

## Saudi Teachers' Perceptions Regarding Adopting Digital Games in Teaching Practice

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### ABSTRACT

This study applied a qualitative approach to shed light on computer teachers' perception of video games and the barriers toward integrating these games into their teaching. The data were gathered through face-to-face interviews with 22 Saudi teachers from the Eastern Province of Saudi Arabia. The results show that teachers in Saudi schools hold a positive attitude toward adopting video games and they realize the importance of adopting new technologies; however, they do not use them for teaching purposes. As far as barriers to adopting video game are concerned, lack of facilitating conditions, low awareness of the potential for video games in learning, and the lack of video games that are suited to Saudi peculiarities and curricula are the most perceived barriers among teachers.

### INTRODUCTION

Nowadays students have become part of a “digital generation” (Van Eck, 2006); they already know how to use different technologies and computer applications. They are looking for fun and enjoyable ways to learn that may be harder to achieve in traditional schools (Van Eck, 2006). One way to make the learning process more enjoyable and engaging is to adopt video games in teaching and learning (Su & Cheng, 2013; Papadakis, 2018). Digital games have become very prevalent among children and youth, and they spend a considerable amount of time using them (Subrahmanyam & Greenfield, 2008). Several studies have demonstrated the importance of using video games to improve students' engagement, academic achievement, motivation, and critical thinking (Eseryel, Law, Ifenthaler, Ge, & Miller, 2014; Su, & Cheng, 2013; Tham, & Tham, 2014; Tokac, Novak, & Thompson, 2019; Watson, Yang, & Ruggiero, 2013). Since the popularity of video games among 21st generation's lives and the potential benefits of integrating them in teaching, Saudi educational system might employ this technique for teaching and learning (Alqurashi & Williams, 2017). However, it is confounding that teachers do not embrace video games in their teaching practices (Papadakis, 2018, Papadakis & Kalogiannakis, 2017). For the purpose of this study, the researchers seek to highlight the Saudi teachers' perceptions towards video games and also highlight the most common barriers in Saudi educational system that limits of the role of using such tools. At this stage of the research, a video game is defined as “a game played by electronically manipulating images displayed on a television screen” (Video Game, 2019, p.1).

### LITERATURE

In the 21st century, well-designed games can be used as a medium to foster learning. Dikkers (2015) indicated that teachers adopting new media determined the degree to which it gets used and if the games are one such medium, then “it stands to reason that some of those games (media if adopted by teachers) can be effective and powerful learning experiences” (p.10). He also stated that well-designed games, if employed as media by teachers, “can tell powerful stories, challenge the mind, and convey the thinking of the designers” (p.10).

The relative importance of using digital games in teaching derives from their key role in enhancing students' motivation. Motivation is a crucial factor that affects learning outcomes (Asgari & Kaufman, 2009). Students in traditional classrooms have lower motivation than students in digital game-based learning classes (Prensky, 2007; Papadakis, 2018). Asgari and Kaufman (2009) stated that using games plays a significant role in making the learning process enjoyable and more engaging and this, in turn, increases students' motivation. According to Tokac et al. (2019), students who used video games for learning had better achievement and more motivation than their counterparts in traditional classrooms. According to Papadakis and Kalogiannakis (2017) and Tham and Tham (2014), game-based learning can be utilized as an efficient pedagogical approach to motivate and engage students; however, it is important to ensure that the selected educational game enriches students' experiences, increases student motivation, and immerses students in learning.

In addition, using video games in teaching can improve students' achievements and establish a positive attitude toward curricula (Papadakis, 2018). In software engineering classes, students achieved deeper learning when they used 3D game-based learning systems compared to students that used traditional methods (Su & Cheng 2013, Tokac et al., 2019). The researchers attributed this learning improvement to the students' enhanced motivation and immersion in the learning activities when using 3D game-based learning systems. The findings showed high satisfaction and confidence rates for students, as well as improved learner curiosity and immersion in learning activities (Su & Cheng, 2013).

