelings of isolation and a sense of missing out on the social and physical interactions that in-person instruction provides, given that they were required to maintain distance from their peers. Furthermore, students have experienced difficulties in maintaining focus when using electronic devices for prolonged periods, causing them to become distracted and lack discipline.

To maintain student focus and engagement, teachers have employed a variety of technological tools aimed at promoting self-regulation and fostering autonomous learning. Students have demonstrated a strong affinity for technology, particularly interactive games, which they find highly entertaining. This preference has persisted even after the resumption of in-person learning, with many students continuing to favor technology-based e-learning. Consequently, educators must explore alternative methods to enhance students' self-regulation, such as incorporating video games into the learning process, given their appeal to students. The use of video games may have a positive impact on students' ability to regulate their learning of EFL.

There exists a dearth of research on the utilisation of video games as a means of improving self-regulation in EFL learning. Self-regulation is a critical component of academic success and is defined as the ability to manage one's thoughts, emotions and actions to achieve desired outcomes. Certain studies have implied that select e-applications, particularly those that necessitate decision-making, planning and problem-solving, may have the potential to enhance self-regulation abilities.

However, note that not all video games yield the same results in terms of self-regulation. Some video games, specifically those that are excessively violent or addictive, may have negative effects on self-regulation skills (Mohamed, 2021). Accordingly, further research is required to ascertain the precise mechanisms by which video games can be utilised to enhance self-regulation in EFL learning (Viberg & Kukulska-Hulme, 2022). This study aims to answer the following question:

What are teachers' perceptions of language learner self-regulation when using video games in teaching?

II. Literature Review

A. Using Technology in English Language Teaching

Using technology in English language teaching (ELT) can provide a variety of benefits for teachers and students. Teachers can use a variety of online resources, such as websites, apps and videos, to supplement their lessons and provide additional practice opportunities for students (Lan et al., 2020). For example, such websites as Quizlet and Duolingo can be used to create interactive flashcards and quizzes for vocabulary practice.

Online platforms, such as Zoom, Microsoft Teams and Google Meet, can be used to hold virtual classes, enabling students to participate in live lessons and interact with their teachers and classmates from anywhere (Landis et al., 2019). Technology should be used as a tool to enhance and supplement traditional teaching methods and not as a replacement for them (Viberg & Kukulska-Hulme, 2022). Moreover, an important consideration is to consider how to effectively integrate technology into the curriculum and how to provide training and support for teachers to use technology in the classroom.

One of the key findings from the literature is that technology can enhance language learning outcomes. Zheng et al. (2013) found that the use of technology in ELT can improve students' language proficiency, motivation and engagement. Similarly, Bagheri et al. (2021) found that technology, such as online discussion forums, can increase students' participation and interaction in language learning.

The literature has also suggested that technology can provide opportunities for personalised and autonomous learning. Demouy et al. (2014) found out that mobile technology can support self-directed learning by enabling students to access learning materials anytime and anywhere. Kukulska-Hulme and Viberg (2018) indicated that technology can provide opportunities for individualised learning by allowing students to choose their learning paths and materials.

Furthermore, the literature has highlighted that technology can support the development of various language skills. Stockwell and Hubbard (2013) determined that mobile technology can enhance students' listening and speaking skills by providing opportunities for authentic and interactive communication. Additionally, Zhu and Liu (2021) found that technology can promote students' reading and writing skills by providing access to authentic materials and feedback. Accordingly, technology can enhance language learning outcomes and provide opportunities for personalised and autonomous learning.

However, some studies have suggested that the use of technology in ELT may present some challenges. Thomas and Reinders (2016) found that the use of technology may not be suitable for all students because some of them may not have access to the necessary technology or may prefer more traditional forms of learning. Moreover, Ertmer et al. (2018) indicated that the use of technology may require a significant amount of time and preparation by teachers. Therefore, the use of technology in ELT may also present some challenges, such as the need for significant time and preparation by teachers and the varying levels of access and preference amongst students. Further research is needed to explore the optimal use of technology in ELT and to identify the factors that may influence its effectiveness.

B. Using Video Games in ELT

Video games have gained increasing attention as a potential tool for enhancing language learning in the field of ELT and general teaching. The use of video games in ELT can provide benefits for students (Wang & Huang, 2021). Video games can be used to provide students with interactive and engaging opportunities to practice vocabulary and grammar in context (Pouralvar et al., 2019). For example, role-playing games can be used to enable students to practice using new vocabulary and grammar structures in simulated real-life situations.

