SEMARAK ILMU PUBLISHING

Journal of Advanced Research in Applied Sciences and Engineering Technology

Journal homepage:
https://semarakilmu.com.my/journals/index.php/applied_sciences_eng_tech/index
ISSN: 2462-1943

Motivation Elements in Game-Based Learning (GBL) for Tajweed Learning

Nadiah Ramlan[1], Norasikin Fabil[1,*], Zawawi Ismail[3]

[1] Universiti Sains Islam Malaysia, 71800 Nilai, Negeri Sembilan, Malaysia
[2] University of Malaya, 50603 Kuala Lumpur, Malaysia

ABSTRACT

Tajweed is a Quranic knowledge, and it is essential to provide a Quranic generation that is fluently and accurately reading the Quran. Unfortunately, previous studies depicted many students unable to read the Quran and indicated low achievement in Quranic subjects. Therefore, there is a need for efforts to create an interactive environment that can support the teaching and learning process, such as Game-Based Learning (GBL). GBL is a teaching aid that can be customized for teaching and learning and encourages students to be actively involved. Meanwhile, various factors are still being investigated in game design to ensure the success of GBL implementation, including motivational elements as an aspect of game design. Therefore, this study aims to identify the effect of GBL design on students' motivation in learning Tajweed. The game (i-Tajweed) deployed a Game Development Framework (GDF) and was tested using a quasi-experimental method on 120 students at primary schools by a purposive sampling method. The study used a set of questionnaires and a set of Tajweed Tests as the instruments for collecting data. The findings of the analysis revealed that the level of significance (0.000 < 0.05) value of the correlation coefficient (r) is 0.310. The result suggests that there is a significant correlation between student's achievement and motivation. Hence, the result proves that using GBL with motivational elements in the design can increase student motivation positively.

Keywords:

Game-based learning; Game design; Motivation; Tajweed

1. Introduction

Teaching and learning have become more challenging in the Industrial Revolution (IR 4.0) era. Meanwhile, Juhary [1] mentioned that IR 4.0 has changed many aspects of human life. IR 4.0 is a term used in the new Malaysian Education System to describe IR 4.0, addressed in the Malaysia Education Blueprint for Higher Education 2015-2025.

The benefits of technology led to many efforts and programs that integrated technology in educational settings, such as Computer Aided Instruction (CIA), e-learning, and computer games. However, [2] mentioned that the great potential effort required to produce high-quality learning games is best justified by the opportunities for learners who struggle in conventional educational settings or with a specific curriculum topic. Consequently, educators need to be creative in

* *Corresponding author.*
E-mail address: norasikin.fabil@usim.edu.my

https://doi.org/10.37934/araset.54.2.2031

implementing the available technology in the teaching process to motivate students to learn the subject.

Furthermore, learning the Quran is an obligation, and Tajweed is Quranic knowledge. Baharudin *et al.,* [3] emphasized that it is essential to provide a Quranic generation that is fluently and accurately reading the Quran. The obligation to practice the Quran reading with Tajweed was explained in surah al-Muzammil by Allah S.W.T. Unfortunately, there are studies by many authors [4-9] depicted that groups of students were unable to read the Quran or illiterate and also indicated the low achievement of Quranic subjects.

Considering these issues and caused by various reasons, various studies [10-12] on technological approaches to Tajweed learning have been published. However, other studies [11-14] stated that in Malaysia, it is considered rare and less deployed compared to other learning content. It is supported by Wang [15], who mentioned that the current system or application in Tajweed learning is still immature and requires additional development.

In addition, research into Game-Based Learning (GBL) as a motivational learning tool is a promising method known for its ability to encourage learners. Yusop and Mohd Naser [16] highlighted that the goal of GBL is to improve learning activities by incorporating games into the educational process. In addition, there has been a growing debate about the influence of games in diverse sectors. Nonetheless, there is currently a scarcity and limited studies on GBL research, as mentioned by Greipl *et al*., [2], Hsu and Chin-Chung [17], Santos-Villalba *et al*., [18], and Bakhsh *et al.,* [19]. The authors stated that it is also an ambiguous study.

Furthermore, Vlachopoulos and Agoritsa [20] and Azizan *et al.,* [21] described that the game design, especially digital educational games, needs to emphasize the elements of the game that are relevant to the purpose of the game development. On the other hand, Kasurinen and Antti [22] agreed that GBL needs to have the instructional elements mentioned as an entertainment game. It is supported by Laine and Renny [23] that research about games is also limited in Design Principles (DP) and game motivators that purposely improve learners' motivation and continuing engagement.

Considering the issues in Tajweed learning and the process of game design as the crucial part and needs great effort, the goal of this research is presented. Hence, this study aims to identify the effect of GBL design on students' motivation in learning Tajweed. Furthermore, this research explored GBL in Tajweed learning as an educational technique to help learners improve their academic performance and motivation.

1.1 Literature Review

1.1.1. Tajweed learning

The goal of Islamic Education curricula in Malaysia is to intentionally nurture and grow excellent Muslims based on the Quran and Sunnah. Therefore, it is essential to recite the Quran as well as understand its meaning. Recitation of the Muslim holy book, the Holy Quran, is a region's responsibility, and it is performed with great care to ensure that no errors are made while reading it, as stressed by Farooq and Kanwal [24]. At the same time, Harun *et al.,* [3] mentioned that Tajweed is the knowledge that provides Muslims with the right way to recite the Quran.