Furthermore, using video games supports other 21st-century learning skills, such as creativity and problem-solving. Video games spark learners' creativity and give them the opportunity to find and organize information, solve problems, and evaluate solutions (Miller & Doering, 2014; Hwang, Hung, & Chen, 2014; Prensky, 2007). According to Squire (2005), digital games offer complex holistic problems for players, and this, in turn, increases the players' creativity and problem-solving skills. Moreover, players in digital games are active participants, while readers or viewers are passive observers (MediaJuice, 2014). The role of readers or viewers is just watching; they cannot make any decisions that will change the ending. In a game, the ending is a reward, particularly when the player reaches the desired goals (MediaJuice, 2014).

Educational video games have a significant impact on students' learning attitudes and achievements regardless of their age or gender. Cheng, Lou, Kuo, and Shih (2013) investigated the ability of elementary school students to accept and use digital game-based learning (DGBL) in their learning environment. The results of this investigation showed that using DGBL is suitable for both genders. In addition, the 4th-grade students' "perceived ease of use," "perceived usefulness," "attitudes toward use," and "intention to use" revealed high correlations.

In addition, Akinsola and Animasahun (2007) highlighted the impact of using a simulation-game environment on the achievements and attitudes of high school students regarding math courses. They found that students had poor achievement when using traditional teaching approaches. Using the simulation-game environment increased the students' achievement and led to a positive attitude regarding math subjects.

At the college level, using DGBL for learning can also improve students' achievement. To illustrate this, Afari, Aldridge, Fraser, and Khine (2013) conducted a study to highlight students' perceptions toward mathematics by using video games at the college level in UAE. The results showed that students were involved in these experiences and such learning tools had a significant positive impact on their math enjoyment, academic efficacy, and achieved learning outcomes.

Although using educational video games could play a vital role in motivating students (Papastergiou, 2009; Papadakis, 2018) and improving students' performance (Su & Cheng, 2013), the adoption of video games for learning has not been prevalent in schools as of yet (Alquarshi, 2016, Koh, Yeo, Wadhwa, & Lim, 2011). The lack of use of educational video games in classrooms is due to the presence of obstacles and challenges. According to Baek (2008), there are six factors that prevent teachers from using educational digital games in their classrooms. The main difficulty teachers indicated was the inflexibility of some subjects or curricula. It is hard to find a game that is suitable for such lesson objectives. The potential negative effects of video games on students' vision and behavior constitute another challenge preventing teachers from using video games. Furthermore, some teachers avoid using video games because some students are not yet ready to deal with video games. Some teachers feel they do not have enough supportive materials, such as reference materials. Moreover, time constraints do not allow teachers to use games. Having a busy, fixed schedule and a heavy curriculum constrains the use of video games. Lastly, schools have limited budgets, therefore they cannot provide the requirements for using educational video games, such as computers and connectivity.

Wu (2015) divided the difficulties that hinder the adoption of video games into internal and external difficulties. The internal difficulties were composed of the lack of self-efficacy, the difficulty of assessing student learning, and the difficulty of choosing video games that were suitable for the subject matter. The external challenges included inconsistency between the use of digital games and the curricula, the negative perceptions some administrators had about DGBL, the lack of facilitating technology and professional development, short class periods, and the poor quality of the digital games that existed in the market.

## **THE PURPOSE OF THE STUDY**

The main purpose of this qualitative study was to identify Saudi teachers' perceptions regarding adopting video games for learning. It investigated the barriers that concern teachers regarding the adoption of DGBL in Eastern Province schools in Saudi Arabia.

## THE SIGNIFICANCE OF THE STUDY

This study will enrich the Saudi educational research field. There has been little research thus far examining the barriers to adopting game-based learning in classrooms (Alqurashi, 2016). This study could benefit teachers, school leaders, and policymakers. As far as teachers are concerned, this study is the teachers' voice toward school leaders and policymakers. It presents the obstacles toward the adoption of digital game-based learning in classrooms. Participation in this study may also help teachers in conducting their own research. In addition, interviewing teachers may help them evaluate their current teaching practices.

