Influence of Educational Games on Children's Intelligence

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Abstract

Children are the most valuable treasure in the world. Every child has a role in living a life that has been given. Children's daily activities can be seen in how the child plays and learns. Every child has a different level of intelligence. It can be seen from the way the child's behavior and the way the child responds to every activity that has been given. Several things can improve children's intelligence, one of them by providing educational games. An educational game is a game that can educate and improve the ability of brain function in children. The game will be trained on how children think to find a solution that is being faced. Educational games can provide an understanding of the logic of thinking. Educational games can provide a child's perspective on facing difficult situations. The influence of this game can educate children so as not to experience panic if faced with a condition where a person is experiencing problems or cornered by a particular case. It can be proven that the role of educational games can improve children's intelligence in thinking. Parents can provide educational games so that their children can improve their thinking abilities and intelligence. By applying educational games to children, parents have been helped in getting smart and healthy children. However, in providing educational games, young people must be able to choose which educational games are appropriate to be made an excellent choice to avoid the adverse effects of the game.

Keywords: educational, game, intelligence, influence

1. INTRODUCTION

The development of technology is developed rapidly in this era. There have been many improvements made by the inventors of the world. Each technological invention provides new contributions and benefits for the community. Every day children are born into the world. Children born will be the successor to the nation so that their abilities must be improved [1]. Children will attend formal school. However, sometimes some problems occur in improving the quality of education. Children's different abilities constrain schools. Every child who takes a lesson in school produces a different test score. There is no uniformity between one student and another student. The classic problem faced is how to increase the intelligence of a child so that he can keep up with world developments. Intelligence is how a child can be trained to deal with situations and solve existing problems. Intelligence needs training so that the abilities and functions of the brain can increase with

time. The right time to improve brain function is when children and adolescents. In this phase, brain development is still not contaminated with other things that can interfere with the work system and the reasoning system of the brain. Brain intelligence is also influenced by food given during growth. But the obstacle is that despite being given good food, there are still some children who experience slow brain development.

Today's digital world has developed a technology called game. A game can trigger or stimulate the development of the human brain [2]. Nevertheless, besides that, the game can also damage and make opium from its users. Therefore, there are several types of games that can be chosen or avoided. One game that can trigger a child's brain development is educational. This type of game can stimulate brain function in order always to think so that it is accustomed to working on small problems. It is causes the brain to continue to work and awake [3]–[5]. Examples of educational games are board games, quizzes, and guessing games. Entertainment games are games that are played by a child to entertain themselves without thinking about brain development. Examples of this type of game are FPS, RPG, Strategy, and others [6]–[8]. Parents need to interfere in choosing a game that is worth playing by their child. It is to avoid addictions in playing the game. In doing educational games, many challenges must be resolved. This challenge is in the form of targets that must be completed so that the game is completed or rises to a higher level. In carrying out it, it takes skill and patience so that players will be trained mentally and morally in solving a case. Educational games are expected to affect the function and performance of the brain, thereby increasing the child's ability and way of thinking [9], [10].

2. THEORIES

2.1 Intelligence

Intelligence is how a human being is processing a problem. Intelligence includes how a sound mind is created. The word intelligence comes from the word smart. In accordance with its meaning that has a perfect meaning in which the development of one's human mind can be done to think, understand, and be sensitive to the environment. Intelligence will increase along with human development [11]–[13]. Figure 1 explains the illustratin of the intelligence components.
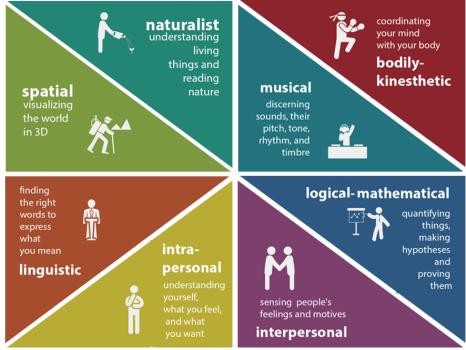

Figure 1. Illustration of Intelligence

Howard Gardner defines intelligence as:
1. The ability to solve a problem
2. The ability to create new problems to solve
3. The ability to create something or offer a valuable service in a community's culture.

