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AN INVESTIGATION ON THE USE OF STRATEGY - BASED GAME TO LEARN BIDAYUH CULTURE

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ABSTRACT

An Investigation on the use of Strategy-Based Game to learn Bidayuh Culture. Online computer game is an effective edutainment tool to educate game players on contents namely culture and history. Unlike the generation of the yesteryears, today's young generation of users are techies and device oriented. This gradually shaped their lifestyle, learning behaviour and eventually their motor-skill resulting from repetitive interaction with screen devices. Subsequently, users as such tend to display rather low tolerance on conventional learning materials like books and adopt individualistic lifestyle. This research stemmed from the problem that is the absence of documentation on Bidayuh culture in computer game. The research focuses on designing a strategy-based game, which narrate the story of a Bidayuh warrior as case study. The objective is to propose and design online game to engage young generation of gamers to learn Bidayuh culture and to investigate its viability as a tool in documenting and learning this culture. The research methodology comprises of quantitative research, experimental research and online survey. The experimental research were conducted by developing the prototype and tested among the online respondents via the email link that was distributed to them.

Keywords:

Edutainment, Strategy-based computer games, Bidayuh.

INTRODUCTION

The prime purpose of this research is to investigate the use of edutainment, in this context, Strategy Based Computer Game in documenting and learning and understanding a culture, particularly the Bidayuh Culture. The Bidayuh is the second largest community of indigenous people in Borneo. They inhabited in the west part of Sarawak, in places such Bau, Lundu, Padawan and Serian. Their ancestors, surviving mostly on agricultural and natural resources are self-sustained and engaged in barter trading with the Malays and Chinese for items such as parangs, knives and salt. The interesting part about the Bidayuh is the Culture itself. Like any other indigenous races in Sarawak, The Bidayuh was once known as one of the race that practice head hunting or 'Ngayau', living in a longhouse and practicing animism. Apart from that, there are customs and ritual that have marked the Bidayuh with a unique culture. It's their way of living. These are inculcated in their arts, apparel, food, economic, social status and religion. In Sarawak, there are ways of preserving this culture. There is the Cultural Village, (<http://www.scv.com.my/>) which is developed to be a living museum, a place where cultures in Sarawak can be seen and experienced by tourists. There is an e community, which offers resources and information on Bidayuh community (<http://www.bidayuh.com/>). On the other side of the research, the researcher is interested in looking at the Bidayuh culture through the advancement of technology, the computer game. Computer game was once known as a form of entertainment, involving young players. Over the years, computer games have matured. According to Russel De Maria, the author of the book *Reset, Changing the way we look at video games*, mentioned that video games have evolved into virtual worlds that operate every hour of the day of the year and are inhabited by thousands of player. (Pg32) According to a March 2006 study by eMarketing, Inc, approximately forty million U.S. households have at least one video game console machine, and

there are seventy million regular online game players.¹ The significance of the fact is that games, be it video or computer games, are gaining popularity over the years, worldwide. Currently in Malaysia, there are no individuals or organization that venture into the possibilities of computer game, particularly Strategy Based Computer game as a tool to learn and disseminate information on Bidayuh culture. In this research, it will explore game (Important requirement in computer game as a learning tool), the game play, learning content and the elements of game to investigate the excitement and possibilities of Strategy based computer game in learning and document the culture of the Bidayuh. This research will investigate the viability of Strategy based computer games in documenting learning the Bidayuh culture or better known as channel to disseminate the information on Bidayuh Culture to the new generation.

Computer Game and learning

Study claims that, Computer Game can be used as a learning tool, Russell DeMaria, author of *Reset, Changing the way we Look at Video Games*, noted that Games and video game technology offers an alternative way to learn and the possibility of it to further improve the quality of the existing education system. (De Maria, Russell, 2007, p.147-148). Francis Emmerson of University of Dundee, UK, in his article, *Exploring the Video Game as a Learning Tool*, Emmerson Francis (2004) noted that Computer games have the potential as an education and training material. They are Platform game; beat 'em up, first person shooter, strategy and real time strategy, Role Playing Game, adventure, sports, simulations and casual games. Alan Thorn, (2007), p 5-7