Furthermore, this study might help policymakers identify the main reasons that prevent Saudi teachers from using digital games in classrooms, allowing them to take actions that will increase the incorporation of educational video games in classrooms. These actions may include the allocation of funds or the creation of policies.

This study will play an important role in raising school leaders' awareness regarding adopting digital games in teaching and revealing to what extent their teachers perceive its benefits for learning. Thus, school leaders should take actions such as arranging teacher training to enhance the adoption of DGBL.

## RESEARCH QUESTIONS

This study attempts to address the following questions:

- A. What are teachers' perceptions regarding using video games for educational purposes?
- B. What are the barriers to the adoption of digital games in Saudi schools from Saudi teachers' perspectives?

## METHODOLOGY

### Research Design

This was an exploratory study aimed at identifying Saudi teachers' perceptions of adopting video games for learning as well as revealing the difficulties teachers might face when they intend to embrace video games in their teaching.

### Instrument and Data Collection

The interview questions were self-designed based on the literature. Then the questions were modified by four experts in the field. A pilot test was conducted in order to validate the research instrument. The researchers conducted an interview with two participants from the target population. After this interview, the researchers made some changes to the interview questions. The final version of the interview contained eleven questions. The researchers used a one-to-one structured interview. The researchers used the Arabic language to conduct the interviews, as per the participants' preference. Each interview lasted for 10–20 minutes.

### Sample

The population of this study was gathered from Saudi teachers in public Eastern Province schools in Saudi Arabia. All the subjects were males 25–50 years old. The researchers used a convenience sample combined with snowball sampling. This study included 22 Saudi teachers in the Eastern Province of Saudi Arabia during the 2018–2019 academic year. These teachers taught computer courses in middle and high schools. No personally identifiable information (like respondents' names, house address, or ages) was collected, as per some participants' requests.

### Data Analysis Procedures

All interviews were transcribed using InqScribe software. Then the researchers read through each interview transcript separately and highlighted the most significant information in order to divide the transcript into information segments that were related to the first research question. The researchers coded these segments using *in vivo* codes, codes from the social sciences, and/or codes from the researchers that best described these segments. The researchers then read separately through each interview transcript and highlighted the most significant information in order to divide the transcript into information segments related to the second research question. These segments were then coded by the researchers using *in vivo*, social studies, and/or researcher-sourced codes that best described the information segments. A number of codes were identified. Similar codes were then grouped and categorized into three themes.

### The Validity of the Results

After the researchers finished coding the data and coming up with three themes, they needed to confirm that these themes and results were accurate and corresponded to the participant's intentions. They used member

checking to establish credibility. The researchers emailed the theme table and findings to the participants to test the accuracy and credibility of the data and received confirmations from all participants. They also emailed the codes to a friend who spoke both English and Arabic language to double-check the translation.

## FINDINGS AND DISCUSSION

To answer the first question, what are the teachers' perceptions about using video games for educational purposes, the researchers analyzed the interviewees' responses to the first three interview questions, which were:

A. What do you think about using games in general to support your teaching?

B. What is your opinion about using digital games (i.e., *Minecraft*) as a teaching and learning tool?

C. Do you think teachers and school leaders believe in the importance of using video games for educational purposes?

Generally speaking, all participants agreed that video games were useful for enhancing student learning and enriching the learning environment. Video games can be useful for learning since students today are part of the digital generation and they are already involved in the world of digital games. According to participants, nowadays a large number of Saudi students use video games on their tablets, computers, smartphones, or game consoles; thus, why don't teachers leverage this for the benefit of students learning? Indeed, adopting video games is considered a smart move by teachers to reach students where they already are, as was said by participant A.

Participants stated that many potentials could be associated with using video games. To illustrate this, according to the participants, adopting video games in teaching could make the learning environment more enjoyable, practical, interactive, and competitive than a traditional learning environment and consequently make students more engaged, immersed, and thrilled to achieve better learning.

