The Development of 'Sirah Prophet Muhammad (SAW)' Game-Based Learning to Improve Student Motivation

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ABSTRACT
In the age of distractions that severely affect students' ability to learn and achieve, the introduction of digital gaming as a learning tool can be promising to enhance students learning motivations and study outcomes. Current studies have emphasized the potential of digital gaming to enhance students' ability to learn. Although with these various studies about benefits of learning-oriented digital games, implementing DGBL in primary schools is still rather rare. The objective of this work is to improve Islamic education using DGBL through the development of an educational game that can attract young students to learn the history of Islamic civilization as well as the biography of the Prophet Muhammad. The developed game-based learning system combines entertainment and education while following the syllabus of secondary schools' Islamic education in Malaysia. This developed application teaches students the journey of Prophet Muhammad (SAW) from the beginning of birth to his death. The purpose of this application is to see how far the students understand the history of the Prophet Muhammad. This work also may help to ensure that teaching objective is achieved as required and set by the Ministry of Education Malaysia.

Keywords: *Game-Based Learning, Education in Malaysia, Islamic education, Sirah Learning, interactive learning environments.*

I. INTRODUCTION

With the rise of distractions that interfere and heavily affect the learning process in our elementary and high schools, the idea of digital game-based learning (DGBL) have been introduced as a tool to improve the learning motivation of students. Nowadays, in the world of teaching and learning, there are many challenges that learners must go through. One main challenge to students and educators is that students are more attracted to entertainment and they feel bored when they are in classes [1-3]. Different factors might be affecting the level of student engagement and motivation in schools which in turns reduce learning outcomes in total. One important factor might be the very attractive high-tech environment that students are living in which includes social media, tv channels, video games, Internet, etc. This makes the traditional learning approaches very obsolete and need to be improved and merged with newer tech-supported educational approaches. Many other factors affecting learners' motivation might be parents influence as well as teachers influence inside classes. The diversity in students' mental response to education is another factor since teaching need to not to consider all students in one level of mind focus [4-7].

Recent researches have shown that digital games can enhance students' motivation and interest to learn and stay focused for a longer time in schools, which ensures higher learning outcomes compared to traditional no-game learning. However, it is important in GBL to balance the skill-challenge for various learners. The developed GBL system need to provide users with the suitable challenge levels that fit with his skills so that a maximum student engagement will be met. A more challenging learning game leads student to anxiety while a relaxing naïve game details will cause user boredom, as Figure 1 depicts [8-10].

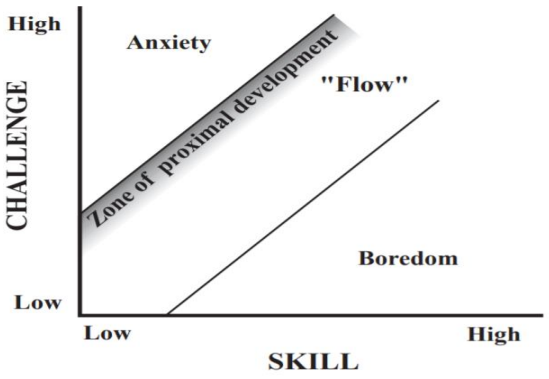

Figure 1: Skill-Challenge Model for Game-based Learning

One common type of education in Malaysia is the Islamic education in secondary schools. Recent researches indicate that this education is getting less interest among students to learn and understand. Various studies have been conducted to find the factors affecting students' motivation towards that. Nowadays in a world full of technology, a necessary change in learning and teaching need to be deployed to make learners more creative and innovative. Creative and innovative educators play an important role on realizing insights. Educators need to be free from the old thinking that holds them [12-15].

The main aim of this paper is to improve Islamic education using DGBL through the development of an educational game that can attract young students to learn the history of Islamic civilization as well as the sirah (biography) of the Prophet Muhammad. The developed game-based learning system combines entertainment and education while following the syllabus of secondary schools' Islamic education in Malaysia. This developed application teaches students the journey of Prophet Muhammad (SAW) from the beginning of birth to his death. The purpose of this application is to see how far the students understand the history of the Prophet Muhammad. This work also may help to ensure that teaching objective is achieved as required and set by the Ministry of Education Malaysia.

In addition, this work may assist educators in teaching Islamic education and facilitating the learning process. This work tends to help all students learn the history of Prophet of Muhammad as well as to understand the subjects of Islamic Education since the contents of the developed application is easy for students to understand, consisting of animation to attract and motivate students. This project can also assess the understanding of all students about the Prophet Muhammad's.

