Perceived Visual Enjoyment Factor in Artistic Playability: In Case Study Real Time Strategy (RTS) Game

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Abstract: Each game has their own unique feature, which attracts gamers by constantly playing the game daily. The game appeal also regards the interface attributes, Game mechanics, and interfaces as a factor towards excitement in playing the game. Nevertheless, there is limited discussion pertaining to perceived visual enjoyment factor in artistic playability, especially among youth based on the Real Time Strategy (RTS) game to support the statement. For this purpose, Defence of the Ancients 2 (DOTA 2) were used as a case study as inspired game play. The game according to gamers is essential for each level to deliver challenges that encourage the gamers themselves as motivational goal. In contrary in winning factor, there are also aspects of UX indicates substantially important as the game experience, that is: anatomy of function, and menus, plays important role in achieving goals, especially for the gamers. Therefore, this paper discusses the components of successful game. Method:The sample was tested using System Usability Scale (SUS) for interviews and questionnaire. Despite of a small sampling, SUS is trusted with its accuracy and reliability, also has established an industry standard, with numerous previous references. Based on findings, the online questionnaire distribution (N=10)

Results: The result indicates that the players were satisfied with the mechanics of the game, comparatively, the player felt enthusiastic with the competitive challenge to finish the game, and to achieve their objectives. The findings in the paper also established that the visual was not the driven factor for the user's engagement in continuously playing the game, but desire to complete the challenge in order to gain satisfaction upon completion. The significant finding in this article, that DOTA 2 game largely by definition depends on CTPM (Critical Thoughts Per-Minutes) and communication within the team because critical thinking is highly required in other to perceive the enjoyment; but the intensity, breadth, and acceleration also significantly required in the game to enhanced gamers excitement.

Index Terms: Real Time Strategy (RTS), Artistic playability Video Game, Visual Interests, CTPM (Critical Thoughts Per-Minutes), Defence of the Ancients 2 (DOTA 2).

I. INTRODUCTION

Currently, we are at the era of technology with millions of gadget and platform that can be used to play video games. Most of the current and previous generations playing games since 1996, and the computer game industry has been increased from $20 to $32 billion in value, and video game software sold worldwide soaring since 2008. In this article, investigation take place on one of the most popular video game Real Time Strategy (RTS) genres, *DOTA 2*. It can be played either offline or online using a *steam platform* developed by Valve Corporation [1]. Currently, *DOTA 2* is the highly preferred among gamers in online *steam platform*. Literally, *Steam* platform is one of the most heavily trafficked digital game platforms in the world due with influx of gamers worldwide [2]. According to *Steam Powered*, the Valve built- in analytics, *DOTA 2* being played almost more than 1000 hours every day [3-4]. *Defense of the Ancients (DOTA 2)* is currently the top video game played in *steam* platform by gamers worldwide. *DOTA 2* initially released on July 9, 2013, on Steam, upon its releases, *DOTA 2* has reached 10 million subscribers worldwide, with USD1 billion in revenue for parent company Blizzard Entertainment [5]. The Game industries are soaring rapidly and globally generate more engrossment than the motion picture and the music industries [6]. Furthermore, the game also considered a big source of entertainment [7]. Due to rapid changes, the industry is increasingly investing significant resources in research and development for video games to sustain. This allowed the developer to produce realistic graphics, rich level and complex artificial intelligence (AI) to increase gamers experience, that also lead the game even closer to reality [8]. Therefore, this article provides empirical evidence on how various types of digital characters, User experience (UX), and graphics as a potential to affect viewers' attitudes towards them [9]. In previous studies, [10] to keep the player more interested in playing the game is addressing the game by convincing a supporting story and realistic environment. As contested by [11] there is plenty aspect that inspired game play, but it is essential for each level to deliver challenges that encourage the game designer to improve the game. In contrary, the UX indicates substantial important as anatomy of function, tutorials, and menus, plays important role in achieving goals, especially [12] for the gamers. While the tutorial is available at the beginning of the game, this can be easily forgotten by gamers when they are highly engaged in different level of the game.In order to identify the importance of the engagement by the gamers and users, this article focuses to the main factors of visual interest among *DOTA 2* gamers and other factors visual components of the game. This research and article hope to contribute future game designers as reference in understanding and increasing future game playability. From the education perspective, the

outcome function as an insight to the student in consideration to build efficient game interfaces.