According to participant E, "using digital video games can assist teachers to draw students' attention and consolidate information in students' minds, unlike lecturing." Further, participant B stated that "there is no question that video games can play a vital role in fostering 21st century learning skills such as problem-solving, creativity, and collaboration," as well as "video games simulate what students' might face in their real lives," as stated by participant K. Participant G indicated that "Adopting video games could assist teachers to explain sophisticated topics and also students might acquire some implicit skills that are implied in some well-designed games." Participant U affirmed the role of video games in teaching programming concepts; he said, "video games such as scratch video games for learning purpose helps students learn program commands, logical sequence of programs, information structure, problem-solving, and teamwork skills in an enjoyable way." Although all the interviewees perceived the benefits of integrating video games into teaching, interestingly, none of them had ever used them in their teaching. This result is consistent with Noraddin and Kian's (2014) study, which found that teachers in Malaysia had a positive attitude toward the use of video games to support their teaching; however, more than 70% of participants had never used video games for educational purposes. Further, in a Saudi context, Alquarshis' (2016) reported that Saudi teachers had positive attitudes toward using video games to enhance students' motivation, engagement, thinking skills, and achievements. Noraddin and Kian (2014) also found that teachers held favorable attitudes. However, Alquarshi (2016) could not confirm that video games could improve teaching strategies or teacher performance.

With respect to the respondents' colleagues' and administrators' beliefs about using video games for learning as reported by the interviewees, the majority of respondents (19 out of 22) stated that their colleagues and administrators had not absorbed the notion of using of video games for educational purposes yet. One of the interviewees stated that "using digital game might make the educational process unserious and waste students time without educational benefits"; another stated that "integrating video game in teaching can be a more distraction of students than attraction." According to the interviewees, there are some teachers who realize the benefit of using video games for learning; however, they are a little worried about the possible negative consequences that might be associated with using video games, such as addiction and distraction. This result is in conflict with a study conducted by Noraddin and Kian (2014). Noraddin and Kian concluded that the teaching discipline had no impact on teachers' attitudes toward adopting video games in their teaching.

Five participants attributed this lack of awareness of the significance of video games to the dominance of traditional teaching methods in Saudi classrooms. Some teachers and school leaders are not familiar with millennial and Z generation needs and expectations. Those teachers have been taught the traditional methods and resist any changes that conflict with their personal beliefs. Another reason for not seeing the importance of digital games is that "some leaders think video games are not serious and they can be only used for fun," as stated by participant J.

In order to answer the second research question regarding barriers that could prevent teachers from adopting video games in their teaching, three major themes were identified based on the participants' answers. The biggest concerns about the adoption of video games revolved around three fundamental factors—facilitating resources, lack of awareness, and game issues.

#### The First Theme: Lack of facilitating conditions

The first theme is the lack of facilitating conditions. "Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh, Morris, Davis & Davis, 2003, p.453). There are many conditions that could facilitate the integration of digital games in Saudi classrooms. Based on the participants' responses, this theme included two main codes—facilitating technology and facilitating resources.

Facilitating technology illustrated that schools have to be equipped with the necessary technologies to use digital games, such as internet connectivity, computers, and tablets. This result is in agreement with other studies (Alqurashi, 2016; Baek, 2008, Wu, 2015). Based on the participants' responses, there was a consensus that their schools are not equipped to adopt video games. The schools needed a lot of development in terms of internet connectivity, computers, video games, and technical support. One participant said, "There are some computers in schools and the number of these computers does not exceed 20 computers. However, each classroom has approximately 30 students." Another teacher reported that "the computers that are currently used in schools are not able to run digital games because running some digital games required availability of specific features, such as screens with high resolution and computer with big ram size." In addition to the lack of computers in the lab, ten participants mentioned that the schools didn't have adequate access to the internet to take advantage of the full potential of adopting video games, such as communication and collaboration. This result is in agreement with other studies' findings (Alqurashi, 2016; Baek, 2008; Koh et al., 2011; Wu, 2015).

