

Conference Paper

Changing The World By Games: An Approach to Solve Problems

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Abstract

This article explores the Games for Change phenomenon which can be used to solve social issues, health problems, and educational goals. The literature review is used to compare some games that have been developed because of the universal problem, such as immigrant, ocean waste, relationship, preschool education, and person with special needs. Understanding the eight essential points during the whole game production is very crucial to make the game sustainable. Despite different opinions regarding the advantage of gamification in daily problems, this article demonstrates a significant improvement from the players after playing a Game for Change. Further, this genre is focused on the behavioral changes after playing the game, so that the measuring the effectiveness of the game can be performed in the short-term or long-term.

Keywords: game for change, game, gamification

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1. Introduction

With a population that exceeds 7,7 billion in 2019, the rapid population growth is bringing to various social problems in the world. The community has known that social issues such as environmental and health care are arising from urban waste, yet it is agonizing that there are many people still throwing their waste in the environment (Yulida, Sarto, & Suwarni, 2016). Changing people's behavior is an enormous challenge because it invades the way people live their lives in their circumstances, as well as the places they live in (Arief, 2013). The local communities should be made aware of the need to care for the environment, in a non-threatening or confrontational way.

According to (Brown, 2012) design, in the theory of design thinking, could, therefore, be a problem solver. Design Thinking is considered to be a suitable method to help humans to extract, teach, learn and apply human-centered techniques to solve problems creatively and innovatively (Dam & Siang, 2018). Moreover, a design that innovates becomes critical when social issues become worse, when the system does not work, or when the institution reflects past difficulties rather than the latest. More awareness of the design influence arises on understanding and defining the problems of society to

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find solutions in collaboration with the community, and their effects on the environment (Deserti, Rizzo, & Cobanli, 2018). Furthermore, the diversity of design artifacts is vast, including visual merchandising, posters, advertisings, and video games. Thus, the social problem can be solved through design thinking, which leads to creating an innovative design artifact.

In recent years, the 'Games for Change' movement has provided a highly influential perspective on game design, using game-based-learning to tackle social problems of all sorts (Lu, 2012). It also provides a valuable space for experimentation with new game mechanics. A wide range of different game and play styles have been developed as part of Games for Change, ranging from poetic reflective games to role-playing games and environmental simulations (Game for Change, 2018). According to Bogost, games are known to be fun (Bogost, 2016) because adding gameplay elements to a mundane situation or social issue can have a positive influence when it comes to critical reflection. It shows in Pokemon Go gameplay, which motivates the players to walk for a few kilometers, to catch or hatch the pokemon (LeBlanc & Chaput, 2017).

According to Zagal (Zagal, 2009), the game can make the player feel responsible for the decision they make in the game and create moral tension while playing the game. For example, in-game Episode, the player can decide the character's storytelling; does he/she become a good or a bad person until the rest of the game?. While in life simulation games like The Sims, the players can have a situation like what if the sim does littering at his/her house? What happens to the sim mood? What if the sim's friends come to his/her dirty house? It can bear moral dilemma and create emotionally meaningful experiences while playing game. Many games have features like social interactions that facilitate the players to engage with another player around the world, solve the game mission together, and achieve the primary goal.

This article is a preliminary study of the following research about designing the games for social problems in third world countries. The content will discuss previous studies about the Game for Change phenomenon in the area of social issues, health and wellness, and education. Also, arguing the platform, the target audience, and the gameplay that show the possibility of this genre in the future.

2. Literature Review

2.1. Game for Social Issues

Many Games for Change was made with social problems as the main topic. This game genre was found in 2004 by stakeholders and communities that care about the world social problems. They tried to tackle the problem using digital and non-digital games, which contribute to society in a meaningful way. One of the games for change figures who promotes the positive effect of playing video games is Jane McGonigal. She developed a game called Superbetter (McGonigal, 2016) to motivate the players to stay strong, motivated and optimistic. Like any other game for change, the main goal is changing the player behavior. According to McGonigal, after playing Plants vs Zombies, students, who are the research sample, could do more cooperative works at school. The result shows that playing game is not always have a negative impact like the parents think (McGonigal, 2011).

