

## **My statement blog**

# **How does Gamification affect children's life?**

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### **ABSTRACT**

The main purpose of the paper is to discuss about the concept of using gamification especially in children. First, the definition is illustrated. Then, the concepts and the elements are described. Importantly, the trends of the use in children are listed in different aspects; using in education, improving specific skills, and the use in medicine. From the literature reviews, we can conclude that gamification is widely used in children to encourage, motivate and keep children's engagement, which show the positive feedback in the use of gamification in children.

## Introduction

*“Study finds significant growth in kid usage of mobile devices in homes with children aged 2-14.”* According to the survey of The NPD Group, 79% of parents with children age 2-14 report that their children owns some type mobile devices. In addition, it found that the activity that children tends to do with their smart device is 87% of playing game[1]. This shows that smart devices were absorbed over children at the early age already. It can be used to attract child’s curiosity with its nice user experience as well as its nice user interface from its application. With the child’s interest on the game, it can be used in any other forms other than for entertainment. Games are also used in education, medicine/therapy, or helping children to improve specific skills. It is called Serious Game or Gamification [2].



Figure 1: the picture shows how children use technology in these days. The devices they have used can be varied from smart phone, tablet, and laptop.

## What is Gamification?

Gamification is the application of game mechanics to a non-game context, though the same techniques are arguably applicable to game-based contexts as well [3]. Therefore, gamification can be simply says that it is a game with a specific context; for example, game for education, game for improving specific skills, etc. The interesting fact about gamification is that it is “Human-Focused Design”. The design of gamification is not only trying to get the job done like in functional design based. In contrast, people human have feelings, insecurities, and reasons why they want or do not want to do certain things, and therefore the design are to optimize for their feelings, motivations, and engagement [4].

According to Google Trends data in **Figure 2**, there has been a steady increase in people searching on the term “Gamification” since late 2010. Not only are people researching the topic, but organizations are taking a serious look at how to best leverage gamification.

## Interest over time

The number 100 represents the past search interest

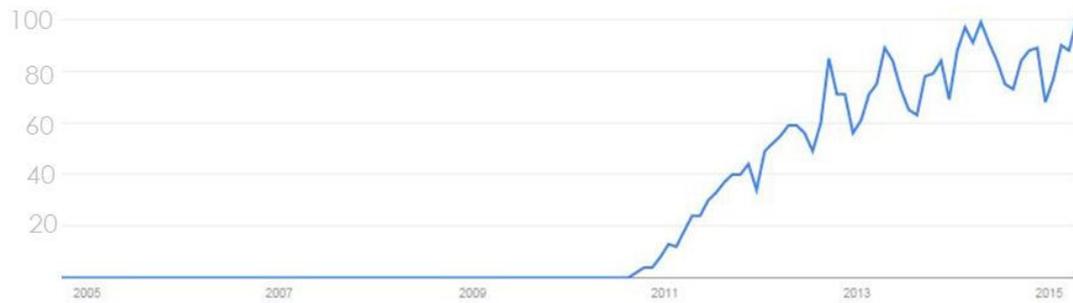


Figure 2: Web Search interest Gamification World-Wide 2005-present.

## The Concepts of Gamification

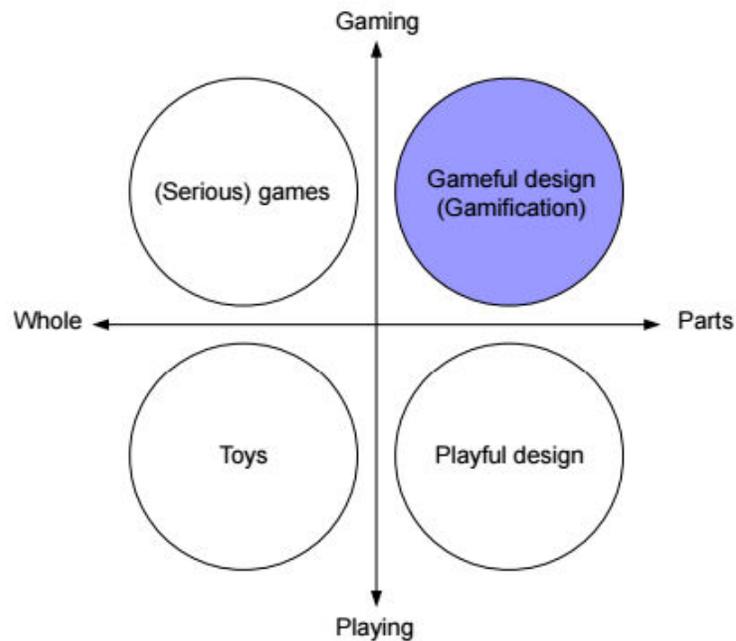


Figure 3: The concept of gamification which shows that the gamification can be seen as parts of game with a playful design.

As shown in **Figure 3**, there are two dimensions of the axis. Whole/Part axis is illustrated to differentiate the concept of the game and serious game from gamification, similarly Gaming/Playing axis differentiates Gameful Design from Playful design. In the figure, we can see that Gameful design (Gamification) is part of a game with designed in a playful way [5].

