

The Development of Game Based Learning: Misi Farah

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Abstract. This research is a development a game based learning or better known as edutainment entitled ‘Misi Farah’. The game began with a story about a character who wants to find her missing belongings. The game also featured an Islamic content and the target audiences were primary school children. There were also few of objectives to be achieved. In the making of this game, ADDIE model was used for the project development. This project was developed by using Adobe Flash CS 4 with actionscript 3.0.

Keywords: game, edutainment, ADDIE model.

INTRODUCTION

The name of this project is “Little Farah Quest” or “Misi Farah” in Malay. “Farah” is the name of the main character in the game. “Quest” means searching for something. Therefore, this game is about Farah who is searching for her stolen items and encountered a small town where her items were located and taken by four townspeople.

This is a game-based learning made in Islamic version where the player can explore freely in the small town and playing in it. While, the rule of this game is the player will be given an option to choose any stage in the area of the small town. Each stage has different simple mini games such as puzzle and drag & drop. After winning the mini game of the stage, the player will be awarded with a special item as a token of completing the stage. Therefore, the goal of this game is to collect the items of all stages before proceeding to the end of the game.

WHAT IS GAME?

A game is a structured playing, physical or mental activity for enjoyment that has rule and sometimes used as an educational tool. A computer game is a computer-controlled game where players interact with objects displayed on a screen. While, a video game is essentially the same form of entertainment, but refers not only to games played on a personal computer, but also to games run by a console or arcade machine.

Types of Computer Games

Computer games normally correspond to given genres or types of gameplay. These are some of the genres exist namely action, adventure, sports, simulation, sport, educational and massively multiplayer online game (MMO).

Action

Action games are fast paced and require good reflexes and the ability to be able to complete a sequence of button combinations on the game controller. The games normally include completing challenges such as fighting with and enemy and the player is normally represented on screen using a recognisable character.

Adventure

Adventure games are mainly single player games set in a fantasy or adventure world where the main challenges involve completing puzzles. The adventure genre normally involves a back story of the main character and will include a specific rescue mission or objective to reach the end of the adventure.

Sports

Sports games simulate real-world sports such as soccer, basketball and baseball. They normally involve mimicking the actions of real professional sports star and categories key players within the game with different levels of skills. Successful sports games often run in a series and update with information relating to the most popular players in the game from the real-world.

Simulation

Simulation games are games that simulate controlling real world vehicles such as cars, tanks or aircraft. The player can learn how to control the vehicles and simulation games can often be used to train professional people on how to operate machinery. Many aircraft companies have airplane simulators to train pilots before they operate real aircrafts in the field.

Educational

Educational games or game-based learning are used to teach people certain subjects. Educational games try to make learning a topic fun and interactive and engage the learner in the subject. The games normally have testing functional built into them where players can answer a range of multiple choice questions that are automatically marked. Education games are widely used for maths, science and ICT.

MMO

MMO games involve playing games over a LAN (local area network) or the internet. The players play over the network and can interact with other players in the virtual game room by controlling another machine in the real room or when using the internet they can

play against players from all around the world. Many successful MMO games are subscription based. The amount of programming involved in creating these games is immense and it's an unbelievable experience to play them onscreen.

Game-Based Learning vs Traditional Training

According to Dr. Susan Ambrose, director of Carnegie Mellon's Eberly Center for Teaching Excellence, this is motivational because the children can quickly see and understand the connection between the learning experiences. Refer to Table 1 below.

In contrast, traditional training evaluates us on our memory of what we were told. Even when we successfully retain the lesson's facts and procedures, our behavior in true-to-life situations remains untested. In addition, in game-based environments, learn not only the facts, but also the important, underlying the how and why.

TABLE (1). Comparison between Traditional Training and Game-based Learning

	Traditional Training (Lectures, Online Tutorials)	Game-Based Learning
Cost-effective	X	X
Low physical risk/liability	X	X
Standardized assessments allowing student-to-student comparisons	X	X
Highly engaging		X
Learning pace tailored to individual student		X
Immediate feedback in response to student mistakes		X
Student can easily transfer learning to real-world environment		X
Learner is actively engaged		X

CONCEPTUAL MODEL

The conceptual model used for this game is ADDIE Model. This model can be applied to any kind of learning solution. There are five phases namely Analysis, Design, Development, Implementation, and Evaluation.

Why ADDIE Model?

This is a design model used by many professional instructional designers for technology-based teaching. ADDIE has been almost a standard for professionally developed, high quality distance education programs. It is also used in corporate e-learning and training. There are many variations on this model. The model is mainly applied on an iterative basis, with evaluation leading to re-analysis and further design and development modifications.

