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Incorporating Rewards as Engagement-Motivational Element in Digital Traditional Games

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Focusing on validating on how game rewards can positively improve motivation towards games engagement, this paper present how rewards have been incorporated in two digital traditional games. *Congkak* and Snakes and Ladder games are chosen to be enhanced with rewards due to its popularity. Study started by analysing and designing how rewards are incorporated in the chosen games. Credits point is chosen to be rewarded to players who win and solved problems in the game. Validation process involved series of experiments which include game demos, game experience, and systematic interview. Findings revealed how players responded positively to rewards when they demonstrate how they attracted, hooked and endured the games. The injection of rewards in Digital Traditional Games is believed to be useful to new psychologists to obtain more understanding pertaining to games engagement through some experiments of rewards in traditional games.

Keywords: digital traditional games; games engagement; game rewards; Malaysian games

I. INTRODUCTION

Traditional game digitization is a process of converting or developing traditional game content into computer readable format. This is an adaptation of the traditional games with the rules, presentation of players and environment are managed through electronic means. The field of digital game studies has established its own journals and research organizations (Murray, 2006). Digital games are said to have influenced physical and mental health, as well as the general well-being of players in both positive and negative ways.

Although many traditional games have been digitized for preservation purpose, its popularity is far less popular compared to the contemporary ones. Despite the hard works of promoting and preserving the digital version of traditional games, these efforts are yet to success. This genre of games losing their appeal among young generations. They are yet to get attracted and engaged to it due to the dominance of modern contemporary games (ChePa & Yahaya, 2017; ChePa, Bakar & Mohd, 2015; Doughty, 2015).

Engagement is one of the important issues in game industry. Scholars have listed several elements to be considered in producing games which are engaging. Digital traditional games are suffering with the issues as well. Digital traditional games have its lacking that can attract player's attention. One of it is reward in games. Preliminary study has discovered that games reward is one of the factors that can improve games engagement (ChePa and Yahaya, 2017).

Based on the issues discussed, efforts are needed to enhance digital traditional games with rewards. Therefore, this article discusses the effort of enhancing two selected games; Congkak, Snakes and Ladder. Rewards are incorporated in its gameplay, towards improving players engagement.

II. REWARDS AND GAMES ENGAGEMENT

Many scholars have recognized reward as an important element in designing computer games. Rewards are defined as benefit resulting from some event or action. Rewards also can be seen as something given in recognition of one's effort or achievement. In games context, rewards are given when players achieved certain level of difficulty of games. It serves as an incentive to player to keep them playing and giving

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them assistance to solve tougher levels. Reward systems describe the structure of rewards and incentives in a game that inspire intrinsic motivation in the player while also offering extrinsic rewards.

Seidman (2016) emphasized that designers want to give players rewards for numerous reasons, including reinforcing player behaviour, increasing players' feelings of mastery, scaling difficulty over the course of gameplay, and scaffolding mechanics and player abilities. Scholars came out with various strategies in designing games rewards. Davis (2014) has listed five ways to design effective rewards for Game-Based learning, while Moorcock and Midgley, (2005), listed nine sort of rewards the player can experience to make player enjoys, and how to keep them playing.

Taking Candy Crush Saga for example, the most popular game on Facebook which has been installed half a billion times on Facebook, and on iOS and Android devices (Walsh, 2014). Rewards of Candy Crush are given in many forms; daily reward, lucky-based reward, achievement-based reward and challenge-based reward. Some rewards are given for free on daily basis, some are given as incentives after achieving certain levels, but some rewards need to be earned by taking challenge to solve special levels. Rewards collected can be used as a weapon to assist players in facing challenges at tougher levels.

Rewards and incentives are considered as a crucial piece in games engagement. With proper and thoughtful design, incentive and reward programs can be very effective in providing optimal motivations for driving engagement. Players are assisted to deal with the twelve games characteristics especially when dealing with their ego gratification in winning. Rewards are important in motivating, assisting and act as a pulling factor to keep players playing, thus make them engaged. Number of experiments to analyse the influence of rewards on games engagement have been studied and reported in (Bakar et al, 2018; Hibadullah et al, 2018).

III. METHODOLOGY

Four main phases involved in this study are theoretical study, model development, prototyping, and model evaluation as illustrated in Figure 1.

