

Teachers' Perceptions, Readiness and Current Practices of Using Technology Tools

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The present study aims at exploring Omani teachers' perceptions, readiness and current practices of using Artificial Intelligence (AI) and gamification tools in their classroom teaching. The study employed a mixed method of questionnaire and semi-structured interviews with (26) basic education teachers to gather insights from a diverse sample of teachers across various subject areas. The research instruments investigated how teachers perceive the impact of AI and gamification tools on student performance, learning outcomes, and overall classroom dynamics. Further, it explores the challenges that influence teachers' decisions to adopt the integration of these tools in their teaching strategies. The findings indicate that Omani teachers hold a positive view towards using AI in teaching with many of them are concerned about the potential negative effects that AI may have on teaching and learning. It was also found that teachers recognize the potential benefits of gamification in which it increases student engagement and collaboration to have an enjoyable learning experience. However, challenges such as time constraints, resource availability and concerns about aligning gamified activities with educational objectives emerge as common points to be considered. By shedding light on the findings, this research recommends valuable insights in implementing gamification in Omani educational settings.

Keywords: AI, Gamification, Oman, Teachers, Perceptions, Technology Integration

Introduction

Technology has become an integral part of our daily lives, transforming the way we communicate and learn. In the realm of education, technology has emerged as a powerful tool, offering creative solutions to enhance the learning experience. In the past decade, much research has been carried out to investigate the effectiveness of technology integration in education. Technology integration does not mean using the computer instead of the blackboard or instead of the worksheets or taking students to the computer lab once a week. Davies and West (2014) define technology integration as “the effective implementation of educational technology to accomplish intended learning outcomes” (p.7). Therefore, educational technology is any tool, device, or equipment that helps students with the intended learning outcomes. Add to that, educational technology includes both instructional technology, which teachers use to deliver lessons, and learning technology, which learners use to achieve the outcomes (Davies & West, 2014).

Artificial Intelligence (AI) has been proved to be one of the promising trends in educational technology and many educators try to integrate it into education. The promising vision of AI to transform education into more personalized learning has made the world start experimenting with AI with different models (Pedro et al., 2019). The call for integrating AI into education has become necessary with the vast evolution of AI technology.

Another notable technological application is the incorporation of games in different settings in the classroom, creating a dynamic and engaging approach to knowledge acquisition. The implementation of gamification exemplifies the incorporation of games into educational settings. It is defined as the application of game mechanisms in non-play environments and applications to improve motivation, concentration, and effort. Gamification has been demonstrated to be a highly efficient method of teaching and learning (Al-Azawi et al., 2016). Michos (2017) also stated that combining traditional teaching methods with the implementation of digital games can be an effective strategy in foreign language teaching. It is worth mentioning that educational games play an essential role in making learning enjoyable and effective. These games go beyond traditional teaching methods in which they promote active participation and critical thinking skills in students of all ages. The use of gamification has opened new possibilities, providing interactive and immersive experiences that cater to diverse learning styles. Therefore, this study is trying to explore Omani teachers' perceptions and readiness of Omani teachers along with the current practices of using AI and gamification in classrooms teaching.

Literature Review

- *AI concept/definition*

The concept of Artificial Intelligence (AI) has been present for a long time since the 1950s. However, due to the slow development, AI has been marginalized. In recent years, AI has returned to the surface causing a phenomenon in all fields including education (Yang & Bai, 2020). Harry (2023) defined AI in education as “the use of artificial intelligence technologies, such as machine learning and natural language processing, to enhance the learning experience”. AI has the potential to personalize and democratize education worldwide, using AI driven educational systems, intelligent agents, autonomous scoring and assessment, and learner-support Chatbot for communication and collaborative learning (Al Badi et al., 2022). Al Badi et al. (2022) discussed that personalizing learning means that learners being able to take control over their learning which could be more engaging and motivating. Therefore, AI could help in personalizing learning.