Similarly, video games can be a highly motivating and engaging way for students to learn. They can help to create a positive learning environment and can increase student engagement and participation (Mohamed, 2021). Video games are also used to promote collaboration and teamwork amongst students because many games require players to work together to achieve a common goal (Pouralvar et al., 2019). However, the appropriate age and level of students and how to integrate video games into the curriculum must be considered. Furthermore, a crucial aspect is to have a clear learning objective and assessment criteria to measure the effectiveness of using video games in teaching.

One of the key findings from the literature is that video games can be effective in enhancing language learning outcomes. Richtoff and Persson (2022) determined that the use of video games in ELT can improve students' language proficiency, motivation and engagement. Newcombe and Brick (2017) found that using video games in ELT can provide an engaging and interactive learning experience for students, which can lead to increased motivation and engagement in language learning. Additionally, video games can provide opportunities for students to practice and develop their language skills, which can lead to improvements in language proficiency. Hence, video games in ELT can be effective in improving students' language proficiency and their motivation and engagement in learning.

The literature has likewise suggested that video games can improve students' language skills in various ways. Li (2022) found out that video games can promote critical thinking, problem-solving and collaboration skills, which are essential for language learning. Additionally, video games can help students develop their listening and speaking skills. Chen and Yang (2013) determined that video games can be used to provide students with opportunities to practice listening and speaking to native speakers in English. For example, games that involve characters speaking in English with subtitles can be used to help students improve their listening comprehension skills (Mohamed, 2021). Video games can also be used to introduce students to different cultures and ways of life and can help them understand the context in which the language they are learning is used (Horowitz, 2019). As such, incorporating video games into ELT can foster learners' interest and curiosity in different cultures, which can motivate them to continue learning the language and to engage in cultural exchange and communication beyond the classroom. Overall, the use of video games in ELT can offer multiple benefits for language learners, including language development, cultural awareness and motivation.

However, some studies have suggested that the use of video games in ELT and teaching may present some challenges. In a book by Shliakhovchuk and Spashchenk (2021), they stated that the use of video games may require a significant amount of time and preparation by teachers. Moreover, Godwin-Jones (2014) found that the use of video games may not

be suitable for all students because some of them may not be interested in playing video games or may not have access to the necessary technology. Furthermore, teachers should carefully select and integrate appropriate video games into their teaching practices to ensure that they align with the learning objectives and enhance students' language learning experiences (Shliakhovchuk & Spashchenk, 2021). The use of video games in ELT and teaching may also present some challenges, such as the need for significant time and preparation by teachers and the varying levels of interest and access to technology amongst students. Note that the effectiveness of using video games in ELT may depend on various factors, such as the type of game used, level of students and learning goals.

C. Learners' Self-Regulation

Self-regulation refers to the ability to manage one's thoughts, emotions and behaviors to achieve goals, and it is a critical component of learning and academic success (Zimmerman, 1989). For self-regulation in learning, note that learners can monitor their learning, set and adjust learning goals, manage their time and resources and evaluate their own learning (Landis et al., 2019). This situation highlights the importance of learners' ability to regulate their own learning to facilitate their learning, which can lead to improved academic performance.

Wang (2021) found that learners who had higher levels of self-regulation are more likely to engage in self-directed learning and had better academic outcomes. This study highlighted the importance of learners' ability to regulate their own learning to facilitate self-directed learning, which can lead to improved academic performance. Moreover, the aforementioned study indicated the importance of explicitly teaching learners how to regulate their own learning to improve academic performance.

To promote self-regulation in learning, teachers can provide students with opportunities to reflect on their learning, set goals and monitor their progress. They can also teach students strategies for planning, organising and evaluating their own learning (Lan et al., 2020). Additionally, teachers can provide students with regular feedback on their progress, which can help students identify areas where they need further support and adjust their approach to learning as necessary. Note that self-regulation is not a fixed trait and can be developed with practice and guidance. Therefore, providing learners with appropriate support, guidance and resources to develop their self-regulation skills is crucial.

D. Learners' Self-Regulation in a Technological Learning Environment

In a technological learning environment, learners are often required to take an active role in their learning because they interact with digital resources and tools. Howard et al. (2019) explained that this requirement can present opportunities for learners to develop self-regulation skills, given that they are required to monitor their own learning, set and adjust learning goals and evaluate their own progress. Learning management systems can be used to provide learners with access to digital resources, track their progress and provide feedback on their learning (Pouralvar et al., 2019). For example, teachers can use a learning management system to set goals for learners, provide resources and materials and give learners the ability to track their own progress.