Significant of the Study

The research is important to expand the repertoire of Edutainment, particularly on Computer games (Strategy based computer game) in learning culture, particularly of The Bidayuh. The research is important for the documentation and preservation of culture in Malaysia (the Bidayuh culture). Moreover, it aims to utilize technology (computer game) by adding pedagogical content in the computer game and teach and expose the new generation to the exotic culture of the Bidayuh. The computer game will provide entertainment as well as education about the Bidayuh culture. The big picture is: this research will be a gateway for other researcher or game developer in Malaysia to move further with the development on how computer games can be utilized to document Malaysian cultures thus contributing to the tourism industry. Computer game is a form of play or sport in an electronic form and it requires a computer or a laptop as a device of interaction. From the basic of shooting game play (Space war) when it was introduced in 1962, (Ste Curran, 2004) computer game has evolved itself to different genres ranging from puzzle game to strategy based game. With the advancement of information technology, educational computer game is introduced. It is a computer game that incorporates educational information and entertainment in its content. Today, some of the computer game plays a prominent role as learning tool in the society. For instance, Second Life.² When we engage in a computer game for instance, killing Aliens or driving a high powered car in a busy street is as easy as pressing a spacebar or a shoot button. That is the convenience and fun factor in nowadays-game play. With the popularity of computer game and the advancement of its technology, undeniably, it has become one of the most promising learning tools in our society. It even changed the way we conduct business today (Edery and Mollick, 2007) For example, Second life is a real life simulation game where the players can buy properties, as the game gain popularity, the developer of the game has to hire real estate professionals to advise them on property management for effective game play. That is how important and promising computer games are in today's society. The development of computer game goes in a parallel way with the information technology. Edward

¹ Extracted from the book *Reset, Changing the way we look at video Games*,

² Second life is a growing area of interest for many educators. Educators are currently using second life with students to explore distance learning, simulation, new media studies and cooperative world. -Pg 318 Second life-the official guide.

Castronova in the book *Synthetic World* depicted that the synthetic world of online role playing game has become more popular that it involved real trade of game character on E-bay. Moreover, subscriptions for the online game for Asian have reached 6,950,000 over the period of five years from 1998 to 2003. (Edward Castronova, 2005). In conventional education, learning contents are often disseminated verbally or through secondary media in the classroom. For Educational computer games, education is in an electronic form, no longer in the conventional classroom. However, It is not how Educational Computer Games revolutionize the modern day classroom, it is about the content in the computer game. Educational content in computer games involving strategizing, problem solving (within the rules given) and goals that the player have to achieve during the game play. For example, in mathematical game, the player has to strategize the right formula, solve the problem, (mathematic) and achieve the goal and rewards when the right answer is given. Educational information (depending on the learning disciplines) is diluted in the game narrative thus providing the elements of excitement for the player to reach the goals. Contents in the game are presented in linear and non-linear narrative. If the game requires the player to understand a culture, for example in Civilization 3, where player the role of the oriental ruler, the narrative of the game doesn't have to be linear because the player can pick up information's during the game play. However, if the educational game requires the player to play the simulation of a real history for example, how James Brooke took over Kuching from the sultanate of Brunei, then the narrative of the game has to be linear. The question is: are computer games a valid teaching and learning tool? It has been seen as a leisure activity and can it enter the education realm? There are computer games designed to assist students in learning certain disciplines such as medical. In this case, a fantasy computer game where player manoeuvre a nano size scout cruiser to seek and destroy cancer cells, thus teach the player to identify the cancerous cells in human body through computer game. (Texley, 2007)

There are numerous writings on computer game and its role in learning. Andy Carvin, in his post entitled "**Should Video Games Replace Classroom Learning?**" Quoted that:

"Trigonometry is much more interesting when you're trying to build a bridge. It's possible that video games could be used to help people learn curriculum in a real world sort of way." She added that the only thing that's standing in the way of that is attitudes. The structure of teaching methods "hasn't really changed since medieval times," since universities were first founded. "It'll probably take a critical mass of gamers as professors for that to change." Carvin Andy (2008)