The developed application has three gaming levels. The first stage that is an easy one which tells about the early days about the birth of the prophet Muhammad, so the prophet was appointed to be the Messenger. The second stage gives exposure to the prophecies of prophet Muhammad's in the spread of Islam. The last level was devoted to the battles led by the prophet until his death. Each level has got various interactive questions that need to be cleared before a student can go to the next level where each level measures the player speed in answering the questions given.

The rest of this paper is organized as follows. Details of current research related to this work will be presented in Section 2. In section 3, methods and tools as well as software details used will be elaborated. In section 4, the implementation of the developed application will be elaborated. Finally, the conclusion of the study will be discussed in section 6

II. LITERATURE REVIEW

In last years, various studies in research community have shown that digital gaming can improve learning motivation as well as learning outcomes among school teens. Yeh et al. [16] have studied the value and effect of mindful learning and creativity for future learning in schools. Based on their study in classrooms using a developed system, they showed that creativity game-based learning provides pupils with an efficient vehicle for creativity training as well as aptitude-treatment interaction and more student confidence to compete.

In his report, author in [8] claim to provide evidence related to new approaches (such as gamification approach) to education, teaching and learning which will provide rewarding learning experiences that will equip students and young people with latest learning skills. The study tries to develop a better understanding of the impact of game-based learning for school learners. Kao et al. [9] have introduced how scaffolds can efficient to improve games as well as build students' confidence and provide basic support for learners. Authors showed that scaffolds have the potential to facilitate learning effects, to learn physics subject, while assisting the gaming process. Results shows that scaffolds can help in determining the students' problem-solving ability and even creativity in designing new physics game scenarios. Students under the study were able to move from problem-solvers role to problem-designers role during the game episode.

In addition, Jabbar et al. [10] have investigated the features of game design which promote learning in GBL (game-based learning) environment. The study aimed to provide an empirical evidence that the proper design of learning games can affect and enhance student engagement and learning outcomes. Authors illustrated the impact of key gaming features in GBL that can affect the cognitive and emotional side of learners. To show

how serious games can influence learners, authors in [17] have investigated two factors that affect learning: cognitive factor and motivation factor. The study has concluded that serious games are more efficient in term of learning and retention when compared to conventional instruction methods. On the other hand, however, the study showed that these games are not more motivational compared to conventional methods.

Additionally, many studies have been conducted on the different methodologies used by islamic education educators and teachers. Mustafa et al. [4] have carried out a study to identify factors that are affecting students' motivation to learn Islamic education in Malaysian schools. Their findings show that two types of factors are behind: situational and individual factors. Situational factors include Islamic education curriculum, parents influence, and the teachers influence whereas individual factors come from the students' diversity in learning and initial interest that resides within each individual. Game-based learning can help improve some of these factors such as initial interest of learners and teachers influence. This can help increase students' motivation to learn.

Tan et al. [12] have explored how the Singaporean government have attempted to introduce their new initiative of "teach more, learn less" to the pedagogies of madrasahs, i.e. Islamic schools, textbooks. The new teaching approaches or pedagogies are more student-centric compared to previous ones that were teacher-centric. The new student-centered teaching approach tend to enhance the motivation and engagement of students using several techniques including gaming. Author in [13] studied the spectrum of educational views and philosophies advocated by some great medieval Muslim thinkers. The study help revealing the richness and diversity of scholarly in Islam on educational theory.

III. RESEARCH METHODOLOGY

Although games are considered as one category of software called entertainment software, it involves various difficulties to develop games using the same software development models [18] [19]. The reason behind is that games are not completely a product of pure software engineering; but rather games are an integration and interleaving of various aspects: art, acting, programming, sound and music, etc. That makes games unique type of software that need its own software development model called GDLC (game development life cycle) model [20, 21]. The GDLC has various types that can be used for development, however the most comprehensive GDLC model is divided into six different phases as shown in Figure 2: initial stage, pre-production, main production, alpha testing, beta testing, and final release.

A. Initial Stage

The preliminary stage in game development is to create an initial design and a rough concept for the game details.

B. Pre-production

After an initial design concept is created, pre-production comes as the next stage. In pre-production, the game design is made as well as some form of documentation for this design. Design of game is an important stage since it will involve game mechanics, attractions, storyline, and various technical aspects. Prototyping and game structuring are important parts of game design.

C. Main Production

Once the revisions to game design are approved, pre-production stage is considered completed where production stage need to be started. Production is the GDLC main process in which game source code will be developed, assets will be created, game balancing and performance will be set and measured. As last step in production, refinements will be made to polish the game to make it user-friendly, more challenging, and full of fun at same time.

D. Alpha Testing

When game code is developed, it needs to be tested to measure if game meets design goals. During testing, which is done by internal or external team, occurring bugs need to be documented and fixed. Various features need to be tested including game functionality, balancing, user-friendly, fun, as well as game accessibility. Alpha testing stage need to be concluded with a bug report as well as suggested changes that need to be made to enhance game.

