

# Improvement of Learning Engagement of Primary School Students by Gamification

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**Abstract.** Education is quite important for a person's whole life. There is a trend in using innovative pedagogy approaches in education currently. Gamification is one of the innovative pedagogy approaches. Educational gamified applications are widely used inside and outside of school, at various educational grade levels, and in many kinds of subjects. This paper has been working mainly on how gamification improves the learning engagement of primary school students. Gamification uses game elements in teaching and makes the learning process more fun and practical for students in order to promote learning motivation. It also can almost fit different personalities of different people as far as possible. The benefits that gamification brings also influence a person's whole life. Students will have the Comprehensive ability to bravely face any difficult problems and challenges, and communicate to others. It makes the student well-rounded, not just a nerd. Everything has two sides. Gamification still has some negative sides that need to be improved. Gamification is not that perfect to be used in every subject or every grade level. Also, using electronic gamification for a long time will hurt students' eyesight. Gamification relies on technology that brings education resources to allocate inequality between Rural and urban, and then it may cause other social problems.

**Keywords:** Gamification, learning engagement, innovative pedagogy, motivation.

## 1. Introduction

Nowadays, education become more important to children. The total population is increasing every year. Therefore, the competition between students is getting bigger and bigger. Parents have high expectations for their children, and becoming more and more high-level demanding all aspects of children, especially in major cities. When children start to study in primary school, it is common that they cannot adapt to learning content and context for this change at the beginning in a very short time [1]. It is a common phenomenon in many schools that most of the students are confused about mathematics. Many innovative pedagogies have occurred in this century. Compared to traditional pedagogies, innovative pedagogies bring more benefits to both educators and learners. Most of the innovative pedagogies can relate to "combine", "connoisseurship", "context", "content", and "change" [2]. Therefore, some innovative pedagogy approaches are frequently used currently. Gamification is one of the innovative pedagogy approaches. Gamification is a game-based learning model. The term gamification represents a design that uses game elements and innovative technologies in non-game contexts. It is important to note that the feedback is ongoing and should be shown immediately if educators want to make game-like activities. Actually, gamification can be used in many kinds of fields, such as business and education. Gamification is used frequently for teaching juveniles. Gamification in education influences the factors of motivation, engagement, and learning outcomes [3]. Gamification has many advantages to improving learning engagement. It promotes students' learning motivation [4]. Besides, gamification can cultivate students' comprehensive quality [5]. However, does gamification improve a lot for all grade levels? Does gamification have no faults? How to choose to use gamification appropriately? This paper will review many different aspects to introduce the improvements by applying gamification and the importance of using gamification. Also, analysis of some bad impacts that gamification brings.

## **2. Gamification Promotes Students Learning Motivation**

### **2.1. Gamification Adapts to Personalized Learning Needs**

It is well known that every person has a different personality. Some students might be very outgoing but others might be very introverted. In traditional pedagogies, students are in a relatively passive position. Talking in class is a big challenge for introverted students. Introverts lack the courage to answer the questions asked in class even if they already know the correct answer, and ask questions about what they are confused about. It is really common that there are some introverts in any grade level of any class. According to the data shown by research, gamification has different impacts on different kinds of personalities. In the research, researchers mainly collected data from primary school students and analyzed it. The study has shown that gamification had a greater influence on introverts than on extroverts [6]. Introverted students have improvement through gamification, they are more likely to talk and respond in class. This is probably because it is easier to change extroverts than introverts. It is difficult for people to change their unique personalities, but gamification can help education adapt to their personal needs. It lets introverts feel more comfortable in class. In addition, gamification helps students have healthy daily timetables and diets [7]. This is totally helpful for the student who is not good in health. It promotes the physical quality of the body so that people will handle COVID-19 calmly.

### **2.2. Gamification Makes Learning More Fun**

Traditional pedagogies always fail to attract students' attention [4]. Some students even get sleep when reading books. Gamification will let students have the feeling of playing games in class. Obviously, the game itself is really attractive and entertaining. Young learners always quickly get caught up in the game. This innovative pedagogy makes the learning experience more enjoyable for students. It is widely known that students learn better when they are having fun. Students will tend to love studying if they think the learning process is fun. When they are in the areas of their interest, it is easy for them to concentrate and think deeply. Then students will have the motivation to study, especially young students. Therefore, it is more suitable for teaching students in primary schools.

