

## Practical Implications and Applications of Mobile Games for Game Developers

**Mahyar Kolivand**

*Seri Omega International School  
Lot 6974, Jalan Beringin 5, Taman Beringin  
81400 Senai, Johor, MALAYSIA  
shahinshah\_kolivand@yahoo.com*

**Hoshang Kolivand, Mohd Shahrizal Sunar, Marzieh Moradi**

*MaGIC-X (Media and Games Innovation Centre of Excellence)  
UTM-IRDA Digital Media Centre , Universiti Teknologi Malaysia  
81310 Skudai Johor , MALAYSIA  
{hoshang,shahrizal}@utm.my*

### **Abstract:**

*It is around two decades using mobile games and design issues are somehow well realised and and well-organised, but a few research are presented on the design issues to prevent current problems due to playing mobile games. Players are doing some efforts to achieve the aim but they must obey the rules that game developers are assigned. However mobile games are developed for entertain, fun and pleasure, but the game developers should not only focused on this aspect. This paper reviews the main advantages and shortcomings of highlighted mobile games to overcome the issues that prevent a mobile game to be success. Through this review we reveal not only the parameters that should be taken into account to make the games successful but also to highlight some issues that societies are suffering form them. Proposing some points to be considered by mobile games' developers for enhancing the usage of them is the highlighted part of this investigation. We hope Game developers can take these parameters into consideration to save energy of children who are constantly involved with these video games. The main contributions of this paper is to keep maintain the trade-off between having successful games for game developers and improving the mobile games; quality for children to enhance their abilities while they are involved with this part of life.*

**Keywords-component;** *movile games, comuter games, video games, implication of mobile games*

### **I . Introduction**

There is no doubt that mobile games are a widespread topic not only for game players but also for game developers and manufactures in the past two decades [1]. There are different types of video games in which the widely used one is known as Mobile Games. This category of video games should be played mostly on smartphones, tablets, PDA and in general on any portable media players.

Due to the hardware capabilities, phones feature are increasing rapidly. Peoples are becoming to pass their time in a favorite way with mobile games played on phones these days. We do remember the time that we were happy playing Snake on first mobile phones. Due to memory of the past we decided to follow mobile games evolution.

The media is full of examples of new entertainments which are spreading and becoming popular due to their great attraction for many people but have raised public concern. Video games are not out of this norm too [2][3].

Games are happiness and fun activities which include one or more players. Players are doing some efforts to achieve the aim but they must obey the rules that game developers are assigned. Of course games are developed for fun and pleasure, but the game developers should not only focus on this part. While some studies show that computer games led to increase levels of aggression and hostile behavior [4], some other believes that video games have many advantages [5][6].

This new kind of knowledge that almost influences on all aspects of human life has two sides like any other human events. Appropriate use of this part of knowledge is not hidden by anyone, meanwhile game developers who are stand in the main part of these sides are usually worried about their commercialization without promoting human prosperity.

Professor David Kelly [7][8] presented a conceptual definition of gaming. He mentioned that game is a concept of lawful entertainment which takes the achievement of the goal into consideration. However this definition covers the most concepts of gaming but it does not cover muttered aspects. For example sport games and action games are not playing for passing the time and enjoyment. These kinds of games are usually played for showing off or competing.

Stephen Linhart [9] said people believe that you must choose either real world or virtual one not both together but we believe that this selection will be dangerous. A simple example is your friend attitude in schools when you are not even expert in a widely used game.

The present era is the era of technologies that result from innovation and creative thinking human beings. Mobile games have a great impact on the creativity of human beings, especially children [10][11]. Numerous studies are done on the effects of computer games on children's creativity and the results showed an increase in the "originality" and the "flexibility" of children's creativity. Lack of focusing on Mobile Games motivated us to prepare such a work on this filed. Although it is around two decades using mobile games, a few research are presented on the design issues to prevent current problems due to playing mobile games [12][13].

## **II . Previous Works**

There is no doubt that there were some oldest mobile games before Snake, but the origin of mobile games usually can be referred to Snake on Nokia handset which was released in 1997. This game was the spark of the new distinct period of history of mobile games. Although, snake was some black pixels in which it moved on some green pixels, every one enjoyed it. How ever when WAP (Wireless Application Protocol) appeared on the scene it took mobile games into a whole new level of gaming.