- *Gamification concept/definition*

Over the past few years, the term "gamification" has attracted significant attention from professionals and academics focused on games. However, the prevailing understanding of gamification has mainly revolved around the integration of systematic game elements into various services, (Huotari & Hamari 2012). Gamification involves incorporating game features, especially elements derived from video games, into non-game contexts with the aim of enhancing motivation and encouraging participation in learning (Alsawaier, 2018). Gamification can also be defined as the practice of using game design elements, game mechanics and game thinking in designing activities that are not based on games for the purpose of motivating the students (Al-Azawi et al., 2016). Kapp (2012) added that gamification incorporates a limited set of game elements. Rather than engaging in complete game experience, participants partake in activities that integrate video or mobile game elements, such as earning points, conquering challenges, or obtaining badges upon task completion. According to Marczewski (2013), gamification refers to integrating elements from games into a task to increase its involvement. This entails receiving a reward after completing the task, whether it's a physical trophy or the inherent satisfaction derived from the activity. Gamification employs gaming concepts in everyday tasks to impact behavior, enhance motivation, and elevate engagement. It encompasses the integration of components like game dynamics, mechanics, and frameworks into situations that do not originally involve games (Stott & Neustaedter, 2013).

• *Benefits*

- *AI benefits*

Using library research, Fitria (2021) investigated the role of AI technology in English Language Teaching (ELT). The findings revealed that the use of AI technology in

language teaching provides a personalized learning environment that caters to the needs and interests of each learner. It allows students to practice their written and spoken English skills, increasing their proficiency and capacity. With the development of technology and platforms, learning English has become easier than ever. AI technology provides an opportunity to optimize the teaching impact of English in ELT and improve language skills. Tahiru (2021) asserted three major uses of AI in education: Automation of tasks where AI can be applied to process administrative tasks like marking homework, and grading exams, Smart Content where AI can condense textbooks into useful tools for exam revisions, and Intelligent Tutoring System (ITS) which is ultimate benefit of AI where learning is personalized according to learners' needs.

- *Gamification benefits*

Gamification in the classroom means the integration of game elements, mechanics, and design principles into educational activities to enhance engagement and learning outcomes. It leverages the inherent appeal of games to make the learning process more enjoyable and effective for students to obtain knowledge. Hence, teachers should clearly define the educational goals and outcomes they want to achieve in their lesson plan and align gamification elements with them to ensure relevance. Adding to that, several aspects should be considered in designing educational games like age, group, preferences, and learning styles of students (Al-Azawi et al., 2016). Furthermore, implementing games provides the chance to have immediate and constructive feedback to students so that teachers can use feedback to guide their progress, celebrate achievements, and address challenges. Marczewski (2013) claimed that incorporating games in teaching can introduce collaborative elements to encourage teamwork and peer interaction in which healthy competition challenges will be done to motivate students. Gamification proponents assert that gamification improves learning outcomes by strengthening important educational skills including communication, teamwork, and problem-solving. Furthermore, they argue that because gamified education is interactive, students are more likely to actively engage in the learning process, leading to higher levels of engagement with projects, online discussion boards, and other educational activities (Rabah, et al. 2018). According to Woodcock and Johnson (2018), the primary reasons for incorporating gamification into learning involve converting dull tasks into more engaging and manageable activities, making challenging work procedures enjoyable, facilitating concentration and focus, providing motivation and satisfaction, and fostering increased activity and sustained participation among learners. A similar conclusion was reached by Sanchez et al. (2020) who followed quasi-experimental design in their research. The participants were prepared for three tests using traditional quizzes (i.e., a question, four response options) or gamified online quizzes (i.e., a wager option, a progress bar, encouraging messages). They assumed that students who completed the gamified quizzes would complete more quizzes and demonstrate better learning. The analysis indicated that findings supported the testing

effect in those students who completed more quizzes performed better on subsequent tests. Additionally, students who completed the gamified quizzes had significantly better scores on the first test. In line with the previous studies, Ritzhaupt et al. (2021) conducted a study to examine the effects of gamification used in formal educational settings on student affective and behavioral outcomes. The results proved that gamification had a positive and significant effect on both student affective and behavioral outcomes in formal educational settings. More studies were conducted regarding the effectiveness of gamification in the classroom. For instance, Mee et al. (2020) conducted a study in Selangor, Malaysia. They aimed to explore views of 33 pre-service teachers in using gamification in language teaching during their 16-week internship at local primary schools using a quantitative survey research method. They discovered that adding gamification to language instruction enhanced students' critical, creative, and problem-solving abilities. As a result, learners' interest in language acquisition is subtly piqued by exciting activities.