II. MATERIALS AND METHOD

The aim of this research is to obtain perceived visual enjoyment factor among gamers, in artistic playability perspective on RTS game. The main subject in the research is RTS game *Defence of the Ancients 2* (*DOTA 2*), the reason was mainly to identify the visual interest in the game. The descriptive research and approach using System Usability Scale (SUS) was recommended by previous studies and research. The interviews and questionnaire also conducted in order to obtain visual enjoyment factor according to the quality of the video game and design components. Due to simplicity, justification of SUS approach in this article with low sampling, is trusted due by the reliability and has become an industry standard, with numerous references [5]. To add, this research is based on an analysis of the visual enjoyment of a single RTS game, therefore and has not been formally tested on local gamers .Due to application of SUS, the sampling narrowed to local players who genuinely plays the game *DOTA 2*, therefore the level has been categorized by their knowledgeable of playing *DOTA 2* as: amateur (Beginner) and experienced (Advanced) player. All participate in this research consists of (N=10) people, which are female (18.2%) and male (81.8%) around age 18-22 (45.5%) and 23-27 (54.5%) has contributed this questionnaire. The participants required to observe in detail on visual and artistic factor in playing *Defence of The Ancients 2* (*DOTA 2*). The test has been conducted and self -administered in location of Kota Samarahan, Sarawak, Borneo, Malaysia. The responses measured according to System Usability Scale (SUS) on artistic playability elements. Therefore, participants were required minimal experience of playing the game, in order to answer the questions.

III. RESULT AND DISCUSSION

A. Artistic Playability

Artistic playability is related to the quality of the artistic visual and aesthetic game elements and how these elements are executed in the video game. The element is consisting of visual graphics, sound effects, music, and storyline.The question in section 2 (Refer Table 1) for this research consists of artistic playability. This question purposely is to analyze the game attraction and enjoyment to the players before, during, after finish playing *DOTA 2* game, these sections consists of 10 questions.

Table 1: Question for artistic playability section

NO.	QUESTION
Q1	Do you satisfy with the graphic, interface and story of the game?
Q2	Can you understand the game system and mechanics (Objectives, rules, how to interact with the video game, etc.) in the game? Or need some guide in some point?
Q3	What is your motivation factor to complete the game?

Q4	Did you reach your goal or objective after playing the game?
Q5	Can you describe your feeling before, while, and after playing the game?
Q6	How many times do you spend playing the game?
Q7	How do you prefer playing the game?
Q8	Do you familiar with the visual of the game?
Q9	Can you describe why the visual can catch your attention?
Q10	Do you still want to play the game next time?

Based on Question 1 (Q1) gain that most of the player was very satisfied with the graphic, interface, and storyline/plot of the game.Question 2 (Q2) the results discuss of the game system and mechanics (objective, rule, and game interaction). The response was attracted with DOTA 2 with its game mechanics. In terms of skills in playing the game, critical thinking is required in decision making in winning the virtual battle.All the respondent answer for question 3 (Q3) that the main motivation factor they to finish the game, with numbers of winning streaks in battle and decreasing number of rankings or lists the enemy increases.Question 4 (Q4) 4 respondents unable to reach the goal or the game objectives, the researcher concluded they were amateur players and required minimal guidance to reach the game objective.Result for question 5 (Q5) is categorized into three part which is before, during and post of playing *DOTA 2*. Participants mostly responded their sense of *very nervous, excited, happy, interesting, thrilling* and *a little amount of anxiety*. While playing the game, participants response feeling with the sense of *enjoyment, tired, hopeless, excited, fun, nervous*, *highly desire to win* and *an annoyance* if defeated and potentially blaming team members.In the question 6 please refer Table 2 (Q6), the participants spend they times more than 10 times to play the game on weekend and they only play the game at least 1 - 5 time per-days.

		Frequency	Percent
Valid	1 - 5 times(daily)	3	30.0
	5 - 10 times(daily)	1	10.0
	1 - 5 times(weekly)	3	30.0
	5 - 10 times(weekly)	1	10.0
	More than 10 times(weekly)	2	20.0
	Total	10	100.0
		Mean	Std. Deviation
How many times do you spend playing the game?		3.4000	2.01108

Table 2: Accurate time the participants spend playing *DOTA 2* game for daily and weekly.

Question 7 (Q7) refer Table 3 below, indicate that the participants prefer playing in a group instead of individual, the reason of socialization was the key, interaction with team to create challenges and fun.

		Frequency	Percent
Valid	Group	8	80.0
	Individual	2	20.0
	Total	10	100.0
		Mean	Std. Deviation
How do you prefer playing the game?		1.2000	.42164

Table 3: Result for question 7

In question 8 (Q8) most of the participants are familiar with the visual of *DOTA 2* and there also stated that visual of the game is good and easy to learn.Responses for question 9 (Q9) indicates they have their own perception of the visual of the *DOTA 2* game, but overall satisfied and amazed with the animation, clear graphic images of the character, realistic environment and real. The realistic effects of the characters *magic* attracted gamers to increase the gameplay durations. The outcome indicates the players are influenced by rich effects-visual during gameplay. On that note, the good visual can enhance the player exciting to play; therefore, can improve their performance playing *DOTA 2* game.Question 10 (Q10) results are 8 of 10 participants responded that they will play the game again, meanwhile the rest stated that they will play based according to their free time, due to limitation of other commitments.

B. System Usability Scale

As stated by, [13] System Usability Scale (SUS) is structured of 10 questions with a score on a 5-point Likert scale. Question alternate between strongly agreed (the game is good) and strongly disagreed (the game is bad). Using SUS can identify how good a user experience but for comprehensive result, this research article empirically depended on usability metrics, that standardized and commonly used throughout many industries [14].