Furthermore, Abu Hasan [25] urged every Muslim to understand the significance of the Quran in their life [25]. Ibrahim *et al.,* [26] agreed that Science, Engineering, Social Science, Law, and Management are all included in the Holy Quran and supported by Faruqi [27]. These truths motivate people to read and comprehend the Quran for religious as well as scientific reasons.

Therefore, many authors, such as Baharudin *et al*., [3], Abi Syafiq Al-Hakiem *et al*., [7], Abu Bakar *et al*., [9], and Zahari *et al.,* [28], agreed that many studies related to learning the Quran and other

Islamic education syllabi at various levels of study were conducted by the respective scholars to access, evaluate, and discuss many aspects. Thus, they provide feedback, suggestions, and alternatives to overcome any problems and issues that occur. Hence, the continuous study of the Quran and Islamic education is necessary to ensure the achievable goal-setting of the Islamic education curricula.

1.1.2 Game-based learning (GBL)

In general, GBL involves designing learning activities that are integrated with game characteristics and principles. GBL is an innovative strategy that utilizes computer games to promote educational value using various software applications that aim to enhance the teaching process, assessment, and evaluation of learners, as mentioned by Dimitra *et al*., [29].

Furthermore, Ilhan [30] stated that GBL has been proven to promote soft skills such as collaboration, teamwork, creative problem-solving, critical thinking, and academic success motivated by students. As supported by Bawa [31], GBL is widely regarded as the greatest instrument for learning and skill advancement in various fields, particularly in educational upgrading.

Choi [32] mentioned that numerous researchers explored GBL as an educational technique to help learners improve their academic performance and motivation. Finally, Laine and Renny [23] support the idea that designing an educational game that maximizes motivational impact is a difficult undertaking that educational game DP may aid based on research and experience. Thus, many researchers believe that motivation elements in game design combined with learning theory can be one of the best solutions to enhance students' motivation and achievement.

1.1.3 Motivation elements

Tahir [33] defined motivation as an important factor in human behaviour and has been highlighted as a necessary component of efficient teaching and learning. Motivation tactics emphasize the use of positive words as well as the prevention of negative phrases, such as criticism, reprimand, and punishment, to motivate learners to do better. Many learning theories include motivation as an essential component. Moreover, motivation is a critical aspect in instructional design, according to Cecilia [34], and for learning to occur and succeed, the learner must have the passion to learn.

According to Harmann and Lisa [35] and Westera *et al.,* [36], a successful educational game design must achieve and balance three aims:

i. providing an entertaining game
ii. linking game content to learning goals
iii. considering the context of game use.

Referring to this rationale and the existing literature, three factors are presented as potential triggers and sustainers of student gameplay motivation:

i. appeal of the game
ii. game learning
iii. game cooperativeness

Besides, a great majority of academics attribute the games' popularity to their qualities.

Meanwhile, Wouters and Herre [37] investigated the impact of serious games on cognitive as well as motivational characteristics. They discovered that serious games might be helpful in specific situations, such as:

i. when additional teaching approaches were used in conjunction with the game
ii. when many training sessions were implemented
iii. when players cooperated in groups as Kennedy and John [38] studied.

The incorporation of rules, goals, engagement, challenge, feedback, fun, interactive, consequence, and rapid reward are among these factors. Game points, social points, badges, and leaderboards are all elements that appear regularly in many situations that Hamari *et al.,* [39] and Seaborn and Deorah [40] studied. Moreover, Garries *et al.,* [41] mentioned the following examples regarding fantasy, rules/goals, sensory inputs, challenge, mystery, and control as important motivation factors. Play, exploration, challenges, and involvement are the four motivational components identified by Amory [42]. In addition, immersion, identity, interactivity, agency, challenge, story, and feedback, according to Blumberg *et al.,* [43], are traits that attract and retain a player's interest in a game.

Hence, there is no consensus on what motivates people to play, as claimed by Wouters and Herre [37] and Garris *et al.,* [41]. Considering the literature and discussion, the researcher would recommend motivational aspects in game design and development. Table 1 explains the motivational elements used in game development and how they might be applied to the respective situations.

Table 1
Motivational elements in GBL

Motivation elements	Example	Impact
On positive behaviour/effort/ outcome, praise is offered. After displaying positive behaviour, praise is offered right away.	Congratulations!	Give encouragement
Use positive words	Focus, be patient, Don't Give Up, You Got This!	Maintain the effort to achieve the goal
Display a good action, effort, or outcome	You Are Amazing! Next Level	Keep the momentum

The following Figure 1, Figure 2 and Figure 3 are examples of the motivation design that was applied in the game (i-Tajweed). The examples demonstrate that a warm environment helps and encourages students to stay motivated. Moreover, it also provides rewards to supply the continuity of the spirit of learning to the students.