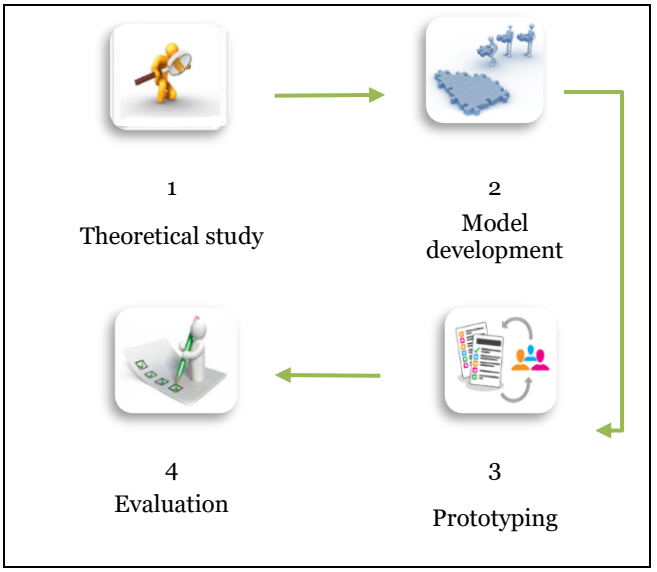

Figure 1. *Research procedures*

A. Theoretical Study

Extensive studies were conducted to explore and understand engagement concepts as core successful elements in developing educational games. Conceptual models and empirical studies designed and conducted by scholars were thoroughly studied (Abbasi et al, 2019; Özhan & Kocadere, 2019; Wiggins *et al.*, 2018).

Internal and external properties have been explored and identified through combination of extensive literature review and series of interview. Major theories that have been focused on are the Flow theory (Csikszentmihalyi, 1997), Game Engagement theory (Whitton, 2011; Whitton, 2008), and Cognitive theory (Admiral *et al.*, 2011). Table 1, Table 2, Table 3, and Table 4 show the list of the identified properties as reported in Yahaya and ChePa (2018).

Table 1. External properties of the proposed model (Yahaya & ChePa, 2018)

No	External properties	Notation
1	Clear goals	*Gl*
2	Genre	*Ge*
3	Game platform	*Pl*
4	Multimedia elements (visuals, audio)	*Vi* *Au*
5	Fun elements (characters, quests)	*Ch* *Qu*
6	Motivational elements (rewards, help tools)	*Re* *He*
7	Challenges	*Ch*
8	Fair	*Fa*
9	Accessibility	*Ac*
10	Flow	*Fl*
11	Outcomes & feedback (Score)	*Sc*
12	Usable	*Us*

Table 2. Internal properties of the proposed model (Yahaya & ChePa, 2018)

No	Internal properties	Notation
1	Prior experiences (knowledge, skill)	*Kn* *Sk*
2	Attention	*At*
3	Immersion	*Im*
4	Interest	*Int*
5	Perceived concentration	*Co*
6	Perceived control	*Ctr*
7	Ego gratification	*Ego*
8	Curiosity	*Cu*
9	Involvement	*Inv*
10	Effort	*Ef*

Table 3. Output of the proposed model (Yahaya & ChePa, 2018)

No	Internal properties	Notation
1	Enjoyment	*Ej*
2	Satisfaction	*Sa*
3	Challenged	*Cl*
4	Arousal	*Ar*
5	Escapism	*Esc*
6	Boredom	*Bo*

Table 4. Engagement levels of the proposed model (Yahaya & ChePa, 2018)

No	Internal properties	Notation
1	Short-term engaged	*Se*
2	Long-term engaged	*Le*

B. Model Development

Based on the identified properties and early model, a refined model is developed. This article is focusing on the role of rewards as an engagement-motivational element towards improving the engagement of Digital Traditional Games, particularly Malaysian games. Figure 2 shows the excerpt of the refined model involving relationship between rewards and motivation.