There are several human bits of intelligence, including [14]–[17]:

1. Linguistic Intelligence
Linguistic intelligence is a type of human intelligence that can process words using vocabulary effectively, which is implemented both orally and in writing. This intelligence is the ability to determine the meaning of words, word order, sound, rhythm, and intonation of the words described.

2. Logic Intelligence
Logical intelligence is a type of human intelligence in processing numbers and logic. This intelligence includes someone's ability to provide alternative answers to a problem. Someone is expected to develop a strategy that makes good sense.

3. Visual and Spatial Intelligence
Visual intelligence is a type of human intelligence to be able to see and observe what is seen in real. Spatial intelligence is a type of human intelligence in seeing space or place. This intelligence has several components, namely awareness of colors, lines, shapes, spaces, sizes, and also the relationships between these components.

4. Musical intelligence
Music intelligence is a type of human intelligence in enjoying, observing, differentiating, composing, forming, and expressing tones. This intelligence includes sensitivity to rhythm, melody, and timbre of the music being heard.

5. Intrapersonal Intelligence
Intrapersonal intelligence is a type of human intelligence that is related to the awareness and knowledge of what human beings can understand the strengths and weaknesses of humanity. It can motivate himself and conduct self-discipline.

6. Interpersonal Intelligence
Interpersonal intelligence is a type of human intelligence to understand and cooperate with other humans. This intelligence also involves the ability to observe and understand the motivations and feelings of others. Be sensitive to the facial expressions, sounds, and movements of other people's bodies and can also respond to communication.

7. Kinesthetic Intelligence
Kinesthetic intelligence is a type of human intelligence to use body skillfully to express ideas, thoughts, and feelings. This intelligence also includes physical skills in the areas of coordination, balance, endurance, strength, flexibility, and speed.

8. Naturalist Intelligence
Naturalist intelligence is a type of human intelligence to recognize, distinguish, express, and make categories according to what is around the environment. An example of this intelligence is an ability to recognize plants, animals, and other objects.

2.2 Game

Game is an activity that must be played and completed by someone who plays it. The primary purpose of the game is an activity that entertains oneself. Each game has its difficulty technique. In games, some aim to entertain, and some aim to hone skills and ways of thinking. In the era of technology, games are a tangible manifestation of technology that has been created by utilizing visual results in a game. The development of the game is very dependent on the technology that has been developed. It can be seen from the development of the game from year to year. The game's influence on society has dramatically increased.

Games can increase people's purchasing power for tools that function to run the game. The higher the demand for games, the more the gaming industry will develop.

2.3 Educational Game

An educational game is a type of game that serves to provide learning to people who play it. On average, educational games are aimed at young children and adolescents, so they are not affected by games that have harmful and violent content. This game has many types. This game also has many benefits in improving the functioning of the human brain, especially for young children and adolescents. Educational game is a game that is designed for learning but can still offer play and fun. Educational games are a combination of educational content, learning principles, and computer games. An educational game is one type of game that has knowledge that will be competed therein so that users will be trained and skilled. Educational games can be used as an educational medium that can be used as learning media. This type of game is commonly used to encourage users to learn while playing. Through this learning process, users can gain knowledge, so the educational game is a breakthrough used in the world of education. Besides, because this type of game combines the sides of learning and playing, this type of game can also be used to attract the attention of children to learn.