WAP is an application in which provides a connection to world wide web. Although web wasn't endless back in the late 90's,WAP gave huge opportunities to people. These include games being played multiplayer. Due to the limitation of WAP, two new technologies were developed for mobile gaming. These include, J2ME and BREW. However J2ME had a huge and massive success on Europe and BREW succeeded in North American and Asia. It was about this time where mobile games became colorful.

It was in 2003 when Nokia announced N-Gage in order to make a change in mobile games. N-Gage is a handheld game system, which worked by sound recognizing. Nokia used this development to launch a new type of phone for sale. However N-Gage did not succeed or make much profit. This failure can be refereed to some reasons. Firstly Sony launched original PSP at this time. Secondly it was very costly as it has a price of \$299. Lastly people looked like idiots talking in "taco style" which is the most highlighted reason.

After this, game developer and companies began to understand that users need something more than a decent hardware. Thus, Nokia developed N-Gage gaming platform in 2008. At this point Nokia aimed to stop the production of all N-Gage devices, not a single device was then produced. Nokia focused its work of developing software that could be pre-loaded on most Nokia phones. Unfortunately, Nokia didn't make much success and profit with this new N-Gage project. The development of Apple's App Store, Nokia's new project became fully overshadowed. Thus by the end of 2010 Nokia officially stopped the N-Gage platform.

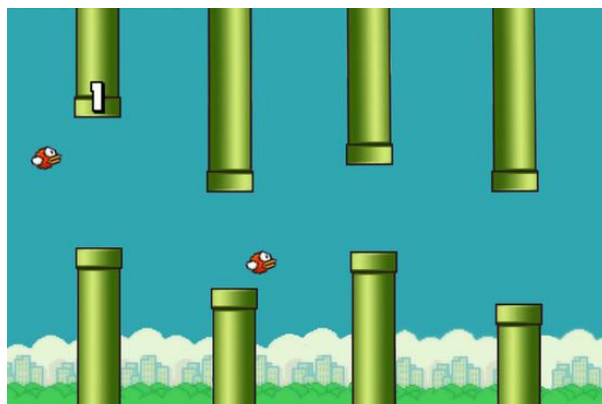
The dramatic alternation of mobile landscape was due by apple in 2008. Since the release of Apple, mobile games have greatly flourished. This is mostly because iOS is designed for complex games. For example, Game center has provided a perspective life as it allows iUsers to battle with both strangers and friends around the world. It also has a large variety of games for both children and adults.

There are some reasons in which Nokia's N-Gage did not make a success in the phone industry, but one of them can be refereed to its early launch, as people of that era were not ready for such a drastic change. The same goes with Vizzavi a collaboration between Vodafone and Vivendi Universal that tried to make something similar to Apple's App Store back in 2001.

### III . THE MOST SUCCESSFUL VIDEO GAMES

#### A. Flappy Bird

In 2013 Nguyen Ha Dong made a game in Vietnam that was published by GEARS Studios named Flappy bird which can be seen in Figure 1.



In this game the player has to control a bird to fly between some rows of pipes with out any collision with them. Flappy game was developed over several days. On May 24, 2013 Flappy game was released but had a huge number of users in the early 2014. Due to its difficult game play, it was criticized by many people. How ever many people continued playing it as it was addictive. Flappy bird was at the top of the free game download list by the end of January 2014. The developer earned \$50,000 per day by app advertisements and sale. Due to the guilt of Flappy Bird’s addictive nature it’s creator ordered the games removal from both Apple’s App Store and Google Play on February 10, 2014. This game is a flying bird, which flies towards the right and pass of Mario-like pipes. If the bird collides with the pipes, the game ends. By the tap of the player on the screen the bird flies and if the player doesn’t touch the screen, the flying bird falls, due to the pull of gravity.

## B. Super Mario Bros

A title which was first made by Shigeru Miyamoto and now the most popular computer games of all history of computer games. Even if you ask anyone at any age for a time that is certainly worthy of Mario or have experienced.

According to the latest official statistics published by Nin-tendo in the Mario series of games more than 446 million copies have been sold. This mobile game was successful because of some reason. The first one was the design. Second one was easy to use which in many ages could be used. Adventure feeling was other reason that made this game successful.

## C. Angry Birds

Angry Bird can be refereed the most downloaded game in the history of mobile games. It had a sale of 2 billion downloads in both regular and special editions till this day. By October 2010, 12 million copies of Angry Birds were purchased from Apple's App Store. The original Angry Birds can be refereed to a great success, as it was the most downloaded free game in the history of mobile games. After the release of the original Angry Birds many other versions were released (Figure 2), such as Angry Birds Seasons, Angry Birds Rio, Angry Birds Space, Angry Birds Star Wars, Angry Birds Friends, Angry Birds Star Wars II, Angry Birds Go!, Angry Birds Epic, Angry Birds Transformers, Bad Piggies, Angry Birds Stella, Angry Birds Trilogy.