Time formed another challenge for the teachers. Interviewees mentioned that the duration of each lesson in Saudi schools is 45 minutes, and this short time is not enough to employ video games, especially when the curricula are heavy. Koh et al. (2011) concluded that having insufficient time to embrace video games in the curriculum was the greatest obstacle that impeded Singapore teachers from integrating video games into teaching. This result is in agreement with the results found by Wu (2015) and Alqurashi (2016).

The second code was facilitating resources. These included the materials, plans, policies, and manuals that are required to incorporate digital games effectively in classrooms. This result is in agreement with other studies' findings (Alqurashi, 2016; Baek, 2008; Koh et al., 2011). In Saudi classrooms, there are neither mechanisms nor policies for the adoption of video games, as some participants mentioned. Participant Q stated that "The biggest issue we have in Saudi Arabia regarding using educational digital games is the absence of planning." Other teachers said, "If Saudi Ministry of education would provide simple manuals about how to use video games, the number of teachers who used digital games in classrooms definitely will grow." Some participants mentioned the importance of having specific policies tailored for adopting video games in classrooms when they talked about the possibility of addiction, bullying, blackmail, and misbehavior. Having clear policies from the educational authorities is a significant factor that affects the use of video games in the curriculum (Koh et al., 2011).

Facilitating resources also included financial and technical support, which are considered other obstacles to the adoption of video games by Saudi teachers. The interviewees stated that there are neither adequate financial allocation for the use of educational games nor adequate technical support to provide assistance for teachers who want to use and subscribe to educational video games. This finding is consistent with prior studies that found financial issues to be a significant factor that prevents teachers from integrating video games into teaching (Alqurashi, 2016; Wu, 2015). According to Watson, Yang, and Ruggiero (2013, p.236), "Teachers should be provided more technical assistance and financial support for purchasing computers and suitable games."

#### The Second Theme: Lack of awareness

According to the participants, school leaders and teachers need to learn about the importance of using digital games in the classroom first and then learn how to use video games effectively to enhance their teaching. This theme included two major codes—lack of awareness and training.

Lack of awareness meant that Saudi teachers and school leaders did not believe that digital games are capable of improving student learning. According to participant C, "many Saudi administrators, particularly school leaders or teachers, are from the old generation, think using digital games is a waste of students time. Teachers can use it only for entertainment, not for education." Alqurashi (2016) found that a lack of awareness of the benefits of educational video games was a reason not to adopt video games among Saudi teachers. Also, Baek (2008, p.

671) stated that “an effort should be made to raise awareness among teachers and parents of the positive educational benefits of gaming.”

Awareness could be raised by providing professional development regarding the effectiveness and integration of digital games into teaching. According to the participants, some teachers might realize the importance of video games, however, they do not have the required skills to purposefully and effectively introduce them into their teaching. All of the participants indicated that the Saudi Ministry of Education should provide workshops and training for teachers, and consequently they expected the number of Saudi teachers who used video games in classrooms would increase. Participant Q said, “I have met some teachers who are computer illiterate and they do not know how to run computers rather than integrating video games.” This result confirmed Wu (2015) and Alqurashi’s (2016) findings that the lack of professional development was the biggest challenge that prevented teachers from using video games (Alqurashi, 2016).

#### The third theme: Game Issues

The last theme revolved around different issues related to video games, including language, consistency, and assessing student learning. For example, the majority of well-known video games use English for instructions and interfaces. However, the formal language in Saudi Arabia is Arabic, which means students and teachers who do not understand English will not be able to properly use such games. Participant Q said, “I read about *Minecraft* and I know it is adopted in western country schools because of capacity in supporting student skills. However, my students can’t understand English language; therefore, I will not be able to adopt *Minecraft*.” Participant U said, “there are some video games with Arabic interface; however, there are not common among students and are poorly designed.”