Additionally, gamification plays a role in motivating and enhancing students' commitment to lesson activities. Gamification boosts motivation and concentration by heightening learners' enthusiasm, leading to increased participation in classroom activities, a transformation in the classroom ambiance, and an enjoyable learning experience. Additionally, the presence of competition, a fundamental aspect of games, is noteworthy. The competitive element sparks excitement among students as the question of who will emerge victorious or be defeated remains uncertain until the conclusion of the game (Michos, 2017). Research findings suggest that students who integrate gamification elements into their learning experience exhibit superior academic performance compared to groups lacking such opportunities (Çeker & Özdaml, 2017). This is consistent with Turan et al.'s (2016) research, where their findings indicated that students who were taught using gamification achieved higher scores compared to those who were not. They emphasized that the use of gamification had the capacity to increase both cognitive load and achievement levels, with students generally holding positive views about gamification strategies.

- *Challenges*

Apart from implementing AI and gamification in teaching and learning, many studies presented several challenges of using these tools in teaching (Li, 2021). It is not a secret that teachers are busy with lots of work and missions. Teaching, planning and designing lessons are very time-consuming so incorporating AI and games will be a demanding process for them. However, Numerous teachers have made efforts, with differing levels of success, to use game dynamics effectively to enhance student motivation and academic performance within the classroom (Stott & Neustaedter, 2013). Moreover, finding the appropriate AI and/or game applications quickly is challenging because teachers must discover if the presented app is beneficial for students' level, interest and

age. However, with the growth of AI, great concern is raised as chatbots are replacing teachers and the great demand for the use of Massive Open Online Courses (MOOC) has translated into a reduction of teaching staff (Loeckx, 2016; Tahiru, 2021). According to the 2023 EDUCAUSE Horizon Report, stakeholders are concerned about education integrity, and students “will primarily use generative AI to cheat on course assignments and assessments, and some even claim that generative AI will lead to the end of creative expression and individual thought” (Robert, & Reinitz, 2023, p. 21). Moreover, Govindarajan (2020) proved in his research that teachers faced difficulties in using gamification while teaching such as lack of training and time constraints in the preparation process. Hence, the writer also provided some solutions to be applied such as collaboration at different levels in school. To elaborate more, communities of practice and sharing ideas play an essential role in developing teachers’ performance. Encouraging the exchange of ideas within such communities encourages teachers to have the culture of lifelong learning. This aligns with what von Gillern and Alaswad (2016) who believed in the challenges of implementing gamification in the classroom. They mentioned that teachers must familiarize themselves and their students with the programs and applications used in the lesson, so they need time.

- *Related local studies*

- *AI studies*

On a local level, more and more teachers are trying to integrate technology in their classrooms to shift from traditional teaching and enhance learning (Al-Habsi et al., 2021). Ayed (2022) in his study tried to determine the status of AI in Higher Education in Oman asserted that instructors are concerned about the ethics of using AI. Therefore, the study suggests introducing across-curriculum lessons to teach the importance of ethical values in AI for students in secondary schools. In the Saudi context, Mohamed (2024) investigated teachers' perceptions about using ChatGPT in EFL classrooms by interviewing ten faculty members. The results revealed that some instructors acknowledge the usefulness of ChatGPT in providing quick and accurate answers, whereas others are concerned that it could encourage plagiarism, and prevent critical thinking and research skills. Alnasib (2023) examined the readiness of 465 faculty members at the Saudi King Faisal University to integrate AI into their teaching practices. The results showed a low knowledge level of AI and how to use it in teaching.

- *Gamification studies*

Recently, many studies have reported the effect of using gamification in the EFL Omani context (Mansur & Fadhilawati, 2019). For instance, Al-Azawi et al. (2016) conducted a comparative study to examine the difference between gamification and game-based learning (GBL). They mentioned that gamification is the practice of adding game elements to the activities that are not based on games, while GBL is the use of games to promote learning experience. Moreover, they commented that gamification can be used

in educational settings when teachers want to examine students' characteristics such as self-esteem, self-concept and individual differences. Furthermore, Govindarajan (2020) conducted a qualitative study which addressed the potential for exploiting gamification and interactive activities to achieve improved engagement in ELT classes. The analysis of the research findings showed that games integrated with technology can be more effectively used in ELT classes to achieve good outcomes and this promotes motivation, active engagement, and willing participation in the classroom.