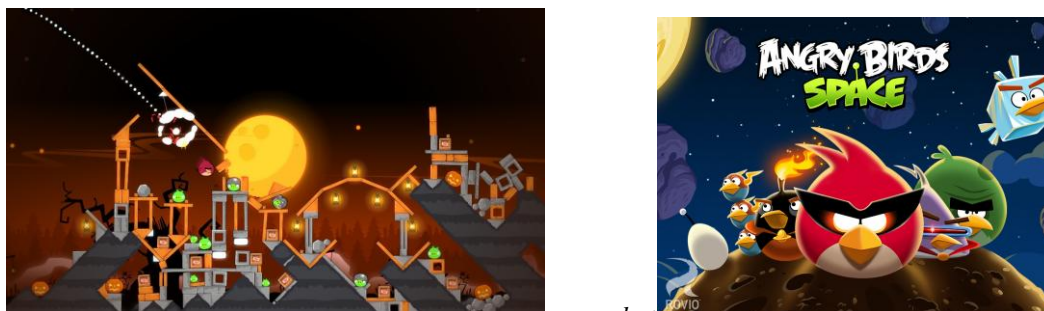


Figure 2. Two screen shots of Angry Bird

## D. Candy Crush

On April 12, 2012 King Digital Entertainment pl company developed Candy Crush saga (Figure 3) for Facebook which is a match-three puzzle video game, with a board filled with colorful candies. It's mobile app version for smartphones was released on November 14, 2012. After four months it passed FarmVille 2, which was the most popular game on Facebook with more than 46 million users in a month. Dreamworld was the major extension of Candy Crush.



One of the main reasons of its addiction in users is they would not get bored of old levels. The update in November 2013 took the game to a whole new level by the developing "Dreamworld" levels, which provided players with the opportunity to replay the old levels in a advance and mechanic world.

## E. Paper Toss

The original Paper Toss was made by Para Masturbarse, for operating system iOS at first. It has only been a short before it is ported to Android. A screen shot of this game can be seen in Figure 4.



Paper Toss is a touch screen input game where the player is in an office and has to toss a paper in to a bin. Main while there is a fan blowing wind to the atmosphere around in order to make the game more challenging and interesting. Thus the player has to take the direction and the power of the wind in to account.

The players will be scored on the number of times they will manage to toss the paper in to the bin before they miss it. These scores will be shown on an online leaderboard around the world. Due to the large number on users for this game paper toss 2.0 was followed. Which has better graphics and more levels.

## F. Clash of Clans

Clash of Clans (Figure 5) was published and developed by Supercell company which is located in Helsinki, Finland. This game is a 2012 freemium mobile. Clash of Clans was released on August 2, 2012 for iOS first. It was only on September 30, 2013 that it was released on Android and it was internationally released on Google Play on October 7, 2013. This game is an online multiplayer game, which is all about building a community. This can only be done by earning gold from gold mines and elixir from elixir collectors or seizing them from other players in a war with other players. The gold and elixir can be used to upgrade the defense of the stronghold, which indeed protects the village and resources from the attack of other players. Players can also use gold to upgrade the town hall, which allows them to built more buildings and upgrade the defenses to higher levels.



Figure 5.



SScreen shot of Clash of Clans

## G. Samurai Siege

Samurai Siege is a same concept of Clash of clans but with different features another game was released, which actually had a huge support and usage by people. This game came to be known as Samurai siege. Which can be seen in Figure 6. As mentioned in Clash of Clans this game is also an online multiplayer game. In the beginning of this game our task is to protect and same a village from being raided by ninjas. After saving the village we would be appointed to the master of the village. In this game the Jade coin and essence which are gained from the markets, wells and raiding other players villages, can be used to upgrade the warriors for war or to upgrade the defense of the village against the attackers.

In this game we have a chance to attack other players around the world or to attack the west of the map and kill emperor Yami (the most cruel and villain person in the game). Wining battles with other players will give loot and honor but winning battles in the map will give loot, new defense buildings and foes which will serve us as our army if we defeat them. Upgrading buildings, defenses and warriors will cause them to have a longer life and higher damage on the enemy. How ever upgrading the castle will allow us to build more of a certain buildings. In this game players can join up and form an alliance. In the alliance they can donate some soldiers to the other members of the alliance and

they can have an alliance war with other alliance in which they have to communicate and work together in order to win the war.