### **2.3. Gamification Makes Learning More Practical**

In addition, students will feel a positive sense of accomplishment as they finish the game. This will make them happier to learn, and more confident. The feedback of gamification is ongoing and immediately shown [3], so that students will be able to know which part they made mistakes in or which learning section they need to focus on when reviewing. Students can improve their knowledge in time.

Also, young students always want to be number one. Teachers' reward is scarce for them so they will try their best to win the absorbing reward. To win, they will pay attention to the content such as the given rules of the game. In the game, everything is interconnected, so they really need to focus then they will not get lost. Usually, it is a small group cooperation work. They will monitor each group member whether they are focused on class and participate energetically in the group. Therefore, every student should concentrate on class. The number of distracted students will decrease. These show gamification makes learning more practical.

## **3. Advantages of Gamification in Cultivating Students' Comprehensive Quality**

### **3.1. Gamification Lets Students have the Courage to Face Mistakes and Troubles**

Gamification provides positive learning contexts and experiences for students. Almost every student has played games before, and knows that there is loss and win whatever the kind of game is. It is impossible that there is always the same guy who wins or loses. There is only one first place.

Failure is nothing to be afraid of. Therefore, failure is an extremely commonplace, small thing and everyone will surely undergo many times of failure. Unlike gamification, students may even be punished by parents or schools if they have made tiny problems with traditional pedagogies.

Also, failure is reframed as iteration in gamification [3]. This greatly minimized the severity of the failure. A strong personality is more useful than grades, it will make a person's future better for a whole life. Then students will feel relaxed and anxiety-free for relatively low scores. Students will no longer fear failure once the students have realized this [5]. Having the courage to try and face troubles is an extremely valuable characteristic for students. Very few students already had the ability before, even nowadays, society is also very short of such talent. In addition, if the context is online, there will be private data protected. Students' results only can be seen by themselves. Therefore, they would not be embarrassed by bad grades anymore. This protects their crucial and valuable self-esteem. The consequences of having self-esteem destroyed can be devastating. For example, students might not have an interest in studying any subject and are always in a bad mood.

### **3.2. Gamification Helps Students Challenge Themselves**

Learning a second or third language itself is a challenge to the students. Because every language has many things to notice, such as grammar and spelling. Students challenge themselves from time to time, they just don't realize it. Gamification will magnify the rewards of success.

In the game, students must keep trying and thinking to hardly get correct answers. This is highly crucial for the growth of a person's life. As mentioned above, gamification helps students to have the courage to face mistakes and troubles. They are getting stronger through gamification and have strong hearts. When students grow up, they are able and willing to take risks. They will tend to think of brand-new ideas rather than always be in their comfort zone. This ability is quite useful in the future, for example, for finishing or accepting a whole new field of project. This is a great chance to realize different work in different positions and areas. Also, students will at least learn something basic after completing the new challenge regardless of how the quality field finishes. Students do not know their limits unless they challenge themselves. If one of them wants to change jobs, they will quickly make the decision based on the knowledge learned from doing different projects previously. More choices mean more possibilities to earn a lot of money or have a higher status in society. There might be some great job opportunities that are particularly rare, and then students will make their judgments in a short time and are not afraid of challenges at all.

### **3.3. Gamification Improves Students' Communication Skill**

Gamification improves students' communication skills. Usually, gamification in class can be categorized as physical gamification and online gamification. Teachers like to apply gamification in class with some classroom response systems, such as Kahoot! and TopHat. Also, some pre-existing electronic online platforms have been gamified with academic knowledge for most main subjects. There are some fancy animations in Kahoot!, so young students might like it very much. Most teachers will use group work to set up the task in Kahoot!. Students might be randomly divided into the given group by the teacher. All of the group members should work hard together and discuss in order to solve the task shown in Kahoot!, rather than just reading books and then answering the academic questions in the book quietly. Every group member has the responsibility to let the whole team get good scores because all of them will have the same amount of score. If students are puzzled by somewhere in the whole activity, they should ask the teacher as soon as possible. Students will also have an immediate sense of crisis since they are competing with others. This lets them not to think relax or give up during the class. This will develop their communication skill not only during the discussion but also through talking with teachers [8]. For physical gamification, there might be many forms to play different kinds of games. Students might need to speak with someone or speak loudly to the whole class. It also develops communication skills.