## The Elements of Gamification

From Nah, F. et al. [6], they have identified the elements of gamification for educational and learning contexts which consist of the following elements:

1. **Points:** The points are the indication of achievement. It is used as a reward to the players. In addition, it is also a representation of the investment towards the goal. The points can be identified differently; for example, Experience Points, the point in which a player gets when completing one task. Steam Points is the point that is used as currency in the game. In our thesis, the experience point is used.
2. **Levels/Stages:** Stage and Level will give the player a sense of the progress of the game. The first level will require less effort while the higher level will need more skills. Similarly to the point, level or stage will give the achievement to the player as a task is completed.
3. **Badges:** It is used as a mark for appreciation or task completion which can maintain learners' motivation along the game or each level as well as engagement.
4. **Prizes and Rewards:** It was found that prizes and rewards are effective in motivating the learners. Also, it is better to give a small reward for a small task instead of the one big reward at the end. If there is a schedule for giving the rewards along the learning progress, it can motivate learners to go to another level/stage. The best example is the character update since others can also recognize the effort that the player has devoted.
5. **Progress bars:** While other types of success can illustrate achievement toward the game, a progress bar can be used to track and display overall goal progression. It can be used to motivate players who are close to the goal or sub-goal to continue. In addition, it can also remind the one who is behind the progress.
6. **Feedback:** Immediate feedback can keep the learner engaged. The more frequent the feedback, the greater the learning effectiveness and learner engagement. With clear and immediate feedback, it attains the flow state. This means the state of engagement and immersion in an activity. Therefore, feedback is an important criterion for performance and engagement.

## The Trends of using Gamification in Children

Gamification is more widely used in many children's activities with a different purpose. A frequently used concept of gamification is to convert non-game activity into a game with points and rewards when reaching a specified task/sub-goal. The following aspects are the important categories of using gamification in children:

## **Education**

Nowadays, schools have encountered a major problem about the student's motivation and engagement. The most apparent picture of gamification in children is for education. The purpose of educational gamification is to use the rule system in the game, player experiences, and cultural roles to shape the students' behaviors [7]. We can say that gamification makes unpleasant task more pleasant. That is why it is an effective way to teach.

The game provides complex system of rules for its player to explore and discover. Hence, the players have to think how to go through each level; they have to use their "*Cognition*" to go through the game level. The game will keep children who play the game to be a master, but before that they have to keep engaging and be able to do some difficult tasks. The game design technique is to deliver appropriate challenge that is applicable to player skills. In addition, increase the difficulty as if the players advance their skills. The level or the goal can be the motivator for the children. Moreover, the game provides more than one strategy for success. This allows students to plan their own sub goals, which is one of the motivation and engagement. It makes the students have clear tasks and rewards. In many good game designs, the best rewards to the players are the harder tasks. This is similar goal when children go to school. The example case of gamification to improve children's engagement is the study that they want the children from age 5-7 to participate in a laboratory study. They found that the use of gamification increased the study task completion from 73% to 97%.

Not only cognitive perspective that children may experience with gamification but also with emotion. It brings children from curiosity, frustration, and joy. This means that the game will bring both positive and negative emotions to the players. From this reason, the children can learn from its failure that they have to play it repeatedly. Each time they fail, they learn something. Players can keep trying until they succeed because the stakes are low. On the other hand, at school the stakes of failure are higher, and the feedback of the action is long. They have fewer chances to try. At the gamification point of view, it offers the other ways for students to face the failure by making the children knows that failure is the part of learning. It also makes the children know their capacities and the reward in real life is the effort not the master in the game. Therefore, the failure is actually an opportunity instead of helpless, fearful or overwhelmed.

In addition to self-ability, children can develop their Social skills by having new roles or identities. By developing a school-based identities help children with leaning in a long run. In addition, the game can provide social recognition when getting an achievement. At school, the children were provided recognition by the teachers; while in game children might get the reward from the game-currency.

## **Improving Special Skills**

Jackie Paxton and Teresa Shoemaker have found that the provision of amusement that allow the child to focus on for extended amounts of time is important to increase a child's attention span [8]. Therefore, in Sri Lanka, there is a research that they improve the children who have problems with Attention Deficit-Hyperactivity Disorder (ADHD) by producing the learning tool that improves children's attitude towards mathematics. They made it an interactive manner and the performance of children with

learning difficulties. It comes with a gamified architecture with an interactive background, attractive graphics, colours, images and sounds [9].

To help children improve their visual perception, motor planning and execution is to use technologies. It helps children with dyspraxia is the use of motion-based embodied with interactive technologies. The motion-based interactive technologies combine active learning and fun via natural user interaction modalities (hand and body gestures) to improve children's skills. The game requires active involvement and the exertion of physical force by players. In addition, several studies had been conducted using motion-based interactive technology, for helping children and adults with both attention problems and gross motor impairments; for example, Brain function rehabilitation, Isometric muscle strengthening, and Balance training, or helping autistic children to develop imitative skills [10].

### **Gamification in Medicine**

Gamification is used in the medical field as well with children. In the case study, the research found that using gamification to distract the children while they are taking their asthma medicine has the positive result of the child's experience. Neuroscientists also discovered that a lot of people interact to interactive design elements. It results in a feel-good chemical reactions, alters human responses to stimuli. This means that it increases reaction times, for instance—and in certain situations can improve learning, participation, and motivation [11].

## **Conclusion**

In this paper, we have demonstrated the concepts, elements of gamification, and the trend of using gamification in children especially for children's learning skills. Gamification has increasingly been used in many aspects for children. In literature reviews that we have done, it shows the positive effects for children with the use in appropriate ways and appropriate situations. This can be used to improve, encourage, and motivate children from the use of the game and with the concepts of learning.

In contrast, it also has a negative feedback from technology experts. Larry Lannom, vice president of the Corporation for National Research Initiatives, has an opinion that "some aspect of the game, competition and narrative, are powerful factors in human behavior [12]." This can be good remark to the use of gamification. In addition, with the nature of today information sharing, the social feedback which children receive through the game may give them motivation to do things which can be in negative aspects.

From both aspects, we are eager to more adaptation and improvement in the use of gamification not only in children but also in other aspects in the future.

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