Significance of the study

As technology continues to play a progressively crucial role in our lives, its significance in education has also grown and the needs of teachers and students to be updated with the effectiveness of its role is a must. In this study, the authors chose two important technological tools namely AI and gamification tools to investigate due to their applications availability and accessibility by teachers in Omani schools. Several studies provide evidence that teachers are increasingly adopting AI and gamification into their teaching practices globally but rarely at the local level. From the presented literature, it can be concluded that there is an effect of using AI and games in learning and teaching to enhance instruction and promote positive perceptions towards it. Hence, this study can be a pioneer study to explore Omani teachers' perceptions, readiness and current practices of using AI and gamification in classroom teaching.

Methodology

This section discusses research design, study questions, participants of the study, instruments used to collect data, procedures and how data is analyzed.

Research design

This study utilizes descriptive research method design gathering data from schoolteachers using a questionnaire and semi-structured interview.

Study Objectives

The primary purpose of this study is to investigate Omani teachers' perceptions, readiness and current practices of using technology tools, particularly AI and gamification, in classroom teaching. Furthermore, the research aims to explore the challenges encountered by teachers in the process of incorporating both tools into their teaching practices.

Study Questions:

1. What are Omani teachers' perceptions about current practices of using AI and gamification tools in their teaching practices?
2. How far are teachers ready to utilize AI and gamification tools in their teaching practices?

3. What are the challenges that may obstruct teachers from using AI and gamification tools in classrooms?

Population and sample

The population of this study was the Omani teachers in all basic education schools. The study instruments were conducted with two sets of 26 Omani male and female teachers distributed to fit the sampling requirements. The reason for the authors follow this sampling and instrumentation technique can be attributed to the following:

1. Triangulate the research approach by in-depth investigation of the two targeted technologies tools.
2. Cover more than one educational district and technological tool to improve the findings' reliability and generalizability to other educational settings.
3. Consider the logistical situation of the sample individuals' previous practice, their schools' technological facilities and readiness to collaborate in the study.

The following are the samples and sampling techniques for each tool:

1. The first set of participants comprised 16 Omani male and female basic education schoolteachers, eight males and eight females, from one educational district and responded to the *AI Questionnaire*. Those were purposively selected according to AI applications' availability in their schools and commitment to cooperate.

Table 1: Questionnaire Sample

Gender	Teaching Subject	Years of Experience	Number
Male	Physics	22	1
	Math	23	1
	Arabic Language	22-24	3
	Islamic	15 & 20	2
	Chemistry	17	1
Female	Science	14-15	2
	Islamic	21	1
	English Language	12-18	5
Total			16

2. The second set of participants were another ten Omani female schoolteachers from two educational districts, five teachers in each district, picked to conduct the *Gamification Semi-structured interviews*. They were selected by a convenient sampling method due to predefined demographic traits, specifically that the questions were designed to shed light on the practices they do regarding the use of gamification in the classroom, their readiness and perceptions. All participants are Arabic native speakers with teaching experiences ranging between 3-21 years.

Instruments

1. *AI Questionnaire*: This instrument was adopted from another study (Chounta et al., 2022) who surveyed (140) Estonian basic education teachers for their use of AI in classroom. The authors calculated the inter-rated reliability of the questionnaire's items using different statistical equations with a value of more than 0.7. To ensure the validity of the questionnaire, it was first translated into Arabic by a professional translator and then back translated into English by another translator. All items maintain their original meaning and relevance of items. The final form of the questionnaire includes a combination of six various types (multiple choice, yes/no and short answer) questions in addition to the demographic data.
2. *Gamification Semi-structured interviews*: This instrument was used to explore teachers' perceptions of using gamification and to reveal the challenges they face in implementing these techniques. To ensure the validity of the instrument, the questions were designed accurately, and several educational technologists checked the questions for their accuracy and relevance and requested minor modifications. Finally, the interviews instrument consisted of six questions that addressed the research questions on the use of gamification.

