CHAPTER 6

DISCUSSION, RECOMMENDATIONS, AND CONCLUSION

6.1 Overview

This chapter elaborates the research discussion, some relevant recommendations for the next researcher and is enclosed in the conclusion. It starts with research summarization, some discussion about the findings related to sustainability elements in designing and developing the i-Tajweed game, research output, and contribution of the research. Finally, it concludes with a useful recommendation for future works and the conclusion at the end of the chapter.

6.2 Research Summarization

This research aims to research the sustainability element in game design and development. Basically, learning Tajweed is considered by most primary school students as complicated as it requires memorizing many rules (*hukum*) of different topics at the same time. Moreover, many studies related to sustainability have been conducted in numerous fields. Thus, there is a need to conduct research that focuses on the sustainability in game design and development for learning Tajweed. For the purpose of this research, the process of development game with the implementation of sustainability elements combined with an instructional model and learning theory related were used in producing a sustainable game.

The goal of sustainable software engineering is to develop dependable, long-lasting software that serves the users' demands and develop better software that does not jeopardize future generations' chances (Muthu et al., 2020). Therefore, sustainable aspects should be addressed before the designed product produce successful tools. Late

adjustments are required, including the last development phases, since areas like product design have difficulty detecting the real demands of the users (Kasurinen et al., 2017). Therefore, the research on identifying sustainability elements in game development should be considered to develop a good game for future generations.

Based on the researcher's personal experience as a Quranic teacher, it feels like a loss to witness many students fail to grasp the simple rules and apply them to Quran recitation. The students stated that they are unable to imagine and realize some *hukums* in Tajweed. Their limited knowledge is also a factor for students 'passiveness and timidity in the classroom. Subsequently, this leads to 'no question' syndrome, a situation where almost no students raise questions in class. The use of current technology and approach not only has the potential in bringing enjoyment but also has a positive impact on the learning outcomes.

Regarding user motivation and achievement, the researcher performed pre and post-tests that compared users' motivation and achievement before and after using the game developed. A simple set of Likert scale questionnaires depending on the relevant sustainability aspects were included in this. Users were encouraged to engage in a questionnaire at the start and end of every test in experiment. The first section contained information on demographics (gender, age, and others). The following questions were about the aspects of sustainability (relevant content, interface design, gameplay, usability, reward, and motivation). During this session, the researcher also gathered information about the perception of students towards the game and the impact of the game on students' motivation. The results were analyzed by SPSS software, analyzing descriptive, frequency test, inferential, and correlation.

Thus, to facilitate students learning, i-Tajweed, with a systematic process, combined with suitable instructional design theory, learning theory, sustainability

elements that can create a new impact on the teaching and learning processes of Tajweed. To achieve the objective, three research objectives were outlined, and rigorous research processes have been accomplished through the design development research (DDR) approach. To answer all research questions that underpin this research, the ADDIE model was used to develop the i-Tajweed game. At the same time, quasi-experimental was employed to test the effectiveness of the i-Tajweed game.

6.3 Discussion

The outcome of this research is game-based learning called i-Tajweed. From the findings, the result shows that there is a significant difference in student achievement between the control group and treatment group after using the i-Tajweed game. The researcher also found a significant relationship between students` motivation and students' achievement in the treatment group. The result shows a low, moderate correlation between sustainability elements and student achievement as well as motivation and student achievement. This finding is consistent with those published in the literature that has established a link between academic achievement and motivation level. Therefore, the researcher affirmed the significance of a motivation element regarding confidence in game-based learning that can influence the students' academic achievement.

According to the findings, game features can influence student motivation and achievement, but they are inefficient at increasing the amount and quality of effort put in on a specific activity (Alsawaier, 2018). These findings contribute to the body of knowledge by indicating that gaming components, which are highly context-sensitive, can improve the quantitative performance of knowledge-related tasks. Given that one of the primary goals of education in modern education systems is to shift from a teacher-

centered to a student-centered approach, Malaysian education authorities may be able to assist. One of the major consequences of this research is that it may inspire learners' families to employ computer-based educational games to help them reach their educational goals.