The bigger social problem such as LGBTQ (Lesbian Gay Bisexual Transgender and Queer) youth is shown in A Closed World game. It was created by GAMBIT studio because of the lack of convincing video games about LGBTQ (Plunkett, 2011). Living as a gay or lesbian for young people is tough, especially the society still exclude and underestimate their existence. Unlike some games that kill the enemy harshly, in this game, the character beat the demons with logic, passion, and ethic. The goal of this game is to tell the players how to think about what 'normal' is? And how to define love from another perspective. It is quite challenging to make a game that not acceptable to everyone.

Another game, Bury Me My Love is a game about the voyage of Syrian refugees to Europe (Arte, 2017). The main character is Nour, a Syrian woman who wants to move to Europe but has some obstacles during her trip. She might meet a smuggler, run out of money, or face a problem that can threaten her life. The genre is an interactive story, Nour tries to keep in contact with his husband by messaging app. The player plays as Nour's husband and decides the storyline about how she crossed the border safely. The gameplay is similar to other games such as Episode, so the player determines the ending of Nour's journey. The game shows the player about the life of Syrian immigrants who want to have a better experience by escaping from their country. Also, it could build awareness to the world about this social problem.

On the other hand, Deep Blue Dump is a game about the life of a baby turtle that has just hatched and began his first ocean journey. The player should help him to secure from plastic bottle waste. While playing the game, the player, especially kids could learn the impact of plastic pollution on the marine life. What makes this game special is

because it raises awareness of a significant global crisis. It has simple gameplay with hand-drawn art to make it unique compared to another digital game. Yet, this game opens up opportunities for players to reflect upon the importance of protecting the sea from plastic. Besides, through interactive games, it could inspire plastic business owners to participate in reducing waste.

2.2. Game for Health Problems

In the healthcare field, there are Games for Change that successfully developed. First, a game for change that was designed to educate mothers in India and East Africa to take vitamin regularly during their pregnancy called “9 minutes”. It is a project by Half Sky Movement, USA, in 2012 because they care about the condition of the newborn in those areas (C-Change, 2012). Even it needs a longer time to research and bigger funding to develop it, the result shows a significant increase in mothers’ knowledge about beneficial pregnancy activities. The game also educates the husbands, who are the secondary target, but if they play the game, they could also learn about the safe pregnancy. It does not need a smartphone to play this game, but the old cellphone does because those are the technology that they could afford.

Second, Game for Change could also be played with non-digital game such as Shapes. It is a Ph.D. project by Niels Quinten (Quinten, 2015) that create playful objects for the physical rehabilitation of people who had a stroke or people with Multiple Sclerosis. It is integrating abstraction, minimalism, and technology into the realm of physical rehabilitation resulted in a unique and playful set of interactive and visual objects that encourage people to practice digital aesthetics. The overall goal of the game is to merge in a wide variety of arrangements with the individual objects. It will be accomplished by carrying out basic physical actions such as lifting, rotating, dragging or pushing these objects in order to bring them together (Quinten, 2015). The research participants are elderly who both physically and cognitively was able to control the game as mentioned earlier objects minimally.

Third, a similar concept to Shapes is MyoBeatz, an Android and Biofeedback Sensor-based game. It is a rhythm game based on music for people who join to neuromuscular prosthesis therapy. Using electrodes, a Myo device measures muscle contractions. Patients with amputation gradually improve control over their potential arm prostheses by flexing the muscles left at the stump in sync with videos and popular music pieces in rhythm. The concept of this game is to motivate the patients to continue the therapy in a more entertaining way, a mobile game. The players should use the arm-band that

connected to the game, in which they try to move their muscles through the gameplay. After the training session, a significant improvement is accomplished. Most of the game trial participants are highly motivated to follow this training.

2.3. Game for Educational Purposes

For years, educators such as teachers, lecturers, or professors are implementing gamification to their class to motivate the students. Many educational games have been developed, either for normal students or special needs students. The main goal of the educational game is mostly to motivate the students or people to learn a new thing in a more entertaining way. To create an attractive educational media could be visualized with character. Cartoon character is frequently used in school lessons because children fascinated by the image (Turan, 2014). Other research about cartoon character shows that students' interest in the study of a new lesson at school with cartoon is significantly higher than the students who learn with a conventional way (Teymuro, 2011).

Moreover, video games use cartoon characters in their element. Baby Joy Joy ABC game for kids by SkyVibe is one of the examples of games to learn alphabet for preschool children. It has cute animated characters, colorful objects, and ear-catching songs. According to (Dore et al., 2019), mobile games that offer educational content show a satisfactory result. Young children who learn basic vocabulary from mobile games could answer more questions about the alphabet than the children who did not learn it from the game.