Figure 6. A screen shot of Samurai Siege



#### IV . ADVANTAGES OF USING MOBILE GAMES

Mobiles are essential tools these days and nobody complains about these inventions except parents and masters during working hours. This small device can help us not only to communicate with others but also to fill up our leisure time.

The world of children in computer games is full of surprises. Where children are brought up to their dreams in a world of excitement and adventure of legends. In this virtual world, while children win, fail, while in algebra are they are freedom.

One way to develop the creativity and innovation in addressing children's activities is playing computers and computer games, which is the result of the creativity of the human brain. Buman Verter in 1999 found that the effects of computer games on children's creativity are important because they have the necessary flexibility.

Computer games are designed somehow that children are not afraid of mistakes and will not be evaluated by others. In most of the cases they feel not competing with others then they make decision in a relax mood.

Children are born creatively but they lose their creativity in 10 years old. Creativity and innovation are the issues that we need in adulthood are explored in them in Early Childhood Education. Due to the world of children which is mixture of real and virtual world, one of the most important tools to grow up these creativity and innovation should be educated in childhood era through video games.

- It is easy to attract the attention of children's during learning of them
- Possibility to browse the latest iteration in learning
- Ability to create a painting and story
- Interests in history or geography
- Children can change the paint color out of messy painting
- Easy to learn foundations of mathematics concepts using figures for children
- Ill children need less painkiller medication (for fun to play)

- Eye-hand coordination and exercising delicate muscles of children
- Training aids for disabled people and their leisure time

## **V. DISADVANTAGES OF USING VIDEO GAMES**

### **A. Physical injuries**

Electromagnetic waves are dangerous for children younger than 10 to 12 years. Although relationship between using mobile phone and cancer is not still proven, some studies show that the possibility of using mobile phone and brain cancer risk should be taken into account.

As the eyes are constantly staring at a computer screen, the light affect on the eyes then face to problems. Studies show that young people are wallowing in games that do not pay attention to how visually and mentally push itself. Moreover, as the children sit in a fixed position for hours, they grip the spine and bones. The tingling and tighten the neck, shoulders and wrists relatively stable and long-term effects of other computers.

#### **a. Academic Drop and Mental health education**

Considering that most of students have their own mobile phone and play games for showing off to others. It will not cause them to concentrate on the class. The main characteristic of mobile games is the state of war. Most of them have one game to the next level with the so-called enemy to fight, continuing a game that brings the child to aggressive.

#### **b. Strengthening the sense of aggression**

Since the mobile phone is capable of having different games children, teenager and even adults are playing a lot of time. Various studies have been done to show that playing mobile games has increased aggressive, aggression, especially among children.

#### **c. Isolation**

Children who are constantly involved with these games are introverted, community, social isolation and to communicate with others are incapable. Isolationism makes sense that a child be separated from that of its peer group is beginning to develop other abnormalities.

#### **d. The idle mind**

One of the issues the usually we are facing with during the life is idle mind of our kids. It means that kids talking about everything easily and cannot imagine the real situation. As the children play with other's products, they cannot manipulate resulting losing of confidence in the building and development.

#### **e. Negative impact on family relationships**

Aggression and isolation of children are the main parameter that video games have brought to the families. Most of the families are not satisfied of this invent. As mentioned earlier they have not make attention on the many advantages of this invent.



## **VI. THE MAIN TIPS FOR GAME DEVELOPERS**

In this section we introduce some main tips that game developers should take into consideration to produce useful games not only for game payers but also for the companies. These tips that have been obtained is based on what families and society required.

### **f. Audience**

Mobile games' players are somehow different with video games' players. If mobile games are suitable and worthy for adults they may have more players compare with computer games. The main point is the audience of the mobile games. However this point is very common but the age range of users is very important.

### **g. Team Players**

Team player games are in order not only for kids but also for adults. Team play games for children with visual tools are less problematic. Video games are usually destroyer when the child is alone for long hours focusing on the screen.

Our overview on video games shows that most the teamwork video games are success in both side of the coin. In one side game developers can achieve their aims and on the other side the affect of these games are usually not bad and somehow suitable for educating kids to work in a team.