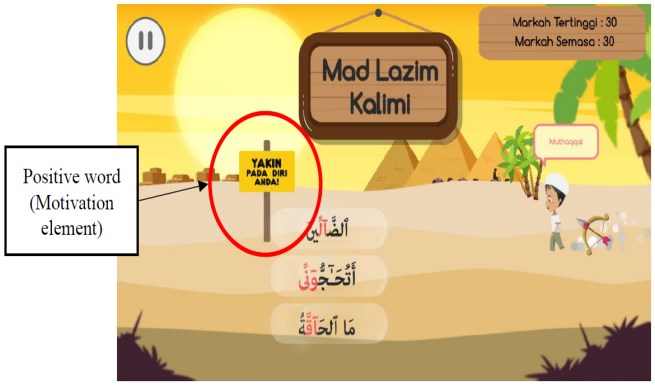

Fig. 1. Motivational elements (Positive Word)

Fig. 2. Motivational elements (Positive Feedback)

Fig. 3. Motivational elements (Rewards)

1.1.4 Game development framework (GDF)

In the game creation process, it is critical to prepare all features and traits by choosing a suitable Game Development Framework (GDF). Its purpose is to ensure that the game's goal has a favourable impact on the growth of learners. Games are created to increase a particular facet of learning. Furthermore, criteria for selecting appropriate GDF are regarded as a significant element in the teaching preparation process. The following are the steps that make up this procedure: Wu and Alf [44] mentioned multiple GDF candidates, analysing each GDF's attributes, creating criteria to filter GDF candidates, and selecting one or more GDFs that best fit the course content.

In the context of this research, the researcher argues that technological advancements have enhanced GDF. As a result, this research aims to observe how conventional methods might be made more dynamic and appealing to pupils by incorporating current technologies, particularly in Tajweed learning. For starters, it can be used to create games that can be utilized instead of traditional workouts.

Second, it may be used to create games that can be integrated into lectures to boost student enthusiasm and performance. Third, students can use a GDF in software development projects to better comprehend the subject of computer science courses, as suggested by Wu *et al*., [45].

Figure 4 displays the adaptation of GDF for this research (i-Tajweed). Four main attributes are applied: Game Design Life Cycle, Instructional Theory, Learning Theory, and Motivation Elements. Game Design Life Cycle focuses on the method selected for the development process of GBL, Instructional and Learning Theory, focusing on the theories embedded in the GBL and the motivations elements for GBL.

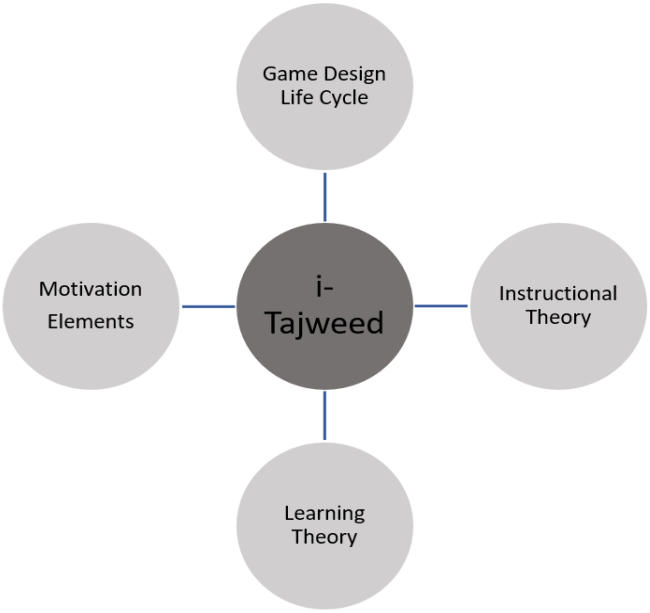

Fig. 4. GDF for i-Tajweed

2. Methodology

This research employed a quasi-experimental design. Accordingly, 120 primary school students from three schools in Sepang District were selected through the purposive sampling method. The students were randomly assigned into two groups of different learning approaches (control and treatment) with approximately equal numbers of students.

A set of Tajweed Tests was employed to measure the student's achievement. Besides, the standard questionnaire was used to measure the student's motivation distributed before (pre-test) and after (post-test). Part A is the general information, and Part B focuses on the motivation elements, which consist of eight items.

Two sessions of collecting data were conducted in the experiment between two weeks of the study. In the first session, both groups were given the Tajweed Test before the experiment started, yet the questionnaire was only administered to the treatment group. Consequently, the intervention classes utilized the i-Tajweed game, whereas the non-intervention classes were taught using the traditional method and video as teaching aids. Meanwhile, the second session was conducted after two weeks of the experiment. The same process was repeated for the second session.

2.1 Validity and Reliability

The pilot study was administered to students with characteristics similar to those of the experimental group. Twenty students at a primary school were selected through purposive sampling. The questionnaire session was conducted after completing the activities. The reliability value is calculated using Cronbach's Alpha statistical analysis. The value of Cronbach's Alpha obtained is α = .767, and it is reliable and acceptable in the actual research stated by Darusalam and Hussin [46] and defined by Hair *et al.,* [47].

2.2 Normality Data

The normality analysis suggests that the values of Skewness and Kurtosis obtained are between -

2 to 2. Table 2 depicts that the distribution of data obtained is normal and can be used for hypothesis testing and inferential analysis.