The achieved outcomes, on the other hand, are consistent with the findings of previous investigations. Gamification's inclusion into the educational system, in particular, is seen as having a good impact on student motivation. In addition, teacher gamification training and planning has a direct and beneficial effect on global motivation, student motivation, and teacher motivation, according to numerous researchers' results. Moreover, global motivation serves as a complete mediator between training and teaching requirements, as well as gamification applications.

Furthermore, motivation has a direct and beneficial impact on the development of pro-environmental attitudes, as well as higher knowledge and sensitivity to environmental issues. These are incorporated in the construct termed attitude towards sustainability, which is a descriptive outcome. As a consequence of these learners' evaluations, the educator's primary duty when the principal architect is to motivate and encourage learners to acquire sustainability abilities, which play a role as he or she creates and designs educational activities with the environment at the forefront.

Among other things, the employment of active techniques in higher education, for instance, gamification, necessitates a shift in the role of future education educators in order to meet the requirements of society today. They must have gained general professional abilities that are adapted to the alterations brought about by technology influence in order to do so. This might be owing to the requirement for time and the resulting imbalance in relation to research, as research and academic publications have traditionally been more important in the university's compensation system than

university teaching. It is important to remember that digital materials are always getting outdated, which implies that teachers must keep their expertise up to date.

The results of the experimental group show a significant improvement in the treatment group compared to the control group. Therefore, the sustainability elements implemented in-game design provide evidence of the positive impact on students' motivation and achievement. The experimental group (the group that received computer game) had considerably greater scores than the control group, according to the moderated average scores (traditional method). This indicates that after accounting for the influence of the pre-test in determining learning factor scores, there is a significant difference in post-test scores between the treatment and control groups.

According to the data, students who played educational computer games performed much better in school. This means that a well-designed educational computer game based on learning styles is beneficial to students' motivation and learning success. As a result, instructional and educational GBL may be utilised to boost students' creativity depending on the circumstance and school conditions. Ultimately, the implementation of instructional and educational GBL in scientific teaching is encouraged. GBL advocated for active learning, attentiveness, and trial and error. In addition to its capacity for learning and entertainment, a well-developed GBL may encourage peer engagement.

The researcher discovered that the treatment group outperformed the control group in regards to academic achievement and motivation when it pertained to GBL (Partovi & Razavi, 2019). This circumstance demonstrates that GBL has a purely beneficial influence on learners' motivation and achievement. Furthermore, GBL has been shown to promote soft skills, for instance, teamwork, creative problem solving, and critical thinking, as well as academic success motivated within primary children

(Partovi & Razavi, 2019). Aside from that, the majority of academics are interested in using digital games to enhance student motivation and assist learning (Greipl et al., 2020)

Furthermore, based on the data, the researcher believes that GBL has the ability to alter the current educational environment. GBL has the potential to shift our educational system away from traditional disciplines and toward a new paradigm of meaningful learning. Learners would be more interested in their education if GBL were implemented in the classroom. However, the effectiveness of GBL in this area is determined by how it is implemented. Even if a learning game has been established and is accessible, institutional impediments, for instance, a lack of resources, administrative support, or an overall unsupportive organisational climate with regard to Information and Communication Technology (ICT), can make it difficult to assess this educational game in the domain (Greipl et al., 2020).

In addition, based on the findings, serious game attributes must be determined and integrated with the relevant learning theory in order to support the pedagogical elements in serious games (Norhazren Izatie et al., 2018). These findings add to the body of knowledge by indicating that gaming components that can improve the quantitative performance of knowledge-related tasks. The purpose of this research is to look at the overall impact of game-based learning and simulations versus more traditional instructional methods on Tajweed learning achievement outcomes. The consequence might be the assistance of Malaysian education authorities. One of the major consequences of this research is that it may inspire learners' families to employ computer-based educational games to help them reach their educational goals. For starters, serious games have been shown to increase learner motivation to research in experimental investigations (Riopel et al., 2019).