E. Beta Testing

Compared to Alpha testing, beta testing is conducted to get a feedback from third party side. In beta stage, users from outside of game development teams will be requested to participate in testing and evaluating the developed game and provide their comments. Based on the selection mechanism of users, beta testing can be closed or open beta. User feedback is the main output of beta testing. This stage may lead to sending developed product to production stage again if feedback is negative, or it will proceed the product to the final release stage.

F. Release Stage

Also called Live stage, release is the stage when the product is ready for playing by public. It is the stage reached when the game has already passed all necessary testing stages and commented modifications. Live or release of game is accompanied with full documentation, maintenance plans, game launching, as well as the expansion of game.

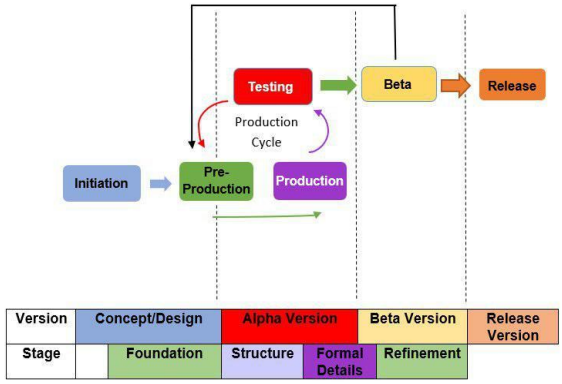

Figure 2: Game Development Life Cycle Model [22]

This work was developed and implemented as a web-based application using Unity 3D software and some software like Adobe Photoshop and Adobe Illustrator to create a game environment. Additionally, this work uses C# as the programming language for game coding. All game details will be saved in specific database file using phpMyAdmin software.

Various design elements of the game such as layouts, fun elements, textures, and animations are created using Adobe Photoshop and Adobe Illustrator. The character of the game is drawn manually and traced by using adobe illustrator software to get the character line to facilitate the texturing process and simplify the process of character development. Additionally, the background of this game uses ancient elements to give a sense to the user in playing this game. Among the props used in developing this game are deserts, camels, old papers, and wood elements that show the ancient environment. Usually, the game engine that is used in developing this work is Unity and Adobe Flash while the programming language used is C# and Java.

Figure 3: Texture background of game

IV. IMPLEMENTATION

The implementation phase refers to the delivery of actual instructions. The purpose of this phase is to provides effective functions. The application in this work is developed using the C# programming language for code developing and backend details. For frontend details and graphics & animations, Adobe photoshop, Adobe Illustrator, and Unity 3D software were used for that purpose.

Figure 4 shows the application home page with different options to use, whereas figure 5 shows different characters of the game.

Figure 4: Game Home Screen

Figure 5: Game Characters

In Figure 6, there are two main buttons in this interface, the audio button which is used to listen to all notes related to history of the prophet Muhammad until his death. User must listen carefully since that include the answers for the quizzes in the game. When user click button play the user will be taken to the gameplay level 1.

Figure 6: Game learning and audio section

In Figure 7, it shows the gameplay interface. This gameplay has three levels. Level 1 is about the life of Prophet Muhammad. Level 2 is about hijra and da'wah of the Prophet Muhammad, whereas Level 3 is about the various battles until his death (SAW).

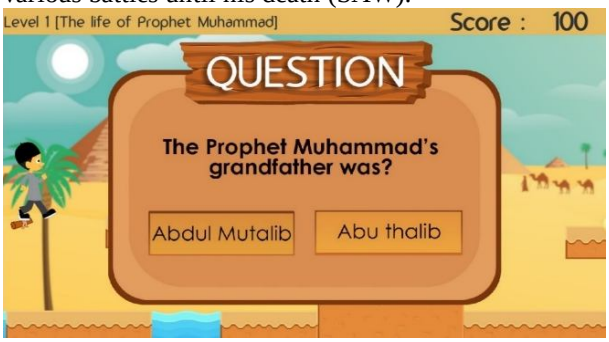

Figure 7: Gameplay level 1.

V. CONCLUSION

In recent years, teaching and learning in the old traditional methods is becoming more challenging with less student concentration as well as less motivational study environment. The introduction of DGBL method of learning is more promising to provide more students' engagement and interest to study and learn. This study aimed to improve the technique of DGBL to enhance the pupils' motivation to learn Islamic studies and sirah of prophet Muhammad (SAW). Combining the entertainment with the education in the developed game can ensure more student engagement with Islamic courses in their madrasas (schools). The developed application helps achieving objectives of ministry to improve learning motivation in Malaysian Islamic schools.

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