

The effects of digital game-based learning using Minecraft towards pupils' achievement in fraction

ABSTRACT

The ability to understand and master concepts of fractions will provide a solid basis for understanding more complex mathematical concepts which in turn will assist in solving problems involving fractions in everyday life. However, findings of the international assessments Trends in Mathematics and Science Studies (TIMSS) and Program for International Student Assessment (PISA) indicated that the achievement of fractions among pupils in Malaysia is at a poor level, which is below the international average score. In considering the rapid development and advancement of digital games, the purpose of this study is to investigate the effect of DGBL using Minecraft on pupils' achievement in fractions. A quasi-experiment with a pre-test and post-test nonequivalent groups was conducted involving 65 Year Five pupils in two intact classes. Through cluster sampling, one class was selected as the treatment group while the other class was selected as the control group. The treatment group which consists of 31 pupils was exposed to DGBL using Minecraft while the control group which consists of 34 pupils was exposed to conventional methods. Data were analyzed using an independent sample ttest to compare the post-test achievement score mean for fraction between the treatment group and the control group. There was a statistically significant difference in the achievement scores mean between the treatment group (mean=8.80, SD=2.77) and the control group (mean=6.20, SD=2.79). The findings from this study would further encourage the use of digital games, especially Minecraft, in the teaching and learning of fractions so as to increase pupils' achievement.