One reason it has been so successful with clear learning objectives, structured contents, relevant student activities. Although, it is a model that allows these design principles to be identified and implemented on a systematic and thorough basis. It is also a very useful management tool, allowing for the design and development of large numbers of courses to a standard high quality.

Phases of ADDIE Model

Analysis Phase

In the analysis phase, the problem statements, goals and objectives must be clarified. The scope and the target users are also identified. These are the considerations involved in this phase:

- The target users:
The primary school children aged between 7 – 9 years old.
- The learning constraints:
Some children are not very diligent in learning through books. This way, playing game may help these children.
- The delivery option:
Develop computerized game based learning with multimedia elements.
- The timeline for the project completion:
The development of this project starts by proposal and then developing the game application and report of the whole project.

Design Phase

In the design phase, the detailed storyline and learning content will be made. These are the considerations involved in this phase:

- Designing the learning content:
The learning content consists of the subject learned in primary school such as Mathematics, Science and Pendidikan Islam.
- Designing the storyline and characters:
The storyline involves the main character in the game to find her lost precious items in the town.
- Designing the game objectives and sub games:
The game objective is to collect all four main character's items by playing the mini game in every stage. The mini game in every stage is different by its own subject.
- Adjust the storyline, the game objectives and learning objectives:

Based on the storyline of the game is to find the lost items by playing the mini game in every stage to gain all four items as the goal to complete the whole game. By the way, the mini games are based on the subject teaching in school and also for mind test.

- Designing the game challenge:
There are two options of difficulty namely easy and hard for the game challenge.

Development & Implementation Phase

The development phase and implementation phase are done together. These phases are more concerns to the actual production of the design. This is included the creation of layout design, graphics and programming. These are the considerations involved in this phase:

- Writing the script:
The game instructions and the characters' dialogues are included in the game script.
- Constructing the storyboard and flowchart:
The layout design and the flowchart of the game are constructed.
- Developing the story reel and animation:
The animation for montage, inside the game and the ending are created.
- Preparing the multimedia elements and programming:
The graphic user interface (GUI), buttons and the links between scenes are created.

Evaluation Phase

In the evaluation phase, it will decide whether the game is effective and satisfies the objectives. This phase considers feedback from users. These are the considerations involved in this phase:

- Testing:
The game will be tested frequently to make sure that there are no errors in the game coding and can function very well before compiling the whole game.
- Evaluating:
Evaluation will be made after the testing is done by gaining the feedback from the user.

SCREENSHOT, CODING AND SCRIPTING

The game project was developed by using flash ActionScript 3.0. The navigation of this game includes point and click, drag and drop, and typing number.

Based in Figure 1, this is the introduction of game where it tells the story of how Farah's items lost. In this scene, full screen coding and skip button are used.



FIGURE 1. This is the Game Montage

Figure 2 show the world map includes four stages. The arrows point the icon of the stages. The name of the stages is the button to link into the games.



FIGURE 2. World Map

The following figure is stage 1 game's option. The 'Senang' (easy) button will proceed to the game as shown in Figure 2. While, 'Susah' (difficult) button will proceed to the game as shown in Figure 3. The game's option is available in every stage.



FIGURE 3. Game's Option

The easy mode provides short time while the hard mode provides long time to solve the game problem. When finished the game, it will proceed to the winning game

This is game request the user to sort the *Surah* as shown in Figure 4.



FIGURE 4. Task to Sort *Surah*

CONCLUSION

The overall of this project is a game that was made as an edutainment for primary school children to help them in improving their basic knowledges in informal learning way. Besides that, it is also made in a creative way like a story book. This game is unique and becoming the pioneer as it is including Islamic values so it is different from other games in market.

Hopefully, this type of game can be an inspiration to others who want to develop game with Islamic content. In a nutshell, the objectives of the proposed project were successfully achieved.

Advantages

The advantages of this game are user friendly because it can help children in understanding the subjects they learned in school. In addition, it also reached the target age of primary school children. The story is also told in simple language also capable of enriching grammar for them.

Disadvantages

However, the disadvantages are inevitable. Firstly, the game was made in only Malay language so it is not suitable for international users. Secondly, the voiceover in the game is a bit unclear and mostly only texts were used to tell the story. So, fear that if there are children who cannot read very well.

Recommendation

For the future project, there are few recommendations which can be followed. Firstly, the scope of the game should be made more widely. For example, the game should be made in multi languages such as English, Arabic and many more. Besides that, the game also can be extended in a higher level. Since the game only focused for children aged 7-9, the scope of the age should be extended to the ages onwards.

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