Table 2
Normality Test

	Total	Control Group		Treatment Group	
		Value of *Skewness*	Value of *Kurtosis*	Value of *Skewness*	Value of *Kurtosis*
Motivation aspect (Pre-Test)	60	-.925	.842	-.914	1.395
Motivation Aspect (Post-Test)	60	.479	-.649	-.945	.002

3. Findings

The finding focuses on the achievement of the Tajweed Test and the impacts of applying motivational elements towards Tajweed learning. Figure 5 illustrates that most of the student achievement in the treatment group is higher than in the control group. The treatment group's average achievement began at 70 marks, while the control group began at 60 marks. Furthermore, most achievement marks for students in the treatment group exceeded 90, with some receiving 100 or full marks. Meanwhile, the average student achievement in the control group did not exceed 90 marks.

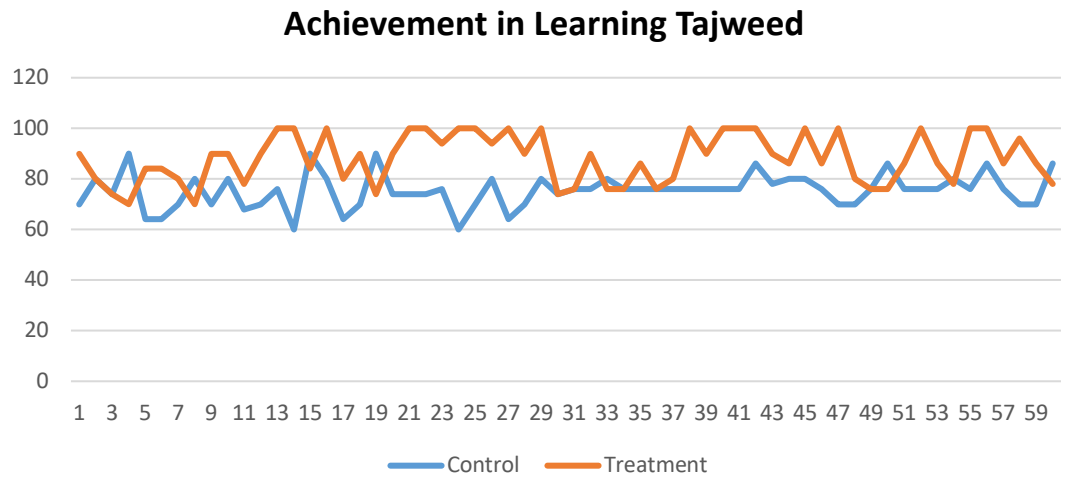

Fig. 5. Student's Achievement in Learning Tajweed for Control Group and Treatment Group

Overall, the achievement of students in the treatment group exposed to GBL in learning Tajweed was higher than that of students in the control group who were not exposed to GBL. This situation indicates that the effectiveness of GBL in learning Tajweed improves student achievement.

Table 3 indicates the analysis data from the questionnaires distributed to the treatment group (60 students) before and after the experiment. The mean value for each item in motivation aspects exhibits an increasing number of post-tests from the pre-test. In general, the mean value for motivation has increased from M = 3.7854 (SP = .076541) for the pre-test to M = 4.4375 (SP = .59058) for the post-test. Thus, the data depicts that the motivation level of the students increased from a medium-high level to a high level after using the game.

Table 3
Motivational result for the treatment group

Item No.	Motivation aspect	Pre-test	Post-test	Explanation
1.	I am very happy to continue learning Tajweed while using this game.	3.7167 (1.10610)	4.4833 (.77002)	Increase
2.	I feel very confident in using i-Tajweed.	3.8000 (1.00507)	4.4167 (.78744)	Increase
3.	Using this game, my motivation to understand Tajweed laws increases.	3.9167 (.92593)	4.4667 (.67565)	Increase
4.	The motivational words given are appropriate and can motivate me to keep playing using i-Tajweed.	3.7667 (.87074)	4.4667 (.76947)	Increase
5.	I easily understand the content contained in i-Tajweed.	3.5833 (1.13931)	4.3667 (.78041)	Increase
6.	After using the i-Tajweed game, I can understand the laws of Mim Sakinah and Mad Lazim clearly.	3.9000 (.87721)	4.3833 (.73857)	Increase
7.	Tajweed tips provided can help me understand Tajweed laws.	3.8500 (.97120)	4.4500 (.67460)	Increase
8.	Overall, i-Tajweed helps me increase my motivation to learn Tajweed.	3.7500 (.87576)	4.4667 (.65008)	Increase
Total	3.7854 (.76541)	4.4375 (.59058)	Increase	

Meanwhile, a correlation test has been used to prove the significance of motivation as the hypothesis below: -

Ho: There is a significant relationship between students` motivation and students` achievement for the treatment group after using GBL in learning Tajweed.

Table 4 indicates a significant relationship between motivation and student achievement, with a significant value obtained being sig. = .016, which is smaller than the sig value. = .05 ($p < .05$). Although the correlation coefficient (r) value is .310 and interpreted as a moderate correlation yet positively related. The variance $r^2 = 0.096$ suggests that 9.6% of the variance in the aspect of motivation had a relationship with student achievement. In comparison, 90.4% of other changes in the dependent variables may be due to other factors. Overall, the findings indicated a significant relationship between motivation and student achievement after using GBL in Tajweed learning.