David Williamson Shaffer, Kurt R. Squire, Richard Halverson, James P. Gee in the journal entitled: **Video games and the future of learning**, describes that the importance of video game the future of learning, because it allows players to experience the simulated world it represents. Study claims that, Computer Game can be used as a learning tool, Rusel DeMaria, author of *Reset, Changing the way we Look at Video Games*, noted that Games and video game technology offers an alternative way to learn and the possibility of it to further improve the quality of the existing education system. The Author also noted that apart from entertainment, video games have become a potential tool for learning. The writing basically questions the way people have looking at Video Game. Focused on the Social impact, and despite the negative impact, Video Game opens a new way of learning. (De Maria, Russel, 2007, p.147-148. When learning is combined with entertainment, it opens up a new level of excitement to user where it enhances understanding on certain topics involved. That is where computer games come in the picture. When game developers and designers realized the capability of computer games as a learning tools, they start to expands the genre from action first party shooting game such as HALO to EcoQuest, a computer game by Sierra Entertainment that teach player on environmental issues. Now, computer game indeed is an ideal teaching and learning tool. Why?

This is due to the facts that computer games offer entertainment and leisure. An online board

revealed that the reasons why people play computer game is to release stress and the challenge that they face during the game play.³ Whether the topic is reading, writing or arithmetic, the educational computer game can be used as a powerful and enjoyable tool for player (or target audience) to inculcate themselves with educational skills. When a subject such as algebra is the main struggle for students in school, the educational game can play in encouraging them to learn the subject in a fun way. However, there are individual that disagree to the fact that edutainment (educational video game) provide an effective learning method. Mitchel Resnick, a Professor from MIT argued that the concept of Edutainment is misleading the perception of education, thus portraying education as something that is hard to digest that need entertainment to make it acceptable.

METHODOLOGY

The game

The main objective of the computer game is to document and let the player, mostly Internet user to learn about the Bidayuh culture through the game play. In parallel to that, the prototype of the game works as an instrument for the researcher to do hypothesis testing, which is:

- Impose a long lasting awareness through the experience that the participant get from
- The game play.
- The culture of Bidayuh can be documented through Online Computer Game.
- Computer Game can be utilized as a tool to learn the Bidayuh culture

Learning content

In the online game, the researcher has inculcated information about the Bidayuh culture. The information is divided into categories such as: Daily items used by the Bidayuh, past times, language, customary apparel, omens, believes and religion. Respondent are expected to learn by reading the information on Bidayuh culture in the online game.

Game elements

The online game will have elements such as: design, which includes the overall composition and the positioning of objects (trees, river, mountain and terrains) in the game. Color, the use of appropriate color to visualize the settings of the environment in the game. Illustration, the researcher used graphic software to do the illustration for the game. The illustration is in 2d, vector styled. Last but not least, audio. The audio for the game was extracted from audio editing software. It served as a background sound for the game and as an indication for the player that they have completed the task in the scene.

Game Play

According to Apple's New Oxford American Dictionary, game play is *"the tactical aspects of a computer game, such as its plot and the way it is played, as distinct from the graphics and sound effects."*

Navigation

In the online game, the player plays the character by clicking on the items in the game. In some scene, scene 1, scene 5 and scene 6, the character will walk towards the clicked items. In scene 2,3 and 4, the view of the game changed to a first person view. Therefore, the player is required to move over the cursor to identify the clickable items.

³ <http://malaysianumber1.com/board/showthread.php?t=958>

Reward system

In a game, the factor that excites the player is the challenge that they faced during the playing period. The reward system will quantify the achievements of the player. In the prototype game, the player will be rewarded by an increase in the knowledge meter in the game every time they managed to get the information about the Bidayuh culture.

Learning content

In the game play, the learning contents would be the clickable items that provide information to the player. The player will learn by clicking on the items in the game interface and read the information given. The learning result is quantifiable by asking question that enabled the player to recall the information on Bidayuh culture that they have obtained while playing the game.

Game Rule

The player is required to read and remember the information of the clicked items in the game. In scene 3 (inside the long house) some items has to be picked up. The player cannot move on to the next scene if they have not clicked and get all the knowledge from the previous scene.

The game development

The development of the game prototype basically involved actions such as: Observation, development and prototype testing.

Observation

The researcher used few methods to get information for the game. The researcher has observed few computer games in terms of how game interface and it's navigational system. The researcher then observed the Bidayuh villages in Singai, Bau. The observation is mainly on the environment of the village and daily items used by the Bidayuh. The researcher also gets secondary information about the Bidayuh culture from local publications and Museums in Kuching. After going through these processes, the researcher made few planning and sketches of the game before convert it in digital form.