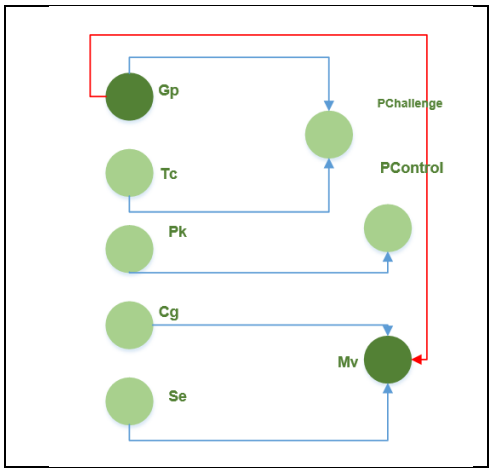

Figure 2. Excerpt of the proposed model

Main properties involved are Game Platform (*Gp*), Task Complexity (*Tc*) which is also referring to game's difficulty. Prior knowledge (*Pk*) of players represents the existing gaming skills of the players, while Clear Goal (*Cg*) represents that the goal and objective of the game are clearly understood by the players. Self-Efficacy (*Se*) referring to players' belief and their ability to achieve goals of the game. In this context, rewards are embedded in the first property which is Game Platform (*Gp*), together with other features of the game. Red link shows relationship between rewards and Motivation (*Mv*) towards game engagement. Relation of rewards on motivation is thoroughly discussed in Richter *et al.* (2015) in response to Deterding's (2011) claim that the world is still lacking enough empirical evidence whether it succeeds in promoting user motivation.

C. Prototyping

Based on their popularity, two traditional games have been chosen to be incorporated with rewards. *Congkak* developed by Shamsul (2015) which is available on Google Play is chosen to be enhanced due to its popularity shown through the download rate and positive comments given by players, At the moment, his *Congkak* have been downloaded and installed for more than 500 000 times. An improved Android based *Congkak* has been redeveloped by including rewards in credit form. By default, 10 credits are given to start the game. The look of the improved *Congkak* with rewards are illustrated in Figure 3.

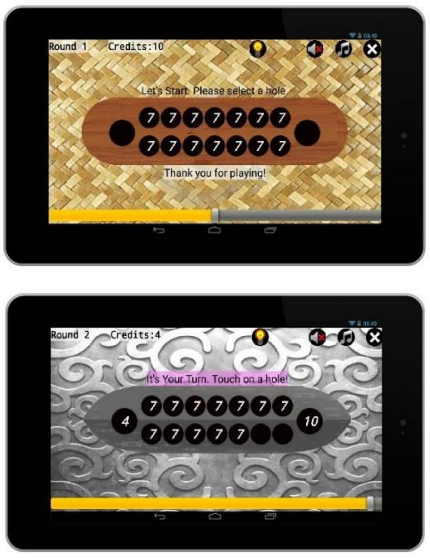

Figure 3. Interfaces of reward-based Congkak

To start the game in round 1, 10 credits are given. Rewards can be collected if players win each round of the game.

Rewards will be credited into player's account and can be used during the game or in the next round of the game. Rewards can be used in two ways; 1) to buy hints which can be used to determine the best hole to continue the game and 2) to free or redeem burnt holes in the next round. Buying hints will help players in making optimum move with longer round and collect more pebbles to fill up holes in the next round.

Second game that has been chosen is Snakes and Ladder. The game is developed in Corona lab and can be played by maximum of four players. To make it special, character of Hang Tuah (the famous Malay warrior) and friends are used to represent player's character. Two ways of incorporating rewards in the game are by rewarding players who win the game for each round and rewarding players who successfully answered questions of a mystery box. Interface of the game are shown in Figure 4.

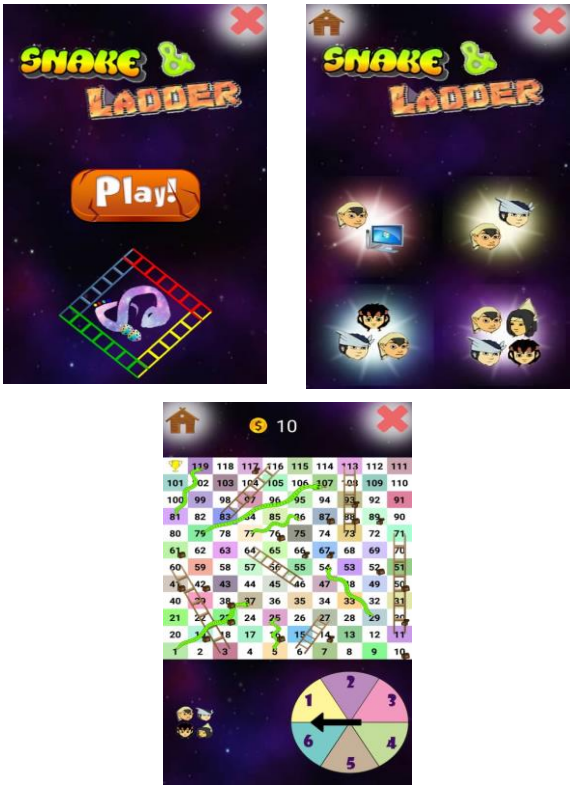

Figure 4. Interfaces of reward-based Snakes and Ladder

Rewards will be given as credit point. Players who win will be given one point. Mystery boxes have been included at some of the boxes of the board. When players reached those boxes with mystery box, a question will be popped up. For a beginning, simple mathematical questions have been included. Questions can be customized for learning purpose. Another one point will be rewarded if the players can answer questions correctly. Rewards can be used to unlock a new theme and avoiding players to fall to the lower boxes when they hit the head of the snake.