On the other hand, alphabetic games for Autism Spectrum Disorder (ASD) had been created to evaluate the effectiveness of it toward the special needs student (Khowaja & Salim, 2018). After playing the games, the ASD students understanding over vocabulary increase and the memory remain stable until one week. The result represents that video games could minimize the problem of people who has difficulty concentrating or difficulty communicating in daily life.

3. Methods

Eight important points were included in the process of designing Game for Change (Game for Change, 2012), namely: audience, context, impact, platform, sustainability, gameplay, execution, assessment. These use for publishing strategies, which create games that have meaningful social impact. First, determine the game's target audience and the context of the game, who is the player, and how is it played. Second, decide the

goal of the game because the players need to know what the end reward. It will keep the player's motivation to play the game. Then, decide what the gameplay is and what is the right game platform such as handheld, Personal Computer, Facebook, or mobile. Moreover, it is imperative to understanding the cost of the game to sustain. From the very beginning of the design process like brainstorming and making a concept, creating game prototypes, until launching the final game will need a reasonable budgeting plan. Furthermore, measuring the effectiveness of the game need more time, especially if it involved behavioral changing.

4. Findings and Discussion

According to (McGonigal, 2016), the application of game principals and a game mindset in a mundane situation could make people thinking better, or even super better. People with mental disorders who also think of suicide because of bullying could thrive slowly from the setback with games. However, some people believe that playing video games could reduce productivity. Previous research shows that video games have a negative effect on proactive cognitive control (Bailey, West, & Anderson, 2010). Children who play violent games could show aggressive attitude, but need a long-term measurement and observation (Prescott, Sargent, & Hull, 2018). On the other hand, a positive effect of the intervention of gamification in daily situations like in an office or school is more diagnostic than the negative one. Therefore, the use of video games in social problems increases significantly.

When designing a Game for Change, the rule of the game for change should follow the player's habit, is he/she a regular video games player or non-video game player. Knowing the demographic, psychographic, and gaming ability of the target audience is very important. Like in Shapes and MyoBeatz, adding game gimmick not only to facilitate the player's need but also to increase the player's experience. Nevertheless, using old cellphone like in '9 minutes' game is the best platform for the target audience. If the developer uses touch screen technology, they have to change the target market and the goal of the overall game. For example, adult who plays Tetris by handheld console in '80-'90s might have difficulty to follow the modern Tetris in Switch. On contrary, Millenials who spend their time to play video games more than their parents might find the old platform is boring (The Nielsen Company, 2019). Hence, whatever the game platform and genre for Game for Change, emphasizing the player's need for the problems is the key to success.

In addition, the game design aesthetic is also essential to increase player motivation. Research has shown that there is a correlation between visual aesthetic and people's awareness in terms of their willingness to change their bad habits. The use of cute cartoon characters in Game for Change in educational purposes (Yang and Kim 2015) could make severe content more amusing. The side effects of the attractive game character against the player's concentration are needed to be investigated more. Especially if the target is pre-school children

It proved that the social problem could diminish if everyone works together, and design certainly plays an essential role in this. According to (Klaveren, 2015), "the building of a good relationship between an artist and a community is necessary for the aimed feeling of togetherness." It can be translated into video games when multi-players occur. For example, in mobile games that connected to Facebook, the players have a mission every day for 24 hours. To complete that, the player has to ask help from the other player who becomes friends on Facebook. It shows the daily life simulation when people need help to solve a problem; he/she could ask support from his/her friends.

5. Conclusion

In Game for Change, assign the target player from demographic and psychographic is undoubtedly true. However, the games should be still enjoyable to play by the secondary target market. Hence, the game developer must consider the eight critical points when designing the Game for Change. The aesthetic game design and the rule of play are fundamental so that a preliminary play-test is needed. It will be reducing the confusion of playing games from the first time player. If the design process is carried out according to the procedure, it will minimize the game's failure.

Evaluating the effectiveness of video games could take time depends on the measurement time. In short-term play-test research, the result is for short-term awareness. The players could reflect upon the social problem, but might not change their behavior. Meanwhile, in long-term play-test research, the result is more complex and tricky. The game could be beneficial to solve an issue, or it could bring a new problem.

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