Pilot-testing

Before the actual hypothesis testing, the prototype of the online game has to be tested to ensure the hypothesis-testing run smoothly. The Prototype game was uploaded and available online. The researcher then e-mailed the URL of the prototype game to 13 participants and 7 participants through Social networking site, Facebook. (Refer to attachment). Out of the 20 participants for the pilot test, only 7 managed to give feedback. After playing the Prototype of the online game, the researcher receive feedback, which was, categorize under technical and game play.

Technical feedback

Out of the 7 participant, only one complaints that they cannot play the game. The respondent claimed that the game doesn't work on her Internet browser. Another respond is that the game took quite a long time to load, and the researcher should own his own domain name and fully host the online game. This is because the current sub-URL that the researcher is using is too long, it's hard to remember and it will be broken during browsing. There is no comment on the online questionnaire and the researcher noticed that the respondents managed understand and answer all the questions.

Game play feedback

On the other side, most of the feedbacks are on the game play, for instance, the player complaints that there are no clues on what to do on certain scene, thus confusing the player. The researcher should hint on what take in scene 3 and 4. This led them to abandon the game.

The prototype- the adventure of Kidau

After fixing the bugs in the game, the game prototype was ready for the hypothesis testing. However, the researcher is still using the same sub-URL due to budget and time constrain. The game is about a Bidayuh Warrior by the name of Kidau who wanders in the travels from a Bidayuh village to another and explore his surroundings. He then sensed something is wrong with one of the village and begin to explore the long house. What he found was an old man sitting on the verandah of the long house. The old man revealed the unfortunate future of the Bidayuh as their sacred mountain; the evil spirits, the unrest spirits of the fallen enemy warrior, has infested Mount Singai. From there, Kidau has a mission. That is to travel to mount Singai and face the evil spirits. He continued exploring the room in the long house and Baruk for clues that will help him in his journey. On his journey to the sacred mountain, the young warrior faced many obstacles. The character has to solve the problem and acquire and remember as many information about Bidayuh as possible from each scene. This will enable the respondents (player) to get the information about Bidayuh from the game.

The scenes

The game is divided into six scenes and each scene has its own challenges. Each scene is carefully designed to fulfill the requirement of the research. Information about Bidayuh culture is inculcated in the game through items that can be clicked by the player.

Scene 1, the village



Figure 4.10.1 Snapshot of scene 1 in the game

This is the first scene where the player is required to control and navigate the character in the game. The game set in the village, the player has to find a way to get in the long house and find out what is going on. In this scene, the player will know how a long House and a Baruk look like. On top of that, the player will also know on the item that the Bidayuh use, for example, a stair made of notched tree log. There is also a menu that required the player to mouse over and click on the highlighted objects to get the information.

Scene 2, the Tonyu



In scene 2, the player is required to explore its surrounding. There is an old man that provides information that will assist the player to the next scene.

The learning experience that the player will get in scene 2 is: Tonyu, which is the verandah of the long house and learning about daily items used by the Bidayuh. For instance, Ju, (fish trap made of bamboo and rattan), Risuong (rice pounder). Player will be exposed to the belief of the Bidayuh when they click on the Bee hive (in the game). The purpose putting a small Bee hive in front of the door is to deter evil spirits from entering the house. These learning contents are inculcated in the game and the player can access to it by clicking on the items. Apart from that, this scene also highlights the appropriate way to address an elderly, omens and definition of the Gawai festivals.

Scene 3, Inside the Long house



In scene 3, the setting is inside a long house. This scene enabled player to experience the environment inside a Bidayuh long house. This scene highlights items that the Bidayuh use daily, for example: Juah, (a large rattan basket to carry items), Bukuo, (a large knife), Sigongang, Tipakuoh, (plate made of palm bark), Rongah, (the attic of the long house), Siratang Boris, (customary apparel

of the Bidayuh), Bona, (earthenware), Pitak, (paddy storage container) and Pogang, (rice cooked in bamboo). The player has to click on the items and read the description of it. Each time the player click the item, there will be sound that indicates that the knowledge has been unlock and the player can move on clicking on to the next item. When the player finished unlocking the knowledge, the knowledge meter will be full and the arrow that indicates the player to go to the next scene will appear.