D. Model Evaluation

To evaluate the model, both verification and validation are needed. This article is only focusing on the validation part through prototyping. Validation involved human experience tests which involved combination of game demos, gameplay experience and systematic interview. Human experience tests (to measure player's engagement) have been carried out involving players which are among 30 millenials (age ranging between 14 – 34 years old, born between 1982 and 2003 and best known as Generation Y). This group of respondent is also known as the new *Great Generation* as they display ambition, confidence, optimism, and a capacity for high-level cooperative work (Wilson & Gerber, 2008).

Prior to systematic interview, players are given opportunity to experience playing both games for fifteen minutes. Observation showed that none of the players stop playing within the given time. Majority of the players enjoyed playing Congkak the most. Twenty questions which are adapted from User Engagement Scale (UES) have been used which focusing on three phases; pre-play, play, and post play (Wiebe et al, 2014). 5-Likert scale questions used covered five main elements which are Aesthetics (*AE*), Novelty (*NV*), Felt Involvement (*FE*), Focused Attention (*FA*), and Endurability (*ED*).

IV. FINDINGS AND DISCUSSION

Feedbacks from validation (user test) have been analysed quantitatively. Mean score for twenty constructs are shown in Table 1.

Table 1. Players' feedback

	Measurement	**Mean score *(n= 30)***
Pre-play		
1	The game appealed to my visual senses (AE)	3.7
2	The game is aesthetically appealing (AE)	4.0
3	Pleasant appearance of the game attracted me to play (AE)	4.1
4	Special features make me curious to explore the game (NV)	3.9
5	Traditional elements are appealing (NV)	4.0

6	Traditional elements attracted me to play (NV)	4.1
Play		
1	Overall, the game experience was addictive (FI)	3.7
2	I played all parts of the game (FI)	3.9
3	I understand all parts of the game (FI)	4.1
4	I was really drawn while playing the game (FI)	3.7
5	While playing, I concentrated on the game (FA)	4.1
6	While playing, I did not think of anything else (FA)	3.5
7	While playing, my eyes are fully focused to the game (FA)	4.0
8	While playing, I was really focused with the game (FA)	4.0
9	I did not aware that I spent much time playing the game (FA)	3.9
Post-play		
1	Playing the game was worthwhile (EN)	3.8
2	The game is not as what I expected (EN)	2.9
3	My game experience was rewarding (EN)	3.5
4	I will recommend the game to my friends (EN)	4.2
5	I will play the game again (EN)	4.2

Mean score for all five constructs during pre-play are above average; minimum of 3.7 and maximum of 4.1. It indicates that players are attracted with the features of the games (including rewards) and convinced to play. Mean score measuring how player felt on the traditional elements used in the game is high. They agreed that traditional elements used are appealing and attracted them to play.

Nine constructs measuring how they felt during play produced above average of mean score as well. It demonstrated how players felt involved and stay focused playing. The last part of validation is focusing on Endurability (*ED*) which shows holistic response to their game experience playing the two games. It also shows how they reflect in showing interest to play again and recommend the games to others. High mean scores proved that they really endured the games.

V. CONCLUSION

Congkak and Snakes and Ladder have been successfully enhanced by incorporating rewards as one of the attractions towards making it engage to young generations. From the observations and feedbacks gathered, players show positive reactions to the new added feature. With injection of rewards to the games, they attracted to play, make them hooked to the games and endured the games well. Future works involving simulation works on how rewards influence engagement would be useful in understanding the engagement patterns.

This study is expected to be useful and beneficial to many parties. The findings can be useful to new psychologists to obtain more understanding pertaining to games engagement through some experiments of rewards in traditional games. This study can also be useful and beneficial to game developers. Ideas of incorporating rewards in digital traditional games can be considered to be implemented in other digital traditional games. It is concluded that rewards have enhanced the game, managed to attract players to play and keep playing, hence and making the game stand out from the crowd.

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