SUS system commonly functions to produce appropriate feedback how the gameplay, UI, digital game assets works to the user, and the feedback benefited game industries. It also functions to ease production design or production variety of the asset before being established. To break down the SUS formula, the result needs to subtract 1 from the odd question answers, subtract the value of the even question answers from 5 [13]. By example in each item's score contribution will range from 0 to 4. For items 1,3,5,7, and 9 the score contribution is the scale position minus 1. For items 2,4,6,8 and 10, the contribution is 5 minus the scale position [14]. Then total required to summate, and with multiplicity to 2.5. The result is based on a scale of 1- 100.
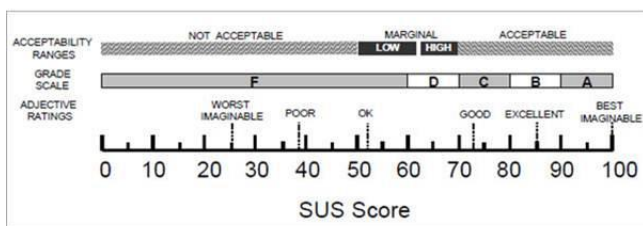

Fig. 3: System Usability Scale (SUS) score calculation [14]. The SUS calculation numbers are based on the report below;

- *100 is a really great user experience, equivalent to an "A"*
- *68 is considered average, a "C" grade*
- *Anything below 68 is considered well below average, an "F"*

The outcome of the score are crucial, in order understand the game design function to the user, and whether it has relatively weaknesses or required to be improved, according to SUS results.The final scores 1-100 are calculated from a simple formula based on [14] to obtain from the responses, suited the objective of this article. The question from SUS is modified accordingly to the requirements of topic and subject matter. The outcome from SUS score was 81.13/100%. The result showed all participants were generally familiar with all the elements and interface components of *DOTA 2*.

Figure 4 shows all the frequency of each possible result for 10 participants for this research. Range question score for SUS is 0-100% for 10 question using 10 participants.
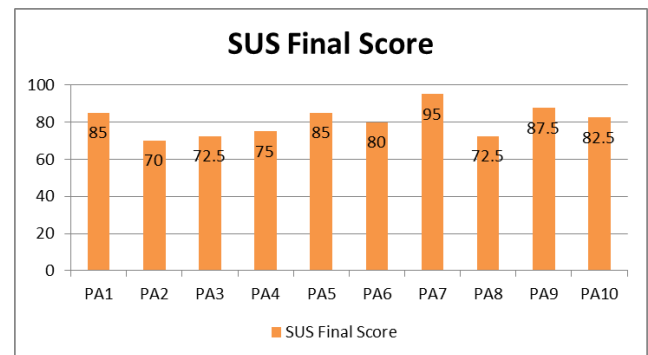
Fig. 4: System Usability Scale (SUS) final result

Data shows the lowest score of the participants is 72.5% score, these data indicate that the participants were amateur (Beginner) player and the highest score is 95% were experienced (Advanced) player. The results determined the game usability was being accepted by both levels of players.

In this paper perceived visual enjoyment factor in artistic playability are useful for reference to designing a commercial game based on local content. The requirement of graphic visuals is highly recommended to engage *DOTA 2* game users around the world. Therefore, the emphasis on game development, art and visual creation in higher education (HIE) is very much needed. HIE should focus on building visual arts talent, especially in game pre-visualization, particularly in creating character design, level environment, assets for games. On the other hand, Malaysia has a diversity of culture that has a potential to develop game content that can inspire new digital games.The findings in the paper also conventional that the visual is not the determined aspect for the player to keep playing the game, but desire to complete the competitive challenge in order to feel satisfied until completion. *DOTA 2* game largely depends on CTPM (Critical Thoughts Per-Minutes) and communication within the team required critical thinking, in order to perceive the enjoyment. However, the depth, breadth, and speed at which it needed to be applied in the game to induce a different enjoyment. The players also reported watching the number of killing/ (score) and therefore, increased their

IV. CONCLUSION

In general, the whole results show the game mechanic was not the main factor in influencing gamers, however, challenge, objectives, goals (or task that the game developer creates inside the game) also an additional component in continuous plays. Overall, the crucial factor the gamers influence to finish the game was the numbers of winning streaks in battle and increase number of enemy knockdowns. Mostly participants respond on feeling before playing the game was their sense *very nervous, excited, happy, interesting, thrilling* and *a little amount of anxiety*. While playing the game, participants response feeling with the sense of *enjoyment, tired, hopeless, excited, fun, nervous*, *highly desire to win* and *sense of annoyance* if defeated and therefore blaming team members. The researcher concludes based on the findings, it is critical to immediately understand the game mechanics and its interfaces in order to win and to increase enjoyment in playing *DOTA 2*. The player behavior and their high expectation are substantial and crucial, thus affecting the enjoyment and decision making while playing the game due to its high requirement of CTPM (Critical Thoughts Per-Minutes). As a result, critical thinking is required as a goal in decision making, also, the ability to think critically is only a partial of dimension of the creative process that users should achieve and exploited [15].

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