## **4. Disadvantage and Future Improvement of Gamification**

### **4.1. Electronic Gamification: Let Sight is Becoming Defective**

Gamification brings a lot of advantages to primary education [9]. However, it is definitely impossible that there is a pedagogy approach that can be perfect, same for gamification. For the gamification out of class or having to be online, students need to use a computer or tablet to complete it. Students' eyesight will become defective as time passes. Nowadays, parents attach great importance to children's eyesight. Electrical learning might also bring negative motivation for some students [10]. They may be afraid to complete the whole process due to the limitations of using electronic products by their parents.

### **4.2. Increasing the Gap in Education Resources Allocation between Rural and Urban**

Designing a relatively professional game that can be used in class is a quite challenging test for teachers. Because teachers need to set the rules and then clearly introduce them to students. Some props might be helpful to let young students understand. Teachers also have to make sure that every stage of this game is interconnected. Besides, this game has challenges but cannot have too difficult challenges so this will suppress students' self-confidence. Most teachers will use the ready gaming program, such as Kahoot! or Jeopardy. Jeopardy is an online platform that has many questions related to academic points with different difficulty levels. Using these platforms will lead to a problem which is some schools in poorer areas do not have access to this innovative technology in a short time. It might take a lot of time for them to get access to, or even fail to use gamification. This problem will increase the gap between rich and poor in society, then it will influence the economy.

### **4.3. Design more Appropriate Games for Students and Combine them with Other Pedagogy Approaches**

However, gamification is not appropriate for all subjects and all students. Gamification improves a lot of literature, especially for reading. The effect on statistics is not that much [3]. Educators also need to do more research to improve the appropriateness and try to make gamification suitable for more subjects. Gamification is not suitable for every student now. Some students might dislike some of the forms of gamification. Then they are not willing to precipitate.

There are other innovative pedagogies such as blended learning and embodied learning [11]. Educators may combine other innovative approaches and gamification to get effective effects. For example, teachers can teach students the main pieces of knowledge in class, and let students do gamification after school. This also applies to the flipped class in order to enhance students' memory [12].

## **5. Conclusion**

In conclusion, gamification is a justified and effective innovation approach in education for teaching primary students. Schools should widely teach educators and use it in class. Gamification will adapt to every person's different personality, and make students feel comfortable while studying. Gamification is basically in the game mode, which attracts the attention of students, especially young students, and then makes learning more fun. The setting of feedback for gamification makes learning more practical because the feedback is immediately shown and keeps renewed. Therefore, this paper finds gamification attracts people to have the motivation to learn.

Learning by gamification can weaken the frustration of failure for students. The younger the student is, the more important for the development of the comprehensive quality of students. Students are more likely to be able to face tough mistakes after using gamification and try to challenge themselves because there are always not that difficult challenges in gamification. Communication is another crucial skill for a person's whole life. It gets promoted by talking to other group members or classmates and teachers.

Using gamification will bring a lot of advantages to both teachers and students. By contrast, gamification has bad influences on students and society. Electronic gamification is one kind of gamification that needs to be completed by electronic devices. Continually looking at electronics for a long time per day will lead to vision loss over time. Gamification needs some technology support. It is very difficult for some countryside to have the chance to use gamification. In urban areas, more and more great educational resources are used. This impunity is quite unbalanced in the society. Gamification exposure of several issues by more and more people using it. Educators need to design more professional forms of gamification to target all disciplines and make the improvement more accurate.

Gamification is still not perfect now. In the future, educators still need to discuss and explore how to make gamification help more kinds of students in any region, for any grade level. Remember to consider and collect students' feelings, that might help more.

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