Table 4
Analysis of the Relationship of Motivation and Student Achievement

Independent Variables	N	Dependent Variables: Students' Performance		
		Correlation coefficients (r)	Variance (r^2)	Significance (2-tailed)
Motivational Aspect	60	.310**	.096	.016

*** Correlation is significant at the 0.01 level (2-tailed)*

4. Results and Discussion

The outcome of this research is GBL called i-Tajweed. I-Tajweed applied the GDF for the development to ensure the increase of students' motivation. The findings significantly impact student motivation after using the i-Tajweed game.

Generally, the result is concurrent with other studies, such as Mastur *et al.,* [48], and Xia *et al.,* [49], agreeing that motivation supports increasing student achievement. However, overcoming the

bias or any arguments on the use of GBL will ensure incremental achievement compared to the conventional method. Thus, this study integrated technology education (video) besides the use of conventional methods. As a result, it is proven and consistent with other studies published in the literature that established the motivation elements in GBL.

Focusing on GBL as a teaching aid tool, other research has proven the increase of learners' motivation in experimental investigations, such as Ilhan [30], Riopel *et al.,* [50], and Alsawaier [51]. Aside from that, previous researchers such as Greipl [2] and Erlandsson and Elsa [52] also discovered that digital games are successfully used to enhance student interest and assist learning. Meanwhile, Jaafar *et al.,* [53] also mentioned games encourage students to explore and discover new things and Aini Nurrasyidah [54] discovered interactive games attracted students and lead the speed up of the learning process. These findings contribute to the body of knowledge by indicating that the gaming components, which are highly context-sensitive, can improve the quantitative performance of knowledge-related tasks.

Furthermore, it is suggested by Shi and Ju-Ling [55] that instructional designers examine game design frameworks. They may discover that the toolset of game DP is limited since some frameworks are difficult to use when the target game genre differs significantly from the default genres. In addition, according to Laine and Renny *et al.,* [23], gamification technologies may not be demonstrated to be more practical (fewer teaching hours). However, they may make instruction more impactful. Hence, in developing an effective and sustainable game for learning, a set of principles and theories must be embodied simultaneously to develop good learning games, as Jääskä [56] recommends.

The fundamental goal of this research is to use games' motivational potential for educational reasons and lead to the development of high-quality GBL. Thus, this research agreed with the necessity for effective game development to motivate Tajweed learning.

5. Conclusions

This paper is a conjunction of a study on the effectiveness of GBL in Tajweed learning. It suggests the adaptation of GDF and suggests four main attributes to be considered in game development: Game Design Life Cycle, Instructional Theory, Learning Theory, and Motivation Elements. Game Design Life Cycle focuses on the method selected for the development process of GBL, Instructional and Learning Theory focusing on the theories embedded in the GBL and the motivations elements for GBL.

Hence, it explained and exposed the knowledge and understanding of the points of motivational elements in GBL design. GBL promotes the primary goals of education in modern education systems that shift from a teacher-centred to a student-centred approach. Therefore, this research may inspire educators' communities to employ computer-based educational games to help them reach their educational goals.

Furthermore, integrating technology in Quran learning by focusing on the motivation elements can attract interest in Quran reading and foster the motivation of students who have a curious power to explore the Tajweed thoroughly and in detail. At the same time, GBL has the ability to improve the quality of Quran reading for those who are interested and consistent in learning it. The stability of religion in the individual has a very close relationship with the ability of students to master and cultivate the practice of reading the Quran in life.

It is hoped that GBL supports the efforts of reading the Quran with Tajweed and inspires the growth of the Quranic literate generation. At the same time, further studies should be conducted to discover more results on motivational elements using GBL learning strategy in different level

educational contexts**.**

Acknowledgment
This research was not funded by any grant.