3. METHODOLOGY

The development of the game dramatically affects the development of smartphones. It can be seen that smartphone manufacturers always embed the power of graphics in their products. Games have a sizeable portion of sales growth on mobile devices. According to data mentioned by SurveyMonkey recently, 62% of smartphone buyers will use the game and install new games after buying their smartphone within one week. Smartphone users install a variety of games on their smartphones.
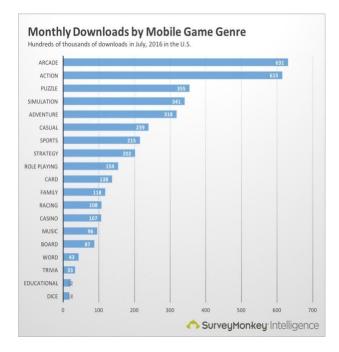

Figure 2. The most downloaded game category

Figure 2 explains that SurveyMonkey describes in more detail the behavior of mobile device users in the United States in July 2016 [18]. Smartphone users download games that have application providers. Downloaded games are categorized into 19 categories. Unfortunately, educational games are only ranked second lowest. Educational games are not

very popular among adults. This game is more in demand by young children because this game is to educate someone to be more human. This game has a better level of students than games that are often downloaded by adults. Educational games also play a role in improving performance and brain function from an early age.

4. RESULT AND DISCUSSION

In order to improve the function of the human brain based on the use of educational games, some things must be reviewed from the educational game. The function and use of educational games must be of definite value so that no errors occur in the use of the game. Market share must also be right on target. Educational games may not be given to different types and classes. The following are the benefits that can be obtained from educational games provided to children.

1. Entertainment
   Entertainment is the main benefit obtained if someone plays the game. Games can eliminate fatigue caused by daily routines at work. Educational games can be a tool to entertain someone because the game can provide good visualization between players and computers. Visualization satisfaction depends on graphic support, sound, and other effects.
2. Sharpening the Brain
   Games can sharpen the brain without being realized by humans even though some people judge the game to be time-consuming. The benefits of games in honing the brain are very well done to increase knowledge and insight. Each game certainly has procedures for playing and problems that must be solved by a player. This difficulty will make the brain function by determining what steps to do next. Solving problems contained in the game must be resolved based on the level of difficulty of each.
3. Coaching Emotion
   Educational games can not only sharpen the brain, but games can also train emotions. When the player is in a situation of solving problems or conflicts, the player unconsciously also exercises his emotions.
4. Developing Capabilities
   Games can also develop abilities. It can be found when playing games. The ability can also continue to develop by enjoying the scenario in a game. Examples are problem-solving, building teamwork, gaining new knowledge, and so on.
5. Balancing Body Coordination
   Playing games can also provide a balance of the brain in controlling the function of change. The fifth benefit is useful for children and adults. The interaction between the eyes, brain, and hands can help balance the cooperation between the members of the body. Games can provide synchronization between the limbs and brain. The speed of thinking, seeing, and moving are examples of the cooperation of limbs.

The difference between educational games and entertainment games is that educational games increase brain intelligence, while entertainment games will increase addiction in playing games. Educational games do not cause a person to become addicted because game models like this provide cognitive learning. The existence of significant negative results between the intensity of playing entertainment games with emotional intelligence shows that the more time someone uses in playing this type of game, the lower their emotional intelligence, and vice versa, if the lower the intensity of playing entertainment games, the higher the emotional intelligence. The use of entertainment game media can cause a decrease in social activities because this type of game can replace the actual model of activities. It is very different from educational games. In educational games, there is no single model that can replace the real atmosphere into the atmosphere in a game. Educational games only serve to train the dexterity of someone who plays it. Educational games are not directly

involved online, so the players are not directly connected in contrast to entertainment games such as online games that engage directly in the contemporary social world. Online games will make direct contact between players online, helping to complement and provide new worlds and ideas. The social benefits gained do not exist because online gaming does not require social life in the real world. Educational games are better than entertainment games that only make players feel addicted all the time

5. CONCLUSION

The times have an essential role in improving the quality of education. Gutu, as one of the educators, is a person who must be able to increase intelligence to students at school. Games are smart tools that can help children improve their brain function. Not all games can be useful to improve the quality of intelligence. An educational game is one of the game models that can sharpen the brain and improve the performance of the human brain. An educational game is perfect to be applied to small children or adolescents to get accustomed to overcoming life's problems later on. With the help of educational games, the improvement of brain function will increase along with the time they have passed.

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