Furthermore, the findings of this research may be useful to educators, instructional and game designers, and investigators in terms of application, design, and research. As a result, the findings can only be applied to them; they cannot be applied to learners in other sections. Computer game barriers should be removed to the greatest extent practicable. Owing to the rigorous and inflexible framework of instruction in the official education system, these hurdles might entail a scarcity of preparation time, insufficient technical assistance, obsolete equipment, and a lack of cooperation. It is advised that the balance between the responsibilities that learners engage in the computer game process and their talents be addressed more thoroughly.

In conclusion, the researcher suggests that game-based (GBL) learning has a role in education and offers principles for making this design tool effective. The domain knowledge in the context of this research is Tajweed. This is quite a complex subject, whereas students need to remember many rules at one time. Thus, one of the essential aspects of adopting computer games in primary school was that instead of pre-training, students could explore and experience the game to understand the topic.

6.3.1 Sustainability Elements in Game Design

In a few years, there has been increasing discussion towards the impact of games in various fields. However, research in game-based learning is still limited (Snow, 2016; Greipl et al., 2020) because it only focuses more on the product's environmental impact on the software engineering domain (Santos-Villalba et al., 2020). Considering this statement and the process of game design itself being the crucial part that needs great effort, the goal of this research is presented. Thus, the main idea of this research is to employ the motivational potential of games for educational purposes and contribute to designing a quality of game-based learning (GBL).

In addition, the enrichment of research interest in (GBL) is caused by the increase of educational and commercial games available (Versus, 2020). Nevertheless, previous studies related to game-based learning are more focusing on the direct impact of software applications and platforms rather than the process involved (Becker et al., 2015). Thus, the researcher found that there is a gap in the research related to sustainability elements in game design. Since game design is a crucial aspect towards the successful implementation of game-based learning (GBL), the conceptual research on sustainability elements in game design is needed.

Therefore, research that focuses on how to produce sustainable products in a systematic process is needed. In the existing literature, several descriptions and corresponding measurements of sustainable products are presented. Still, they are often limited because they focus on the product`s environmental impact rather than the process involved (Amri & Saoud, 2014). As a result, research into the usefulness of educational games as learning tools is a potential strategy because of their ability to motivate students. At the same time, the game can develop students' knowledge and cognitive skills in creating possible challenges and fulfilling the expected outcomes.

6.3.2 Design and development of an interactive game (i-Tajweed) and its advantages

1. **Delivery through a variety of multimedia elements.**

   Tajweed lessons are delivered through text, graphics, audio, video, and animation to provide a clearer picture of the content of teaching, motivating students, and encouraging students 'concentration. It also helps to facilitate and enhance students' understanding of the topic.

2. Notification about learning objectives.

It can provide early information for students about the material to be taught and prepare the minds of students to receive the lesson. Besides, students` motivation will increase to further help students to learn faster.

3. User-friendly interface.

The combination of various media made the courseware more attractive and user-friendly. Software development is dependent on cognitivism and behaviorism theories to make sure that the establishment is on pace to enhance the teaching and learning effectiveness while also assisting students in greater grasp and mastering the subject.

4. Domain knowledge or content

1. Provide an easier way or an effective method for students to remember the letters (*harf*) for each hukum Tajweed.
2. Provide a method that can keep and record students' achievements after they answer the quizzes.
3. Increasing the examples (*contoh*) for each *hukum* and be recited by the good reciter (*qari)* with the correct Tajweed.