References
[1] Juhary, Jowati. "Perceptions of students: Blended learning for IR4. 0." *International Journal of Information and Education Technology* 9, no. 12 (2019): 887-892. https://doi.org/10.18178/ijiet.2019.9.12.1322
[2] Greipl, Simon, Korbinian Moeller, and Manuel Ninaus. "Potential and limits of game-based learning." *International Journal of Technology Enhanced Learning* 12, no. 4 (2020): 363-389. https://doi.org/10.1504/IJTEL.2020.110047
[3] Baharudin, Harun, and Maimun Aqsha Lubis. "Mohd. Nik Rahimi Nik Yusoff.(2018). Tajweed learning through the support of Arabic phonetic." *Jurnal Hadhari* 10, no. 2: 259-274.
[4] Hanapi, Nurul Fatihah, Wan Yusoff Wan Shaharuddin, Yasmin See, and Nor Hazwani Munirah Lateh. "Tahap kebolehan membaca al-Quran: kajian kes pelajar bahasa arab di Malaysia." *Online Journal of Language, Communication, and Humanities (INSANIAH)* (2022).
[5] Ismail, Daud, Firdaus Wan Khairuldin, Wan Mohd Khairul, And Mahadi Mohammad. "Perkembangan dan Masalah Pembelajaran al-Quran dalam Program j-QAF di Malaysia." *Islāmiyyāt: International Journal of Islamic Studies* 36, no. 2 (2014). https://doi.org/10.17576/islamiyyat-2014-3602-06
[6] Nor, Muhammad Amirul Mohd, Muhammad Zulazizi Mohd Nawi, and Norhisham Muhamad. "Pelaksanaan amalan pengajaran guru kelas Al-Quran dan Fardhu Ain (KAFA) dalam pengajaran Tajwid Al-Quran di negeri Kedah." *Journal of Research, Policy & Practice of Teachers & Teacher Education (JRPPTTE)* 11, no. 1 (2021).
[7] Abi Syafiq Al-Hakiem Ab Jabar, Mohd Ikram Mohd Nawi, Uqbah Amer, and Ahmad Ibrahim Ismail. "Penguasaan Bacaan al-Quran: Satu Kajian Terhadap Pelajar Kolej Universiti Sains Perubatan Cyberjaya." *Proceeding of 5th International Seminar on Islamiyyat Studies (IRSYAD 2019)*. (2019).
[8] Sabilan, Sapie, Harzita Ismail, Suhana Moha, Mohamad Fuad Ishak, and Siti Nga'ishah Mohni. "Penilaian Aspek Konteks dan Input Berkaitan Tahap Pencapaian Kemahiran Bacaan Tilawah Al-Quran Berasaskan Penggunaan Kaedah Warna Terhadap Kelancaran Sebutan Bertajwid Dalam Kalangan Pelajar-Pelajar Tahun Lima Sek. Keb. Bukit Besi, Dungun, Terengganu: An Evaluation On Context And Input Of Reciting Tilawah Al-Quran Performance Based On Colour Method Towards Tajwid Recitation Fluency Among Standard Five Students Of Sekolah Kebangsaan Bukit Besi, Dungun, Terengganu." *Attarbawiy: Malaysian Online Journal of Education* 1, no. 2 (2017): 20-31. https://doi.org/10.53840/attarbawiy.v1i2.82
[9] Bakar, Basirah Abu, Ashlah binti Ibrahim, and Adnin binti Ibrahim. "The Effectiveness of Quranic Reading Teaching and Learning Methods on Private University Students in Malaysia." *Journal of Management & Science* 18, no. 1 (2020): 11-11. https://doi.org/10.57002/jms.v18i1.242
[10] Mssraty, Hassan Tariq, and Qais Faryadi. "Multimedia Intructional Learning Sytem to Aid in Teaching Qur'an Recitation with Effective Tajweed in Primary Education of Malaysia." *International Journal on Islamic Application in Computer Science and Technology* 3, no. 2 (2015).
[11] Umar, Irfan Naufal, and Zabedah A. Aziz. "The effects of multimedia with different modes of presentation on recitation skills among students with different self-regulated learning level." *Procedia-Social and Behavioral Sciences* 197 (2015): 1962-1968. https://doi.org/10.1016/j.sbspro.2015.07.584
[12] Noor, Nurtihah Mohamed, Marina Ismail, Rahmah Lob Yussof, and Fakhrul Hazman Yusoff. "Measuring tajweed augmented reality-based gamification learning model (TARGaLM) implementation for children in tajweed learning." *Pertanika J. Sci. Technol* 27 (2019): 1821-1840.
[13] TalhahAjmain, Muhammad, Asma Nurul'Aqilah Mahpuz Jima'ain, Siti Nur Hadis A. Rahman, Mohamad Khairul Latif, Ahmad Marzuki Mohamad, and Nur RazanIzzatiMohdRoslan. "Application of Technology in Teaching and Facilitating of Islamic Education in 4 th Industrial Revolution: A Review." *International Journal* 9, no. 1.3 (2020).
[14] Trajkovik, Vladimir, Toni Malinovski, Tatjana Vasileva-Stojanovska, and Marina Vasileva. "Traditional games in elementary school: Relationships of student's personality traits, motivation and experience with learning outcomes." *PloS one* 13, no. 8 (2018): e0202172. https://doi.org/10.1371/journal.pone.0202172
[15] Wang, Dan, and Mas Nida Md Khambari. "The Application of a Game-Based AR Learning Model in English Sentence Learning." *Malaysian Online Journal of Educational Technology* 8, no. 1 (2020): 63-71. https://doi.org/10.17220/mojet.2020.01.005
[16] Yusop, Noorrezam, and Mohd Naser Mohd Sabri. "A Study Of Comparison Analysis Tools Supporting Self-Learning Tajweed Using A Mobile Application For Kindergarten Student." (2021).