Adaptive learning systems use technology to adjust the difficulty of learning activities based on learners' performances (Landis et al., 2019). They can provide learners with personalised feedback and help learners to identify areas where they need further support. By using game-like elements in learning activities, learners can be motivated to set and achieve goals and to monitor their progress (Landis et al., 2019). Teachers should be trained and provided with the appropriate resources to use technology in learning.

Furthermore, technology can serve as a facilitator of self-regulated learning. Persico and Steffens (2017) explained that technology-based learning environments can promote self-regulated learning by providing learners with more control over their learning experiences. Hence, the use of technology can help learners develop their self-regulation skills, such as goal-setting and self-monitoring.

Another important finding from the literature is the role of teacher support in fostering learners' self-regulation in a technological environment. Cho and Heron (2015) determined that teacher support is positively related to learners' self-regulated learning in a technology-enhanced learning environment. Accordingly, teachers' support is a significant predictor of students' self-regulated learning in a blended learning environment.

Moreover, the literature has suggested that learners' self-regulation in a technological environment may be influenced by individual factors, such as motivation and metacognition. Lehmann et al. (2014) found that learners' motivation and metacognition are significant predictors of their self-regulated learning in a computer-based learning environment. Learners who are highly motivated and possess strong metacognitive skills are more likely to engage in self-regulated learning in a computer-based learning environment. This situation underscores the importance of promoting motivation and metacognition amongst learners to support effective learning outcomes in digital learning environments.

However, some studies have suggested that the use of technology in education may also pose challenges to learners' self-regulation. Lahza et al. (2022) found that learners' self-regulated learning is negatively affected by the lack of personal interaction in an online learning environment. Personal interaction is an important aspect of creating supportive and engaging learning environments that promote self-regulated learning. In online learning environments, instructors and course designers may need to consider strategies to promote interaction and engagement, such as using discussion forums, video conferencing or collaborative learning tools, to support learners' self-regulated learning.

Therefore, the literature review highlights that technology can serve as a facilitator of self-regulated learning. However, teacher support and individual factors, such as motivation and metacognition, play crucial roles in fostering learners' self-regulation in a technological learning environment.

III. Methodology

This research aims to explore teachers' perceptions of enhancing EFL learners' self-regulation through video games. A questionnaire was used to investigate EFL teachers' perceptions of using video games in teaching EFL to enhance self-regulation. The questionnaire included 24 statements related to the effects of video games on students' self-regulation. The questionnaire was designed based on the literature review and previous studies related to the topic. The statements were rated using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). A group of three experts in the fields of curricula and methods of teaching English and applied linguistics were presented with a checklist to gather their input on the suitability of statements for video games and self-regulation and their relevance to specific dimensions. The appropriate statements were selected and modified to fit the requirements of this study. The validity of the scale was confirmed, and its reliability was assessed using Cronbach's alpha, which yielded a score of 0.93, indicating that the scale was dependable.

The participants of this study were 130 EFL teachers recruited from different schools in the region. The participants were selected based on their willingness to participate in the current study and their experience in teaching EFL. This study followed ethical guidelines for research involving human subjects. The participants were informed of the purpose of the study, their rights and confidentiality. They were also given the option to withdraw from the study at any time without any consequences.

The participants were contacted through email and informed of the study's purpose. They were also provided with an informed consent form that they had to sign before participating in the study. Thereafter, they were asked to complete the questionnaire online using Google Forms.

The collected data were coded, entered in a computer and analysed using SPSS. Data collected were analysed using descriptive statistics, such as mean, standard deviation and frequency distribution. Inferential statistics, such as t-test, was used to compare the means. The results will be shown in the table.

One limitation of this study is that it relied on self-reported data from teachers, which means it is based on their perspectives and opinions. Another limitation is that it only focused on EFL teachers, which may limit its generalisability to other contexts or populations.

IV. Findings

The results of this study were reached and formed considering the Saudi EFL teachers' responses to a web-based questionnaire. Table 1 shows the results.