Parents should accompany their children to the mountains, clubs and sports arenas go to their favorite games but as these days playing video games are the favorite part of life for the kids family video game can be taken into account. A new idea is to produce video games in teamwork of a family. If a family plays to gather there are many ideas that can produce family games. For example traveling a family in moon or in a jangle. These kinds of games not only create strong family relationships but also the parents can control the time which is the crucial drawback of video games.

### **h. Healthy Games**

It is essential for children to take a rest during playing video games on a regular time which can be designed in the game by the game developers. As the players often lose control of the game the rest time can be consider into the game by for example reloading or counting the money or any other things that they have.

### **i. Natural Interaction Games**

Natural Interaction games are the other category of video games that force player to do some vibrations, locomotion's and jumps. These categories of video games are currently in order due to low mobility of children.

### **A. Damaging Games**

The most damaging video games are the games that have so many characters or pictures that frequently appear on the screen and the child must look at all and fire. It is strongly recommended to game developers to replace these kinds of games with calm and quiet games that the children should be aware of each side not watching so many characters. Although these types of games are usually attractive for children, they are not in a good condition of healthy. The parent usually avoids their children to play this kind of games. Smart games are in order to be replace by these kinds of games.

## **B. Ethical and immoral**

Teens may have usually some immoral works; convenient video games keep it enough leisure and remove impatience part of their life. Many parents prefer their teens to play video games compare to going out with their friends. In this period of age the children attitude is different. If game developers take these criteria into account and try to make the games attractive it may affect of absorbing teens. Teamwork games are one of the suggested ideas in this case.

## **VII. Conclusion**

Mobile games' players are somehow different with video games' players. If mobile games are suitable and worthy for adults they may have more players compare with computer games. Mobile games and the impact of them is a fascinating topic for psychology and game developers. Although, mobile games have many disadvantages, many advantages must be taken into account not only for the families and society but also for game developers. There are some parameters that can create a mobile game successful in the case of selling and good impact on gamers. In this paper we have tried to review some success mobile games and find what is the parameters that made them success. In addition of discussing the impact of this new invent we have suggested some criteria that game developer should take them into consideration. We hope this research is beneficial for both society and game developers.

## **Acknowledgment**

The authors would like to express their deepest gratitude to Research Management Center (RMC), Universiti Teknologi Malaysia (UTM) and Ministry of Education Malaysia (MOE) for their financial support under Flagship COE (Vot. number Q.J130000.2409.02G29).

## **REFERENCES**

1. Chehimi, Fadi, Paul Coulton, and Reuben Edwards. "Evolution of 3D games on mobile phones." *Mobile Business*, 2005. ICMB 2005. International Conference on. IEEE, 2005.
2. Durkin, K., & Barber, B. (2002). Not so doomed: Computer game play and positive adolescent development. *Applied Developmental Psychology*, 23, .373-392
3. Gunter, B. (1998). *The effects of video games on children: The myth unmasked*. London: sheffield Academic press.
4. Antonietti, A., & Mellone, R. (2003). The difference between playing games with and without the computer: A preliminary review. *Journal of Psychology*, 137(2), 133- 144
5. Griffiths, M. D., & Hunt, N. (1998). Dependence on Computer games by adolescents. *Psychological Reports*, 475-480 ,82
6. Kolivand, Hoshang, and Mohd Shahrizal Sunar. "An overview on base real-time hard shadow techniques in virtual environments." *TELKOM- NIKA Telecommunication, Computing, Electronics and Control* 10, no. 1 (2012): 171-178.
7. Kelly "warned of dark actors' games". *BBC News*. 19 July 2003. Retrieved 1 May 2010.



8. [http://en.wikipedia.org/wiki/David\\_Kelly](http://en.wikipedia.org/wiki/David_Kelly) (weapons expert)
9. <http://www.stephen.com/collage/bio.html>
10. Chehimi, F., Coulton, P., & Edwards, R. (2008). Evolution of 3D mobile games development. *Personal and Ubiquitous Computing*, 12(1), 19-25.
11. Kolivand, H., & Sunar, M. S. (2014). Covering photo-realistic properties of outdoor components with the effects of sky color in mixed reality. *Multimedia Tools and Applications*, 1-20.
12. Liljedal, Anders. Design implications for context aware mobile games, 2002.
13. Ardito, C., Buono, P., Costabile, M. F., Lanzilotti, R., & Pederson, T. (2007, September). Mobile games to foster the learning of history at archaeological sites. In *Visual Languages and Human-Centric Computing, 2007. VL/HCC 2007. IEEE Symposium on* (pp. 81-86). IEEE