Procedures

This study took place in the first semester of the year (2023-2024) and lasted for three weeks. Arrangements were made to implement both instruments in the field. The participants' confidentiality, privacy and anonymity were confirmed in advance of the field application of both instruments. The schools' administrators were communicated to get the "participation consent forms" signed by the selected schoolteachers.

The questionnaire was administered simultaneously with interviews in both districts. The interviewees were asked to allow for their responses' audio-recording. Each interview took 35-40 minutes in a focus group format of five teachers in each district. Responses were then transcribed and analyzed.

Data analysis

To answer the four questions of the research, the data collected from the questionnaire were analyzed using basic statistical analysis (mainly percentages). Interviews were analyzed using main topics and the interviewees were anonymously coded as: A, B, C...etc. Data were transcribed to find relationships among ideas, compare the participants' comments, and categorize common concepts into themes. This led to the development of constructs to recognize the reality of using AI and gamification in classroom data.

Findings and Discussion:

First: Teachers' perceptions of current practices

To answer **RQ1**, the authors asked the teachers about their perceptions of current practices to utilize AI and gamification in their teaching. The answers were the following:

A. Teachers' perceptions of AI current practices

Teachers responding to the question of whether they have used AI in their teaching came almost equal (Fig. 1), which makes sense as teachers expressed their needs for training (as mentioned below). Moreover, when teachers are asked about the tools/applications they use, the answers were very limited to ChatGPT, Canva, Gamma, Di.d, and slidego. These limited practices show the need for more professional training in useful apps that can be used to enhance teaching and learning.

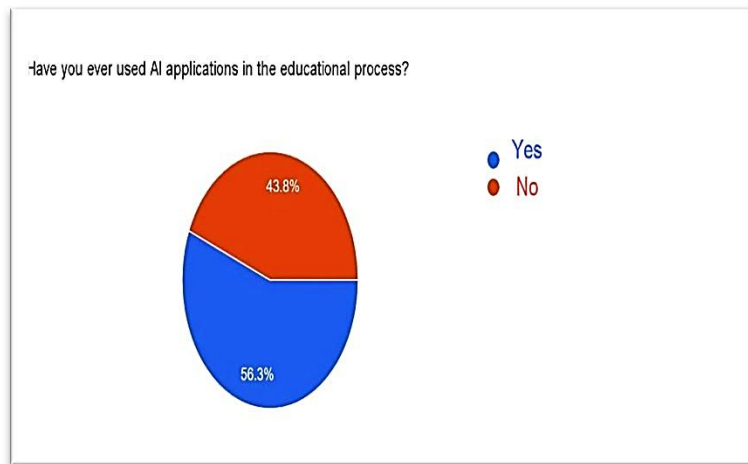


Fig. 1. Use of AI in teaching

Teachers were creative to describe the positive aspects that AI can bring to the classroom. They wrote *"it saves time and complete the lesson perfectly."*, *"it is enjoyable, engaging, motivating to our students"*, *"it enhances teaching and learning, provide a room for teachers and students to be creative"*. Most of the answers received emphasized the importance of AI in saving time for both teachers and students in acquiring knowledge. Teachers also highlighted AI as a valuable tool to enhance the teaching and learning experience by incorporating motivation and creativity.

B. Teachers' perceptions of gamification current practices

The findings presented under this theme shed light on different ways teachers are incorporating gamification into their teaching methodologies. Interestingly, the analysis revealed that some participants were using applications to design their own games such as Kahoot and Word Wall to design spelling and group competitions. For example, participant D said: *"I use it for group rewards, competitions between groups, races such as spelling race and writing race, card playing, reading gap. So, Kahoot and word wall were the most applications used in my classroom"*. So, it can be noticed that the variety

of these applications indicates a growing recognition among teachers that gamification extends beyond traditional teaching methods nowadays and this goes in line with Ritzhaupt et al. (2021). Moreover, participant E mentioned some applications used in designing games to serve different purposes such as Plickers and Educ Play to enhance students' motivation and engagement. She said: *"The most beneficial gamified applications in my classroom include Plickers for interactive assessments and Educ Play for creating engaging learning games. These tools enhance the overall learning experience for students"*. Similarly, Participant F commented that she used Kahoot to design quizzes, surveys and discussions for more competitive learning experiences as well as Duolingo for more professional performance to have an enjoyable learning. She said: *"I have utilized the game-based learning platform Kahoot!, which enables teachers to design surveys, discussions, and quizzes for engaging and competitive learning. In the future, I would like to utilize Duolingo, a gamified language-learning app that makes learning a language enjoyable and interesting"*.