Table 1
Teachers' Responses

Question	Strongly disagree	disagree	Uncertain	Agree	Strongly agree	Mean	Std. Deviation	T-test	significance	Sample attitude
Video games encourage students to complete assignments	8	13	4	53	52	3.98	1.181	38.464	0.000	Agree
Video games encourage students to set short-term goals	22	24	28	31	25	3.10	1.369	25.822	0.000	Agree
Video games encourage students to set long-term goals	8	10	13	48	51	3.92	1.181	37.785	0.000	Strongly agree
Video games encourage students to Set reminders for upcoming tests and quizzes	8	13	4	53	52	3.98	1.181	38.464	0.000	Agree
Video games encourage students to Take notes in class	22	24	28	30	26	3.11	1.377	25.738	0.000	Agree
Video games encourage students to	8	10	18	43	51	3.37	1.227	31.303	0.000	Strongly agree

Create schedules										
Video games encourage students to Stay on track with deadlines	9	18	4	50	49	3.92	1.181	37.785	0.000	Agree
Video games encourage students to Take a decision	21	24	31	32	22	3.86	1.256	35.054	0.000	Agree
Video games encourage students to Set aside specific times for studying	2	10	18	30	70	3.08	1.327	26.433	0.000	Strongly agree
Video games encourage students to Set aside specific times for completing homework assignments	7	10	2	51	60	4.20	1.045	45.837	0.000	Strongly agree
Video games encourage students to Apply problem-solving as a learning strategy	25	33	24	32	16	4.13	1.123	41.928	0.000	Disagree
Video games encourage students to Draw logical conclusions from facts	16	8	17	41	48	2.85	1.324	24.571	0.000	Strongly agree
Video games encourage students to Communicate with students effectively	9	6	1	29	85	3.75	1.343	31.807	0.000	Strongly agree
Video games encourage students to Communicate with teachers effectively	12	17	13	41	47	4.35	1.166	42.494	0.000	Strongly agree
Video games encourage students to Develop social skills	27	26	27	46	4	3.72	1.324	32.069	0.000	Strongly agree
Video games encourage students to Be autonomous in learning	10	5	28	42	45	2.80	1.216	26.250	0.000	Strongly agree
Video games encourage students to control their learning	4	8	6	37	75	3.82	1.178	37.012	0.000	Strongly agree
Video games encourage students to Monitor their learning	27	13	11	27	52	4.32	1.027	47.908	0.000	Agree
Video games encourage students to be Aware of their learning	10	16	22	56	26	3.49	1.586	25.106	0.000	Agree

Video games encourage students to Evaluate their own learning	7	20	21	25	57	3.55	1.168	34.678	0.000	Strongly agree
Video games encourage students to break down knowledge into smaller parts	14	5	2	43	66	3.81	1.295	33.536	0.000	Strongly agree
Video games encourage students to Recognize their own emotions	18	23	17	35	37	4.09	1.285	36.321	0.000	Strongly agree
Video games encourage students to Recognize the emotions of others	28	15	31	36	20	3.38	1.416	27.247	0.000	Agree
Video games encourage students to Check in with teachers or mentors for feedback on their progress	9	30	20	46	25	3.04	1.372	25.252	0.000	Agree

As shown in Table 1, the participants had a positive attitude towards most of the questionnaire items on the use of video games in education. The mean scores of 23 items out of 24 were above 3, indicating agreement with the statements. The highest mean score was for the item 'Video games encourage students to set aside specific times for completing homework assignments' (M = 4.20, SD = 1.045), followed by 'Video games encourage students to communicate with teachers effectively' (M = 4.35, SD = 1.166). This result showed that the participants strongly agreed with the notion that video games promote learner autonomy and effective communication.

Meanwhile, the lowest mean scores were for the items 'Video games encourage students to apply problem-solving as a learning strategy' (M = 3.13, SD = 1.123) and 'Video games encourage students to check in with teachers or mentors for feedback on progress' (M = 3.04, SD = 1.372). The result indicated uncertainty or disagreement with these statements. Overall, the teachers had a positive perception of the role of video games in developing 21st century skills and learning strategies. The significance values ($p < 0.05$) for all questionnaire items also confirmed that the participants' attitudes are statistically significant.

In summary, the analysis of the questionnaire responses revealed that the EFL teachers had an optimistic view of video games as effective tools for promoting autonomy, communication and cognitive and metacognitive skills amongst students. Although some teachers were uncertain or disagreed with certain aspects, such as problem-solving and feedback, the majority recognised the benefits of using video games for learning and education.