Basically, the evaluation of i-Tajweed was performed during the experimentation process. The summative evaluation was conducted during the evaluation phase, following the formative evaluation that has taken place during the development and implementation phase. Two groups which are the treatment group that implemented the i-Tajweed game and another one is control group that used video from YouTube were involved in pre and post-test. The purpose of summative assessment is to determine

whether or not the intervention met the research objectives. This section presents results from the quantitative part to answer the third objective: Evaluation for a) Sustainability elements in game design, b) Students` motivation, and c) Students` achievement.

The purpose of the literature review was to find effective game characteristics that ID could incorporate into the design and development process. The research suggests that game-based (GBL) learning has a role in education and offers principles for making this design tool effective. These tools can be useful for improving learning and understanding of complicated subject matter (Milrad, 1999). The domain knowledge in the context of this research is Tajweed. This is quite a complex subject, whereas students need to remember many rules (*hukum*) at one time.

Thus, there is a need to develop an effective game for students to motivate them to learn Tajweed. When instructional designers examine game design frameworks, they may discover that the toolset of game-design principles is limited because some frameworks are difficult to use when the target game genre differs significantly from the default genres (Shi & Shih, 2015). In addition, according to (Laine & Lindberg, 2020), gamification technologies may not be shown to be more practical (fewer teaching hours), but they may make instruction more impactful.

6.3.3 Evaluation of the Sustainability Elements in Game Design Toward Motivation and Student Achievement

The majority of the educational games examined were just looked at from a qualitative standpoint (Dos Santos et al., 2018). Regardless of the positive outcomes in respect of engagement and pleasure, the majority of investigations give ambiguous findings, such as indicating that players considered the games to be interesting, entertaining, and educational. Because motivating games' effects may be directly

quantified in relation to actual-world variables, there is a higher amount of quantitative data available (for example, the number of consumed resources). These results are insufficient to address the research issue, which necessitates a more comprehensive and detailed review of the literature (Dos Santos et al., 2018).

Table 6.1: Summary of Findings

No	Sustainability	Domain	Attribute	Evaluation/ Result
1	i-Tajweed game	Tajweed Game-based learning	▪ Game-based learning	Pre and post test Expert evaluation
2	Hypothesis: *Hypothesis 1:* There is a significant difference in students' achievement between the control group and the treatment group after using GBL in learning Tajweed.		▪ Sustainability elements ▪ Motivation ▪ Achievement (Test score)	Accept H1. The significance value = .002 (p <.05).
	Hypothesis 2: There is a significant relationship between sustainability elements and students` achievement among the students in the treatment group after using GBL in learning Tajweed.			Accept H2. The value of sig. = .018 (p <.05).
	Hypothesis 3: There is a significant relationship between students` motivation and students` achievement in the treatment group after using GBL in learning Tajweed.			Accept H3. The value of sig. = .016 (p <.05).

Table 6.1 presents the summary of the findings in this research. It indicates a significant relationship between sustainability elements and students' achievement, between students` motivation and achievement in the treatment group after using game-based learning in learning Tajweed.

6.4 Research Output

This part discusses the output from this research. There are three outputs of this research which are sustainability elements in game design, sustainable game design framework, and i-Tajweed game. The following section explains the output from this research:

6.4.1 Sustainability Elements

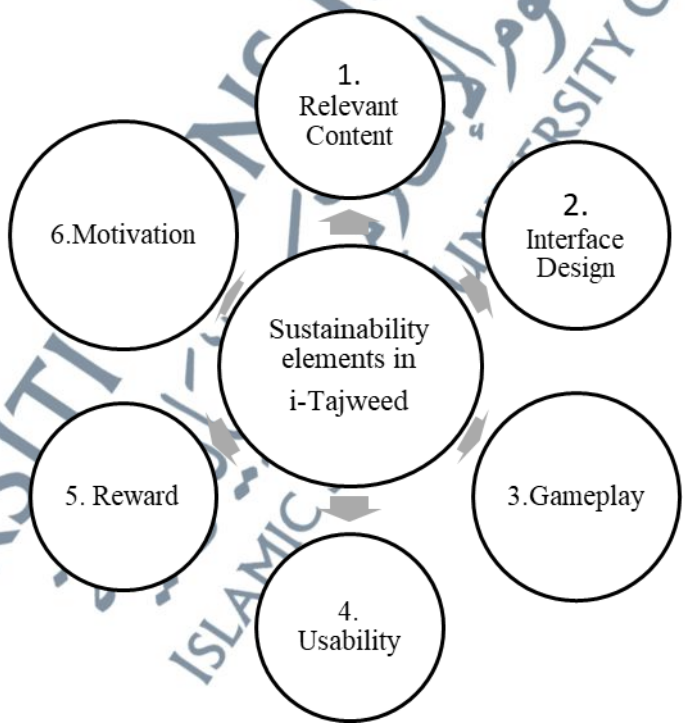

Figure 6.1: Sustainability Elements in Game Design

Figure 6.1 shows the sustainability elements implied in the game design and development process.

6.4.2 Sustainable Game Design Framework

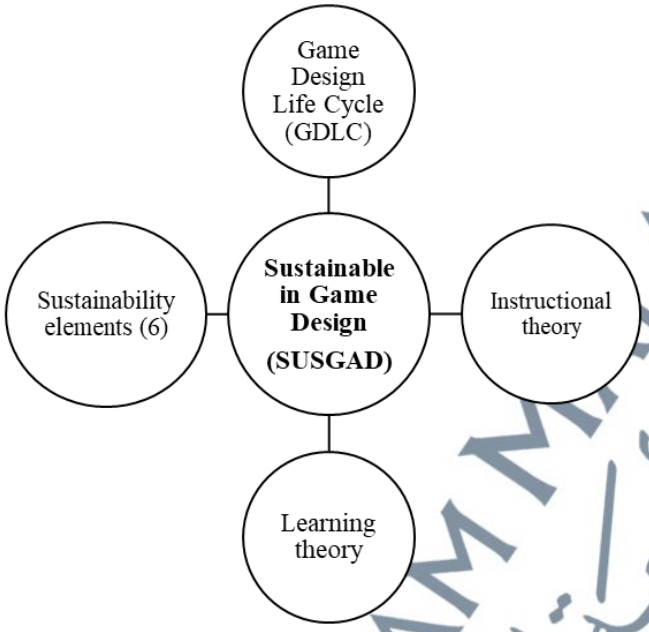

Figure 6.2: Sustainable Game Design Framework (SUSGAD)

Figure 6.2 show the sustainable game design framework that has been employed in this research.

6.4.3 i-Tajweed Game

The game was developed in the domain of Tajweed that aimed at cognitive learning outcome that measures students' achievement. One of the basic characteristics that characterize the application of gamification in various educational stages is its impact on student motivation. Therefore, CTML, Gagne 9 events of instruction and motivation technique from Prophet Muhammad (positive word) were used in the game design and development process. Figure 6.3 present the front page of i-Tajweed game.

Figure 6.3: Frontpage of i-Tajweed Game

Figure 6.3 show the interface in frontage of the i-Tajweed game. The combination of multimedia elements with the combination of instructional design theory and learning theory is used in game design and development.

6.5 Contribution of the Research

The following section discusses the contribution of this research in terms of:

6.5.1 Empirical Implications

This research gives an advantage in terms of empirical implication. Quasi-experimental designs were used in conducting this research that can contribute to developing software applications such as game-based learning. Furthermore, the various usage of multimedia elements such as text, audio, video, animation, and graphics, especially in designing the interface, supports the teaching and learning of Tajweed. Other than that, the effective and attractive icon button used in the courseware made the courseware user-friendly and made the teaching and learning process more enjoyable and interesting.

This research aims to research sustainability elements in the game development process with multimedia integration and implementation of sustainability elements and

instructional design model and learning theory, in doing so, testing the effectiveness of the cognitive theory of multimedia learning (CTML). Therefore, the findings of this research offer several implications, divided into theoretical and managerial implications on how i-Tajweed can be used as a teaching and learning tool.