More importantly, some participants perceive gamification as an effective yet entertaining tool in classroom instruction. For example, participant C mentioned that she used games and interactive activities to refresh her students' minds to memorize the new concepts learned at the end of the class. Also, she spotted the light on its importance as these games made learning more enjoyable in which they provide students with instant feedback. She said: *"I use educational games and interactive activities to refresh their minds about concepts and make learning more enjoyable and these games provide students with instant feedback"*. Furthermore, other participants mentioned how games are successfully applied in their classes and their effectiveness on students' development in different skills like problem solving and critical thinking. These findings echo that reported by Rabah, et al. (2018). Additionally, they mentioned that using games will give teachers comfort and proficiency with technology which will influence their perceptions. Also, teachers who are confident in using technology may be more open to incorporating gamification into their teaching practices. They said: *"For example, it is used to earn points for achievements and completing assignments or participating in discussions or achieving goals"* Adding to that, Participant G commented: *"I apply it to introduce complex information related to the syllabus to make learning more interactive and it can be collaborative or individual. Through this, I can encourage problem-solving and critical thinking and at the same time I feel more confident to teach using technology to ease the teaching process."* The previous responses are in support of Marczewski (2013). The findings shed light on how teachers are knowledgeable of gamification and positively perceive and respond to its integration in their teaching; and how helpful it is in increasing student engagement and achievements.

Second: Teachers' readiness

To answer **RQ2**, the authors asked the teachers far are teachers ready to utilize AI and gamification tools in their teaching practices. Their answers on readiness were categorized in two themes namely 'knowledge' and 'training'; and presented in the following analysis

1. Knowledge

A. Teachers' knowledge of AI

Under this theme, 56.3% of the participants described their knowledge of AI as limited. Add to that, a quite good percentage (37.5%), asserted that they know what AI is. (6.3%) of the participants were not sure about AI (Fig. 2).

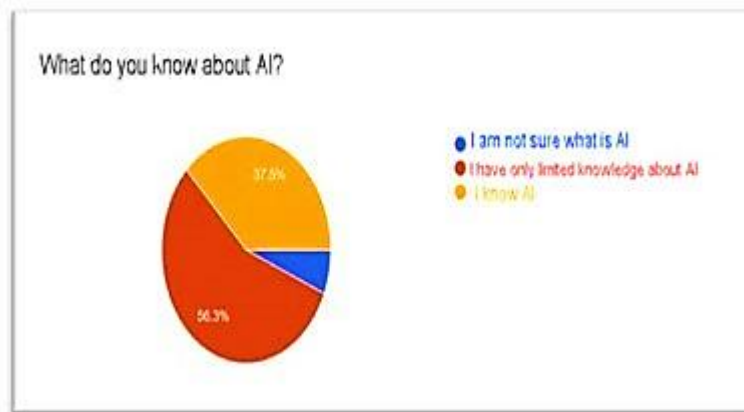


Fig. 2. AI Knowledge

To verify their above responses, the authors asked the teachers to define AI. The answers were as follows: *"a program that mimics the voice of a human to answer the query of the person who is researching"*, *"a program that responds to your questions in a short time"* and *"mimicking human mind in responding to questions"*. However, these definitions are basic but far from scientific and academic when compared to Harry (2023) definition. Therefore, by analyzing these responses, the authors are confident that 37.5% of the participants have the minimum required knowledge to identify AI. However, the majority have low knowledge of AI.