Scene 4, The Baruk



From the Long house, player is invited to the setting inside a Bidayuh Baruk. The player will feel the environment in the Baruk. The player will learn about Baruk, It's Purposes and how it looks like from the inside, headhunting activity, Bidayuh musical instruments, Religion and handicraft.

Scene 5, The Bamboo bridge



After collecting information about the Bidayuh culture in scene 4, the player is brought to a situation where the character has to cross a river on the journey to Mount Singai. This scene basically illustrates the scenery surrounding the Bidayuh village. The player will be exposed to information such as: the economy of the Bidayuh, the use of Pitcher plant's vines to tie or bind building structures

and the bamboo suspension bridge. Although the pilot test revealed that this scene left no clue to the player on what needed to be done to move on to the next scene, the researcher purposely left it that way in order to create tense to the player during the game and sense of achievement when they have completed the scene.

Scene 6, Mount Singai



Scene 6, which is the final scene in the game where the player has to answer the questions related to the information obtained from the previous scenes. This scene is the tool for the researcher to find out what the player have learned throughout the game. There are 11 questions that moderately cover what needed to know about the Bidayuh culture.

FINDINGS

In the data analysis, the researcher is using descriptive analysis to present and analyse the finding. The data is divided in three main sections, which are:

1. Respondent's demographic, time spent on the Internet a day and knowledge about the Bidayuh.
2. Respondent's answer on the questions that are related to the bidayuh culture in the game.
3. Respondent's opinion on the game's role in documenting and disseminate information on the Bidayuh culture.

The researcher has designed the online questionnaire that is included in the game. This is to ensure the convenience of the respondents when they play and answer the questionnaire. The data obtained from section A of the online questionnaires were used to construct the profiles of the respondents. The information are on gender, age, race, residential and how long they spend their time online a day. Therefore, the researcher has identified the respondents (internet user) and asks them (through online questionnaires) on how long they spent on the internet a day. Table below revealed that 10 (5.8%) of the respondents spend less than an hour a day, 59 (34.1%) spend one to three hours on the internet a day, 89 (51.4%) spend four to eight hours a day on the internet and 15 (8.7%) of the respondents selected others.

The respondents managed to remember and answer the online questionnaire about the culture of Bidayuh in the prototype game. The findings revealed that 11 questions on the Bidayuh culture are answered correctly by majority of the respondents. The open-ended questions show the reason why the small group of respondents selected the incorrect answer because of design of the other factor, which is:

1. The respondents are bored with presentation of the information in the game. Instead of reading the information, they just clicked to move on to the next scene.
2. The game play that allowed the respondents to click on the answer only once and does not allowing the respondents to go back to the same question to change their answer.
3. The respondents misunderstood the question. For example, the question “warrior, what is your culture?’ have been mistaken as the question was intended to ask the respondent’s culture. As a consequence, they selected their own culture instead of the culture inculcated in the online game prototype.
4. The result of the research is the evidence that the online game can be used to document and learn the Bidayuh culture. In this context, the Bidayuh culture is only the content. The studied matter is actually the learning content that was presented in the game play. The elements of the game such as interactivity, artwork, color and audio functioned as a compliment to the game.
5. The online game provided opportunities to document and learns not only the Bidayuh culture, but also other cultures in Malaysia. This can be a platform for the tourism industry to penetrate the online market. For example, an online computer game about the cultures in and interesting places in Malaysia that allowed the player from all over the world to explore and learn about the culture, interesting places and folklores in Malaysia.
6. Through the online game, the researcher has identified the elements in the game that should be improved thus provide information to the game designer on what to be focused on.
7. The respondent’s feedback in this research provided some suggestions on pedagogical aspect. The suggestion below is for educator to consider the use of online game in learning.
8. Educators could start exploring online computer game in teaching students. The online game can be used as a part of student’s activity. For example, an online computer game that allows graphic design students to play a simulation of a design industry. They can start by playing the role of free-lance designer, learning what to do, master the tool of the trade, how to promote themselves to move on to start a design company and play the role of a creative director.
9. Educator must consider the potential of the online game in academic in the local settings, and incorporate it as a teaching and learning tool.

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