V. Discussion

The findings of this study are consistent with those of previous research, showing that educators generally hold positive views of video game use for teaching and learning (e.g., Proctor & Marks, 2013; An et al., 2016; Gillern et al., 2022; Pineda-Martínez et al., 2023). That is, video games can promote a positive learning atmosphere and raise participation and engagement amongst students. Moreover, video games can engage learners, enhance their motivation and develop crucial 21st century skills, such as collaboration and critical thinking (Putri, 2014; Qian & Clark, 2016; Hewett, 2022). To this end, video games have several features that make them an effective learning tool. They often require players to work collaboratively towards a common goal, which can help develop important interpersonal skills, such as communication, teamwork and leadership. Additionally, many video games require players to think critically and solve problems creatively, which can help develop important cognitive skills, such as logical reasoning and analytical thinking. Video games also have the potential to be a highly effective and engaging learning tool, particularly for learners who may struggle with traditional classroom environments.

The participants in this study strongly agreed that video games promote learner autonomy, effective communication and cognitive skills. This result echoes the conclusions of researchers who found that video games empower learners to take control of their learning and interact with others (Wouters et al., 2013; Seli & Santosa, 2022). Accordingly, teachers believe that video games can positively affect learners' planning, organizing, monitoring, evaluating and assessing skills. In video games, students are frequently expected to participate actively in their learning. Hence, learners must keep track

of their learning, establish and revise learning goals, and assess their development. Lastly, video games can provide opportunities for learners to develop self-regulation skills.

The overall positive attitudes of the EFL teachers indicate their willingness to adopt video game-based pedagogies, consistent with findings that educators with more favorable views of technology tend to use it more in their teaching (Maravic et al., 2018; Cabellos et al., 2021). However, some uncertainties remain regarding the problem-solving and communication aspects. Hence, providing hands-on experience and continuous training on educational video games could address these issues.

Some participants were uncertain whether video games improve problem-solving abilities and student–teacher communication. Their skepticism corroborates the arguments of authors who indicated the lack of empirical evidence on the learning benefits of video games (e.g., Fu et al., 2016; Maraffi et al., 2017). Without first-hand experience with video game use in classrooms, teachers may be unconvinced of their advantages for developing problem-solving skills and enhancing feedback. This situation highlights the need for professional development programs to prepare teachers for video game integration.

In summary, this study provided valuable insights into EFL teachers' perceptions of video game use for learning and education. The results confirmed the generally optimistic views found in previous research, especially on learner self-regulation, autonomy, motivation and 21st century skills development. Additionally, the findings directed to the need for professional development focused on problem-solving, communication and student–teacher interaction using video games. By promoting video game literacy and hands-on experience amongst teachers, many of the uncertainties found in this and other studies could be addressed. Overall, the participants recognized the significant potential of video games as pedagogical tools for enhancing learners' self-regulation. However, note that not all video games are created equal. Thus, educators and parents should carefully consider the content and appropriateness of games before incorporating them into a learning environment. Video games often require players to work collaboratively towards a common goal, which can help develop important interpersonal skills, such as communication, teamwork and leadership. Additionally, learning management systems can be used to give students access to online tools, monitor their development and give them feedback on their education. For example, teachers can use a learning management system to give students the ability to track their progress, provide resources and materials and establish goals for them.

VI. Conclusion

This study shows that teachers have a positive perception of using video games to enhance learners' self-regulation. The results from the questionnaire of 130 teachers indicate that they believe video games can have a positive effect on learners' self-regulation. This finding suggests that video games can be an effective tool to help students develop their self-regulation skills. By incorporating video games in the classroom and providing training for teachers on how to use them effectively, schools can help students develop the skills they need to succeed academically and in life.

The researcher presents the following recommendations based on the findings of this study.

1. Incorporate video games in the classroom: The results suggest that video games can be an effective tool to enhance learners' self-regulation. Therefore, teachers could consider incorporating video games in their teaching practice to help students develop their self-regulation skills.

2. Provide training for teachers on how to use video games: Some teachers may not be familiar with video games or know how to use them in the classroom. Therefore, it may be beneficial for schools to provide training for teachers on how to use video games effectively to enhance learners' self-regulation.

3. Develop video games specifically for self-regulation: Although there are many video games available, not all of them are designed to enhance self-regulation skills. Therefore, game developers could create video games specifically for this purpose to ensure that they are effective in helping students develop their self-regulation skills.

Although the results of this study are promising, further research is needed to investigate the effectiveness of using video games to enhance learners' self-regulation in different contexts. For example, future studies could explore the impact of video game use on self-regulation in different age groups or different subject areas. Another study can focus on conducting interviews with the teachers who participated in the questionnaire to gain further insights into their perceptions of using video games to enhance learners' self-regulation. Moreover, a researcher can compare the results of this study with other studies that have investigated the use of video games for educational purposes. Another research can develop a set of guidelines for teachers on how to effectively use video games in their classrooms to promote learners' self-regulation skills.

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