[17] Hsu, Chung-Yuan, and Chin-Chung Tsai. "Examining the effects of combining self-explanation principles with an educational game on learning science concepts." *Interactive Learning Environments* 21, no. 2 (2013): 104-115. https://doi.org/10.1080/10494820.2012.705850
[18] Santos-Villalba, María Jesús, Juan José Leiva Olivencia, Magdalena Ramos Navas-Parejo, and María Dolores Benítez-Márquez. "Higher education students' assessments towards gamification and sustainability: A case study." *Sustainability* 12, no. 20 (2020): 8513. https://doi.org/10.3390/su12208513
[19] Bakhsh, Khuda, Muhammad Hafeez, Shumaila Shahzad, Bushra Naureen, and Muhammad Faisal Farid. "Effectiveness of digital game based learning strategy in Higher Educational Perspectives." *Journal of Education and e-learning Research* 9, no. 4 (2022): 258-268. https://doi.org/10.20448/jeelr.v9i4.4247
[20] Vlachopoulos, Dimitrios, and Agoritsa Makri. "The effect of games and simulations on higher education: a systematic literature review." *International Journal of Educational Technology in Higher Education* 14 (2017): 1-33. https://doi.org/10.1186/s41239-017-0062-1
[21] Azizan, Ummu Husna, Maizatul Hayati Mohamad Yatim, Laili Farhana Ibharim, and Nor Zuhaidah Mohamed Zain. "Analysis of game elements in digital educational game according to Gagne nine events of instruction." *International Journal of Academic Research in Business and Social Sciences* 9, no. 7 (2019): 131-135. https://doi.org/10.6007/IJARBSS/v9-i7/6097
[22] Kasurinen, Jussi, and Antti Knutas. "Publication trends in gamification: A systematic mapping study." *Computer Science Review* 27 (2018): 33-44. https://doi.org/10.1016/j.cosrev.2017.10.003
[23] Laine, Teemu H., and Renny SN Lindberg. "Designing engaging games for education: A systematic literature review on game motivators and design principles." *IEEE Transactions on Learning Technologies* 13, no. 4 (2020): 804-821. https://doi.org/10.1109/TLT.2020.3018503
[24] Farooq, Muhammad., and Kanwal, Nagina. "Summary of Holy Quran: An Ultimate Guide Series." *Amazon Publishing.* (2019).
[25] Abu Hasan, Mashita. "The first revelation in the Holy Qur'an: it's significance in the methods of learning." *Jurnal CITU* 1, no. 2 (2005): 117-131.
[26] Ibrahim, Mohamed Akhiruddin, Mohammad Hikmat Shaker, Shahirah Sulaiman, Azniwati Abdul Aziz, Nur Safura Ab Ghaffar, and Mohd Hisyamuddin Yusup. "The Integration of Naqli and Aqli Knowledge in Curriculum at Universiti Sains Islam Malaysia: The Study on Student's Internship Organizations in Kelantan, Malaysia." *IJASOS-International E-journal of Advances in Social Sciences* 2, no. 5 (2016): 376-383. https://doi.org/10.18769/ijasos.74641
[27] Faruqi, Yasmeen Mahnaz. "Islamic View of Nature and Values: Could These Be the Answer to Building Bridges between Modern Science and Islamic Science." *International Education Journal* 8, no. 2 (2007): 461-469.
[28] Zahari, Nuril Ham Al Hafizah Binti, Sharifah Norshah Bani Binti Syed Bidin, and Syadiah Nor Binti Wan Syamsuddin. "Development of Al-Quran android application from year 2013 to 2016: The highlight." *International Journal of Academic Research in Business and Social Sciences* 7, no. 6 (2017): 183-195. https://doi.org/10.6007/IJARBSS/v7-i6/2954
[29] Dimitra, Kirstavridou, Kousaris Konstantinos, Zafeiriou Christina, and Tzafilkou Katerina. "Types of Game-Based Learning in Education: A brief state of the art and the implementation in Greece." *European Educational Researcher* 3, no. 2 (2020): 87-100. https://doi.org/10.31757/euer.324
[30] İlhan, Aziz. "The impact of game-based, modeling, and collaborative learning methods on the achievements, motivations, and visual mathematical literacy perceptions." *SAGE Open* 11, no. 1 (2021): 21582440211003567. https://doi.org/10.1177/21582440211003567
[31] Bawa, Papia. "Game on!: Investigating digital game-based versus gamified learning in higher education." *International Journal of Game-Based Learning (IJGBL)* 10, no. 3 (2020): 16-46. https://doi.org/10.4018/IJGBL.2020070102
[32] Choi, Beomkyu, Jie Huang, Annie Jeffrey, and Youngkyun Baek. "Development of a scale for fantasy state in digital games." *Computers in Human Behavior* 29, no. 5 (2013): 1980-1986. https://doi.org/10.1016/j.chb.2013.04.007
[33] Tahir, Muhammad, and Salih Yucel. "Motivational Techniques for Teaching: Prophetic Model." *International Journal of Teaching and Education* 7, no. 2 (2019). https://doi.org/10.20472/TE.2019.7.2.006
[34] Katzeff, Cecilia. "The design of interactive media for learners in an organisational setting–the state of the art." In *Proceedings for NordiCHI 2000*, pp. 23-25. 2000.
[35] Hartmann, Andreas, and Lisa Gommer. "To play or not to play: on the motivational effects of games in engineering education." *European journal of engineering education* 46, no. 3 (2021): 319-343. https://doi.org/10.1080/03043797.2019.1690430
[36] Westera, Wim, Wim Van der Vegt, Kiavash Bahreini, Mihai Dascalu, and Giel Van Lankveld. "Software components for serious game development." In *10th European Conf. on Games Based Learning*, pp. 765-772. Reading UK, Paisley, Scotland, 2016.