Given that one of the primary objectives of education in modern education standards is to shift from a teacher-centered to a student-centered approach, the consequence might be the assistance of Malaysian education officials in this regard, as well as the creation of student orientation education programs. One of the major consequences of this research is that it may inspire students' families to employ computer-based educational games to help them reach their educational goals. As a result, more family-friendly products from computer-generated educational games will be produced. Moreover, game manufacturers will be encouraged to continue their efforts to improve the quality of these games to meet the educational demands of kids. From the standpoints of application, design, and research, the findings of this research may be valuable to educators, instructional and game designers, and researchers.

Due to the rigorous framework of instruction in the official system of education, these hurdles can include a lack of preparation time, poor technical support, outdated equipment, and a lack of cooperation. Therefore, justification classes should also be offered to motivate parents and teachers to engage in this process and improve their understanding of the developmental goals of computer games. Furthermore, it is advised that the harmony between students' responsibilities in the computer game process and their talents be addressed more carefully. This fraction allows students to participate in these games actively.

The effort to shift academic material to the game text should not detract from the games' enjoyment. When choosing computer-based instructional games, teachers

should take into account the gender qualities of their students. Computer learning games appear to offer strong and always obvious types of assessment, allowing all activities, conversations, accomplishments, and mistakes to be traced and documented in real-time. This generates a large amount of data, which, when correctly examined, helps educators to draw crucial conclusions about students' talents, requirements, and prospects.

Besides, it is hoped that this application can contribute to enhancing the use of computers and educational software in teaching and learning in the classroom. Moreover, the use of computers is believed to have significant implications, especially for the country's educational system. It can be seen by the positive feedback given by the respondents. Most teachers are agreed that this i-Tajweed fulfills the needs of the syllabus in Tajweed learning and is suitable to be a teaching aid.

6.5.2 Theoretical Implications

It was seen in most previous studies that the quasi-experiment procedure was commonly practiced by comparing two groups with similar characteristics from the same institution. However, this research has introduced an alternative approach of selecting the respondents by choosing the groups from two different schools to address the issue of critical threats and avoid design contamination in quasi-experiments that may affect the results of the experiments. As a result of this strategy and planning, this research has paved the way to approach quasi-experimental research and the steps taken to reduce bias and threats. Therefore, this research can be a guideline for future research that plans to conduct quasi-experimental research in two different schools or institutions, especially in a pandemic situation.

This research contributes to the literature by offering appropriate specific analyzes for each phase of ADDIE. A large number of previous studies have developed multimedia-based learning with superficial content by creating games, virtual reality, or applications for students that limit their use as a companion to the main text or as a form for evaluating concepts learned in general. However, this research developed the i-Tajweed game with extensive sustainability elements that are suitable with the content and was able to serve as a complete teaching tool for specific Tajweed topics. Furthermore, the elaborate and illustrious details in the research can serve as a guideline to help future researchers to develop a similar game that contains multimedia elements and an active activity module.

Both practitioners and academicians have consistently highlighted the significance of current technology to enhance students' performance. However, in developing a multimedia module, most previous studies neglect to explain the process behind developing the product and are mostly concerned with the testing the product developed to the real respondent or the other way around. In responding to the gap, this research took a different avenue by executing ADDIE and DDR, which explained both: the systematic approach of creating the game while also concentrating on the experimental design for evaluating the i-Tajweed game's effectiveness with actual people. Through the laborious and conducive number of research procedures, it was found that ADDIE is one of the most reliable and relevant instructional design models to be used today despite the advancements in technology (Williams & Robinson, 2020).

Furthermore, this research also contributes to the methodological aspects by providing evidence on how a quasi-experimental procedure can benefit from the qualitative data support. Most previous studies analyzed the data from the experiment

and supported the data from the semi-structured or structured questions prepared prior to the interview procedure.