Game consistency referred to the alignment between digital video games, the Saudi curricula, and Saudi societal peculiarities. Participants mentioned that many digital games are common among students, but these games can’t serve the curriculum in any way. This finding is supported by previous studies (Alqurashi, 2016; Kirriemuir & McFarlane, 2004; Koh et al., 2011; Watson et al., 2013; Wu, 2015). According to participant C, “there are difficulties related to the games themselves in terms of their relevance to nature and the requirements of educational levels and consistency with what are in Saudi education policy.” In addition, some participants said that some well-designed games conflict with Saudi culture and religion because of certain women, pictures, and music.

The last obstacle that hindered the use of video games by teachers in Saudi Arabia from the interviewees’ perspectives is the difficulty of assessing students’ learning when they play educational video games. This result is in agreement with Wu’s (2015) study. Having an assessment element in the games used in the classroom would assist teachers in monitoring their students’ progression and evaluating their skills (Borji & Khaldi, 2015). This assessment element in games could include criteria such as a progress indicator and player tracking. According to participants B & C, any video game should have an assessment section in order to evaluate the progression of learning that in turn helps students to achieve the learning goals. On the other hand, participant A stated that “teachers need to learn how to measure learning process managed by such tools.”

## CONCLUSION

This study aimed to investigate Saudi teachers’—particularly computer teachers’—perceptions of the benefits of using video games in their teaching. The results show that computer teachers perceive the benefits of embracing video games in teaching. However, they stated that their colleagues who teach other subjects had a low awareness of the benefits of using video games for learning. Interestingly, none of the interviewees had ever employed video games for teaching purposes. This study also identified the difficulties that prevent Saudi teachers from adopting video games from computer teachers’ perspectives. These challenges are attributed to the lack of facilitating conditions, low awareness of video games’ potential for learning, and the lack of video games that suit Saudi peculiarities and curricula.

## IMPLICATIONS

Saudi educational authorities could begin initiatives to encourage teachers to adopt technological innovation in their teaching, such as video games. The Saudi Ministry of Education could provide incentives for teachers who adopt technological innovations in their teaching.

According to the interviewees, teachers emphasized that policymakers, school leaders, and teachers needed to assemble incorporate guidelines, materials, and plans regarding the implementation of video games for learning. Teachers could suggest a list of video games to be used in each subject based on their experiences, with manuals that showed clear instructions about the method of use, the purpose of use, and the target audience of the game.

Further, the Saudi Ministry of Education should enact rules and policies to control the use of video games in classrooms.

According to the interviewees, there are no video games that align with the Saudi community's peculiarities or the prescribed outcomes of the Saudi curricula. As such, the Saudi Ministry of Education could create a partnership with pioneer companies specializing in game design so that the Saudi Ministry could ask for tailored games that aligned with Saudi culture and curricula. Also, there should be teams of specialists in different areas (science, social studies, psychology, and religion) who suggest effective video games teachers may use in the classroom and who evaluate the consistency of the video games with course outcomes and the community's religious, social, and cultural values. From the researchers' perspectives, Saudi authorities should rethink the ability of the current educational system to embrace technological innovations in general and encourage the integration of DGBL in particular.

According to the participants, there are teachers who do not know how to integrate video games effectively into their teaching. In order to use educational video games effectively in Saudi classrooms, the Saudi Ministry of Education should provide courses, training, and workshops for teachers to assist them in selecting, designing, and using effective games. Also, holding seminars and conferences that discuss technological innovations and share successful experiences of adopting video game would remove skeptics' doubts and increase the use of educational games in Saudi schools (Koh et al., 2011). Since there is little research written in Arabic that sheds light on the use of video games for learning, the Saudi Ministry of Education could support researchers in conducting more research to identify technological innovations that might enhance student learning and sharing the results of these studies among teachers.

#### **FUTURE RESEARCH**

For future research, the researchers suggest conducting the same study with females only and comparing the results of this study and the future one to better understand the influence of gender. Also, changing the population and conducting studies in different sites using different research methods, such as qualitative or mixed methods, would give us a deeper understanding of these obstacles, and the results would assist the policymakers in overcoming these obstacles.

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