[37] Wouters, Pieter, and Herre Van Oostendorp. "A meta-analytic review of the role of instructional support in game-based learning." *Computers & Education* 60, no. 1 (2013): 412-425. https://doi.org/10.1016/j.compedu.2012.07.018
[38] Kennedy, Kerry J., and John Chi-Kin Lee, eds. *Routledge international handbook of schools and schooling in Asia*. New York: Routledge, 2018. https://doi.org/10.4324/9781315694382
[39] Hamari, Juho, Jonna Koivisto, and Harri Sarsa. "Does gamification work?--a literature review of empirical studies on gamification." In *2014 47th Hawaii international conference on system sciences*, pp. 3025-3034. Ieee, 2014. https://doi.org/10.1109/HICSS.2014.377
[40] Seaborn, Katie, and Deborah I. Fels. "Gamification in theory and action: A survey." *International Journal of human-computer studies* 74 (2015): 14-31. https://doi.org/10.1016/j.ijhcs.2014.09.006
[41] Garris, Rosemary, Robert Ahlers, and James E. Driskell. "Games, motivation, and learning: A research and practice model." *Simulation & gaming* 33, no. 4 (2002): 441-467. https://doi.org/10.1177/1046878102238607
[42] Amory, Alan. "Game object model version II: a theoretical framework for educational game development." *Educational Technology Research and Development* 55 (2007): 51-77. https://doi.org/10.1007/s11423-006-9001-x
[43] Blumberg, Stephen J., Matthew D. Bramlett, Michael D. Kogan, Laura A. Schieve, Jessica R. Jones, and Michael C. Lu. *Changes in prevalence of parent-reported autism spectrum disorder in school-aged US children: 2007 to 2011-2012*. No. 65. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, 2013.
[44] Wu, Bian, and Alf Inge Wang. "A guideline for game development-based learning: a literature review." *International Journal of Computer Games Technology* 2012 (2012): 8-8. https://doi.org/10.1155/2012/103710
[45] Wu, Bian, Alf Inge Wang, Jan-Erik Strøm, and Trond Blomholm Kvamme. "An evaluation of using a game development framework in higher education." In *2009 22nd Conference on Software Engineering Education and Training*, pp. 41-44. IEEE, 2009. https://doi.org/10.1109/CSEET.2009.9
[46] Darusalam, Ghazali, and Hussin, Sufean. "Metodologi Penyelidikan Dalam Pendidikan 2nd Edition Penerbit UM. Kuala Lumpur." (2010).
[47] Joseph, F. H. J. R., J. Babin Barry, E. Ander Rolph, and E. Anderson Rolph. *Multivariate data analysis*. Pearson Prentice Hall, 2010.
[48] Mastur, Rosmawati, and Aminah Suriaman. "Correlation between students' motivation and English achievement at secondary school level." In *5th International Conference on Arts Language and Culture (ICALC 2020)*, pp. 112-119. Atlantis Press, 2021. https://doi.org/10.2991/assehr.k.210226.055
[49] Xia, Qi, Hongbiao Yin, Ruonan Hu, Xiuhan Li, and Junjie Shang. "Motivation, engagement, and mathematics achievement: An exploratory study among Chinese primary students." *SAGE Open* 12, no. 4 (2022): 21582440221134609. https://doi.org/10.1177/21582440221134609
[50] Riopel, Martin, Lucian Nenciovici, Patrice Potvin, Pierre Chastenay, Patrick Charland, Jérémie Blanchette Sarrasin, and Steve Masson. "Impact of serious games on science learning achievement compared with more conventional instruction: an overview and a meta-analysis." *Studies in Science Education* 55, no. 2 (2019): 169-214. https://doi.org/10.1080/03057267.2019.1722420
[51] Alsawaier, Raed S. "The effect of gamification on motivation and engagement." *The International Journal of Information and Learning Technology* 35, no. 1 (2018): 56-79. https://doi.org/10.1108/IJILT-02-2017-0009
[52] Erlandsson, Vilma, and Elsa Ivarson. "Augmented reality and gamification in higher education: Designing mobile interaction to enhance students' intrinsic motivation and learning." (2021).
[53] Jaafar, Nurulaini, Siti Rohani Mohd Nor, Siti Mariam Norrulashikin, Nur Arina Bazilah Kamisan, and Ahmad Qushairi Mohamad. "Increase students' understanding of mathematics learning using the technology-based learning." *International Journal of Advanced Research in Future Ready Learning and Education* 28, no. 1 (2022): 24-29.
[54] Zokhi, Aini Nurrasyidah Md. "Aplikasi Inovasi Q-Track Kit Dalam Proses Pengajaran dan Pembelajaran Bagi Modul Teoritikal: Innovative Application of Q-Track Kit in the Teaching and Learning Process for Theoretical Modules." *International Journal of Advanced Research in Future Ready Learning and Education* 27, no. 1 (2022): 20-29.
[55] Shi, Yen-Ru, and Ju-Ling Shih. "Game factors and game-based learning design model." *International Journal of Computer Games Technology* 2015 (2015): 11-11. https://doi.org/10.1155/2015/549684
[56] Jääskä, Elina, Kirsi Aaltonen, and Jaakko Kujala. "Game-based learning in project sustainability management education." *Sustainability* 13, no. 15 (2021): 8204. https://doi.org/10.3390/su13158204

Name of Author	Email
Nadiah Ramlan	nadiahramlan@usim.edu.my
Norasikin Fabil	norasikin.fabil@usim.edu.my
Zawawi Ismail	zawawiismail@um.edu.my