Besides, this research has shown how multimedia elements and sustainability elements in game design can act as an alternative teaching tool to enhance students` motivation in a specific topic in Tajweed subject. As such, multimedia elements were previously found to be effective in retaining the memory longer. Furthermore, with regard to the adaption sustainability and motivation elements, students agreed that they have felt happier and feel about learning Tajweed. Thus, the use of current technology and approach has the potential in bringing on the learning outcomes and enriches the body of literature pertaining to the 21st-century pedagogy literature.

6.5.3 Practical

The research is practically significant for all stakeholders such as schools, students, and game developers. Upon the process of establishing the validity and reliability of the i-Tajweed game for the quasi-experimental procedure, the questionnaire developed can be used by other researchers in future studies. The attached assessment sheets for expert validation can function as an evaluation rubric to evaluate sustainability elements in game design. Furthermore, the i-Tajweed game will help teachers gain insights into the potential tools that would get students to be more motivated in the classroom.

1. Stakeholders

Furthermore, sustainability issues must be constructed from the perspectives of various stakeholders, including homeowners, policymakers, families, societies, and the community as a whole (Dos Santos et al., 2018). Given the numerous stakeholders participating in this area (for instance, adopters, governmental

funding agencies, game designers, and game researchers), this description should not be primarily derived from the literature reviews. Still, it should also incorporate how these various stakeholders conceptualize efficacy. Both academicians and practitioners have consistently highlighted the significance of current technology to enhance students 'performance. In developing a multimedia module, most previous studies neglect to explain the process behind developing the product and are mostly concerned on the testing the product developed to the real respondent or the other way around.

2. Schools

Throughout this strategy, teachers will establish a foundation to gain a better understanding of the students and then make an informed decision to either continue or change teaching instructional strategies and detect the students' achievement.

3. Developers

Besides, this research also provides a robust framework and instructional strategy model to use the i-Tajweed game in teaching the Tajweed subject. The framework and model could benefit teachers in planning steps to encourage students' motivation in the Quran curriculum. With that insight, teachers can plan strategies to increase students' achievement and identify the key strategies to execute better tools in teaching and learning Tajweed. More importantly, the culmination of information, knowledge, and strategies can result in an engaging and meaningful lesson delivery in the classroom.

The animation feature in a multimedia presentation help student to reduce cognitive load and motivate them to remain focus to remember the topic. At the

same time, this situation complying with the curriculum specification to accommodate teachers in utilizing the technology to teach Tajweed subjects at school.

6.6 Recommendation for Future Works

This section explains some recommendations that can be used for other researchers in future works. From the findings of this research, some useful recommendations that can be used for future researchers in conducting their research are highlighted as follow:

6.6.1 The Domain of Knowledge in a Designing Framework

The domain knowledge in this research is Islamic studies focusing on learning Tajweed. This research highlight sustainability elements in designing the game for learning Tajweed that purposely enhance students` motivation and achievement among primary school students. Future research is highly recommended to explore other domains on other subjects related to Islamic education. The implementation of different domains maybe can get a different result that can benefit students and teachers in the teaching and learning process.

6.6.2 Theories or Models

Other models or theories, for instance, behaviorism and constructivism, can be used in future research. Furthermore, the future design should feature more attractive elements to attract students to follow the activity. In the words of (Shabiralyani et al., 2015), studies claimed that many students favor learning through visuals compared to audio and movement. Hence, in the future, i-Tajweed should be printed with colored diagrams and attractive features for better visualization of the structure. Furthermore,

additional diagrams or daily life dialogues regarding the process can be added to stimulate curiosity among students before they perform problem-posing activities. Considering the importance of this issue and the preliminary findings of the research, the researchers believe that this is a field that should be further investigated in order to gain a deeper comprehension of which components are required or appropriate to nurture user cooperation and collaboration effectively.