B. Teachers' knowledge of gamification

Teachers' knowledge of gamification in the classroom can vary based on several factors, including their background, experiences, and the educational context. To examine this, the participants were asked to define and explain their understanding of gamification. First, they defined gamification from their point of view and the findings revealed that all participants were knowledgeable about gamification and had a positive perspective on the use of gamification in education. For example, participant A said: *"I know that gamification means applying games like competition, rewards, and interactive design, in non-game activities to promote engagement, motivation."* Likewise, the following

statement from participant B illustrates that she understood gamification as the integration of games in activities to have fun and raise extrinsic motivation in the classroom. She said: *“I think it is the process of incorporating game mechanics into activities that are not basically games to make them more enjoyable and fun.”* Participants D and E agreed on the definition of gamification by saying that gamification is the strategic integration of game elements like competition, rewards, challenges, and progress tracking into educational activities to enhance engagement, motivation, and learning outcomes. They said: *“It is a fun strategy to be implemented in my class. Gamification, to me, is the strategic integration of game elements into educational activities to enhance engagement, motivation, and learning outcomes.”*

2. Training

A. Teachers' needs for AI-based training

Almost 70% of the teachers have not received any pre-service training in using AI, reflecting a status which needs improvement to keep abreast of the 4th industrial revolution in education and the development of students' 21st century skills.



Fig. 3. AI pre-service training

It has been found that 62.5% of teachers require in-service training to learn how to utilize AI in teaching. One positive note, 37.5% of teachers can learn independently and apply AI in their classrooms.



Fig. 4. AI in-service training

B. Teachers' needs for gamification-based training

The interviews' findings indicated that although all participants integrated gamification into their daily teaching practices, they expressed a need for additional support and training to enhance its effectiveness. Participant A, for instance, expressed a desire for more training and in-service professional development opportunities to gain insights into gamification strategies and how to apply them in their everyday teaching.

First: Challenges for implementation

To answer **RQ3**, the authors asked the teachers if they had faced any challenges in using AI and gamification in their teaching. The answers were the following:

A. Challenges of AI integration

By asking the teachers about the negative aspects of AI, some answered with "*I can't think of any*". However, many of the teachers expressed some serious concerns about using AI as follows:

- "*Cheating and not letting students think by themselves*".
- "*Less use of human mind and inequality in evaluating students' work*".
- "*Expensive and many logistic difficulties*".
- "*Safety of personal information and threats of fraud*".

These concerns show how anxious teachers are about the future of AI in education (Mohamed, 2024; Chounta et al., 2022; Robert, & Reinitz, 2023, p. 21). These concerns should give stakeholders, educators, and schools' officials a clear message of the necessity for future legislation on the use of AI.

B. Challenges of gamification integration

Concerning the challenges faced by teachers in implementing gamification in their teaching practices, various challenges were identified, with time constraints being a

prominent issue. Participants A, B, C, and E collectively acknowledged this challenge, expressing the following sentiments:

- *"I might resist incorporating gamification due to a reluctance to change established teaching methods, as it requires time and effort to start from scratch."*
- *"We sometimes feel pressured by time constraints, making it challenging to design and implement gamified activities while covering the required curriculum content and ensuring timely completion."*
- *"One challenge involves the need for time and expertise to design and implement gamified activities effectively."*
- *"Gamification demands more time for preparation and implementation, which could be challenging given the demands of the current curriculum and other school responsibilities."*

This finding is consistent with prior research that identified comparable challenges hindering educators from integrating gamification into their courses. These challenges involve insufficient resources such as time, training, classroom organization, financial support, along with students' lack of interest and issues associated with classroom dynamics (Sánchez-Mena & Martí-Parreño, 2017).

Another challenge identified by participants is the struggle to strike a balance between the applied gamification elements and the desired educational objectives. For instance, Participant D expressed this difficulty, stating: *"Evaluating the learning outcomes and ensuring that gamified activities aligning with curriculum standards might be challenging. Finding a balance between engaging activities and achieving educational goals is crucial to ensure that gamification enhances learning rather than becoming a distraction from academic objectives."* Similarly, Participant C shared similar concerns, stating, *"I have reservations about maintaining a balance between game elements and educational objectives."*

