Issues, Trends, And The Strategies Of A Game-Based Learning Of Mathematics

Introduction

In each aspect of life, intentionally or unconsciously we are utilizing mathematics. However, dominant part of the students over the world dislike mathematics (Gafoor & Kurukkan, 2015). Ongoing exploration on mathematics education shows that students face difficulty in understanding mathematical concepts and to develop logical thinking and strategy to manage math issues or problems. It is required from teachers or instructors to implement teaching which will result in the development of critical mathematical thinking by students, rather than a sterile integration of mathematical formulas.

While trying to examine what makes it difficult to learn mathematical ideas and skills, the authors consider straightly included attention, cognitive-processing, auditory, memory issues and metacognitive deficiencies (Drigas & Pappas, 2015). Since game-based learning is a creative methodology that exploits the educational potential offered by video games in general and serious games in particular to boost training processes, thus making it easier for users to achieve motivated learning (Pérez, Guzmán Duque, & García, 2018). Applying game-based learning in different areas of education helps to improved students mental ability.

Review Related

Literature of the study

This section discusses the issues, trends, and the strategies of the chosen topic.

Issues

- Minimize students' ability to think and solve mathematical problems (Hamadneh & Masaeed, 2015). The tools or application can minimize students' ability to think and solve mathematical problems because the application directly generates an answer and gives solution in that mathematical problem.

  Students might become dependent on the tool (Webel & Otten, 2016).

Trends

- PhotoMath

PhotoMath is a mobile application described as a world's first smart camera calculator that reads and solves mathematical expressions or problem in real-time. It ? is a combination of computer vision technology and intelligent expert system that are answer math expressions in a humanlike manner. ? The user or the client essentially focuses the camera towards a printed mathematical expression and the application immediately gives the solution or the answer

(Press Release, 2015). According to the developer of this application, the PhotoMath currently supports arithmetic expressions, fractions and decimals, powers and roots, and simple linear equations. However, the PhotoMath application are currently not recognize the handwritten expression (Elliott, 2104).

MathAdventure: Game-based Learning

In this game the player can choose a category to play (easy, medium, hard) and must answer the following mathematical questions or problem in order to win the game and proceed to the next level. MathAdventure provides animated graphic and audio effects as well as immersive stimulation and it is good for elementary students since, children nowadays love to engage or to used computer and smartphone. MathAdventure is consist of basic arithmetic such as addition, subtraction, multiplication, and division.

Conclusion

Game-based learning was more effective in enhancing the learning effectiveness and attitudes of students than traditional PPT teaching (Liu & Chen, 2013). Game-based learning can help engage and motivate students when they struggle by going beyond rote memorization to get kids practicing essential skills and making tough choices. In conclusion, engaging educational tool like mobile games or application for mathematics has a positive effects as a reinforcement to help students both retain their content memory and attention knowledge, cognitive skills, and have positive attitudes towards mathematics. Therefore, MathAdventure can improved the ability thinking of the student.