6.6.3 Gameplay Method

Future research could also reconsider other methods in research design employed. For example, other researchers may want to conduct a true experiment to determine the effectiveness of the i-Tajweed. Further, all instruments were developed to accommodate the research's need, and the processes taken were intended to fit and adhere to the methodological perspective of this research. Finally, other researchers may want to conduct further statistical analysis on the instruments themselves to accommodate different perspectives or contexts of education research.

6.6.4 Method of Data Collection

Further research maybe can conduct on other methodologies in data collection. For instance, in digital games targeted at skill learning and behavioral or attitudinal modification, observation or other approaches such as Kahoot or Quizzy can be employed. Discovering the prospects for developing an overarching technique to quantify DGBL effectiveness is an exciting subject for future research. In order to build a uniform methodology, future research should first concentrate on the improvement of an assessment framework for analyzing DGBL effectiveness. A comprehensive description of effectiveness in the setting of DGBL should be articulated before this evaluation system can be developed.

6.6.5 Respondents of the Research

It would be fascinating to see the amount of time required for game features to be internalized and become conspicuous as an external reward system in the midrange and how long this impact remains on the respondents. Furthermore, the field experiment maybe can add the duration of days. Future research could look into various game aspects, as well as their constellations and dynamics, to see how they affect motivation and performance in idea contests, as well as their long-lasting implications in knowledge management systems. Future research could look into ways to create a game-like experience for diverse user types by intelligently and methodically implementing customized game elements.

6.6.6 Other Context

Finally, more research is required to identify the most successful ways to include games in the normal classroom. Early adopters of gamification, according to the survey, are primarily Computer Science and IT educators. According to researchers, successful classroom adoption of almost any game necessitates both certain technology infrastructures and a suitable teaching framework. One of the biggest roadblocks to using game aspects in teaching is a lack of sufficient technology assistance. As a result, the development of software tools that can effectively support gamification in various educational contexts, as well as studies into the practicality and effectiveness of gamification in education, would result in a greater scale adoption.

6.6.7 Web-based Platform

Lastly, the last direction for future research is i-Tajweed can be upgraded to the web-based module so that in the future, students can quickly access the contents, and i-Tajweed can serve as an e-learning tool for Tajweed teaching and learning. In addition,

developing a self-learning i-Tajweed module can provide a way for students to have more autonomy in their learning by having the power to control the show at their leisure. They can perform any action such as playback, slow motion, rewind, fast forward, and pause at a certain point of the content presentation.

6.7 Concluding Remarks

This research is an effort to establish and analyze the sustainability elements in game design that can motivate students in learning Tajweed. The developed game aims to motivate and enhance students' achievement in learning Tajweed and consequently contribute to improving students' recitation in Quran.

Considering the results of this research, teachers, students, instructional designers, software developers, and curriculum designers can benefit from these findings, which demonstrated the effectiveness of multimedia-based education tools integrated with an instructional strategy to enhance student`s achievement in learning Tajweed. The research shows that this application has a significant impact in motivating students to learn Tajweed. The replacement of digital electronic media for the initially employed medium is the paradigmatic facilitating influence of ICT. In conclusion, it is hoped that this application, i-Tajweed, will boost the development of more educational tools to overcome the weakness of interactive software, especially for the j-QAF program.

It should be noted, among other things, that the utilization of active techniques in education, like game-based learning, necessitates a shift in the role of future education teachers to accommodate the expectations of today's society. Moreover, in order to excite both students and teachers, their teaching technique necessitates precise, thorough planning and minimal standard for selecting teaching and learning resources. Therefore, any interested party who expresses interest in adopting an alternative

teaching strategy should investigate this research as a researcher is not the governing body to decide on behalf of Islamic education in Malaysia. Instead, educators, policymakers, and curriculum designers should take a deep dive into the status of education nowadays and seek the issues that need to be fixed, changed, and looking forward.