Participants highlighted further challenges, such as the absence of adequate support in terms of ongoing professional development opportunities, access to diverse and user-friendly gamified tools, and institutional backing for the integration of technology into the curriculum. Additionally, there might be a form of reluctance from certain students to adapt to gamified teaching methods, as they may be resistant to new approaches. This result aligns with the above research, which highlighted the issue of students' disinterest in gamified courses. According to teachers, this lack of interest stems from students perceiving gamified courses as not useful. Teachers reported using gamification only once in their courses because students felt it was a waste of their time (Sánchez-Mena & Martí-Parreño, 2017). Similarly, Participant B emphasized the necessity of technical support from their schools. Participant C suggested: *"The provision of libraries*

containing gamified learning activities or templates within schools, enable teachers to save time and effort in designing gamified content.” Moreover, Participant D highlighted: “Support and resources for designing and implementing gamified activities aligned with different subjects and grade levels would be beneficial.” In addition, Participant E articulated a need for technological support, such as access to resources and platforms like interactive tools, internet platforms, and multimedia resources to effectively integrate gamification into their teaching practices.

Results and Discussion

This study aimed to explore Omani teachers’ perceptions, readiness and current practices of using gamification in teaching. The findings obtained from both instruments: the questionnaire and semi-structured interviews were reported under three main themes: Teachers’ perceptions, Teachers’ readiness and Challenges.

The results indicate that Omani teachers hold a positive view towards using AI in teaching. This result is substantiated by Al-Habsi et al. (2021). However, many of them are concerned about the potential negative effects that AI may have on teaching and learning. Additionally, Omani teachers seem to lack the necessary skills to utilize AI tools and apps to enhance teaching and learning. Thus, there is a need for professional training to prepare them for utilizing AI in teaching. These results corroborate the work of Al Badi et al. (2022).

The literature supported the findings analyzed regarding the positive effect of gamification in classrooms. It is obvious that there is generally a positive correlation between the use of gamification and increased student participation and motivation (Govindarajan, 2020). Teachers reported a noticeable increase in enthusiasm among students with willingness to participate in discussions and assignments. These rewards associated with gamification, such points, seem to contribute significantly to this high motivation. This finding is in harmony with the finding reported by Mee et al. (2020), which was that all participants had the enthusiasm to think critically, creatively, and participate in the class while playing and learning. However, it is important to note that individual differences affect how students respond to and interact with gamification. While some students are interested in competitive environments and find motivation through this trend, others may be more intrinsically motivated and may not respond as positively to external rewards so, this must be considered while choosing the applications (Al-Azawi et al., 2016).

In conclusion, the current practices of using technology tools in classroom teaching offer deep insights into their possibility to enhance student engagement and motivation. However, careful consideration of challenges and limitations is necessary to ensure the effective implementation of these technologies in teaching strategies. As the authors continue to explore these trends in our educational field, collaboration between teachers

and researchers will be necessary in shaping the future of AI and gamification as a new learning experience.

Conclusion and recommendation

Technology tools in the classroom have a significant impact on students' ability to think critically, creatively and solve problems as teachers respond in this research. Learners' subconscious interest in knowledge acquisition of different subject matters is guided using fascinating activities. Participants concurred, in line with the findings, that using AI and gamification activities generally increased students' motivation and that using interesting apps could encourage low achievers to participate in class. Hence, it is important that teachers can find engaging resources and AI/gamified exercises that match the subject matter for in-class instruction. In the absence of digital assistance and teachers' resources, the classroom objectives will not be as successfully achieved. Therefore, to provide a productive learning environment for students, the school administration must support teachers' ongoing professional development. As well as teachers need to be trained to actively design AI and gamified lessons that match students' interests and levels to support the learning process. Consequently, receiving appropriate training in integrating AI/gamification into their teaching practices will lead to professional development to deal with the challenges occurring in the classrooms. Finally, collaboration between teachers, AI/game designers, and researchers is required for developing evidence-based best practices in these fields.

The present study has certain limitations. Firstly, it is restricted by a relatively small sample size, as investigated 26 Omani teachers across the educational districts. Therefore, the ability to generalize the findings to all Omani teachers may be limited. Moreover, the unique characteristics of the group involved in this study could influence the results and limit the ability to apply the findings to a larger population. The authors recommend that future research in this area should broaden the sample size, extend the field application to include more districts and use observation and experimental study instruments. The future research should also examine the effectiveness of other technological tools that may be adopted by Omani schoolteachers such as augmented reality apps and e-books.

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