

Abstract

A very important topic in the mathematics curriculum in Israel, where most students encounter difficulties, is the topic of fractions. The transition from natural numbers to fractions creates a special difficulty among students due to the students' over-inclusion of previous knowledge about natural numbers on the rational number groups (Jackson, 2017).

The current study examined one of the factors that influence the teaching and learning process of simple fractions: the way the subject is taught. The study participants were 125 male and female students (59 boys and 66 girls) from four heterogeneous 5th-grade elementary school classes.

Two classes were taught in a combination of technology that encourages cooperative learning, by one of the math teachers, and two classes were taught in the traditional teaching method by another math teacher from the same school. The contribution of the intervention program that combines technology and is based on cooperative learning to the achievements of fifth-grade students in comparing simple fractions was examined. Additionally, the study examined gender differences in the impact of the intervention program on each of the teaching methods.

The research findings showed that teaching that incorporates technology had a positive effect on the student's achievements in solving simple fractions tasks: the students who studied with the help of technology achieved significantly higher in most of the questions compared to students who studied in the traditional teaching method. Also, interviews with students who participated in the intervention program, revealed that the students had positive attitudes towards such a teaching method as improving interest in classes and their desire and motivation.

Regarding the differences between boys and girls, the research findings showed that no gender differences were found in relation to the intervention program.

The main conclusion of the study is that it is possible to improve student's achievements in learning the subject of comparing simple fractions when the key to success is a change in the teaching approach. The contribution of this study is both a theoretical contribution (expands the existing knowledge base on the subject of teaching word problems) and a practical contribution (provides research knowledge to those engaged in mathematics education in Israel and the world on the teaching of comparing simple fractions by technology) so that with the help of this study it will be possible to build the teaching of the subject so as to suit different population groups. This research can raise awareness of a cooperative technological teaching approach among teachers since the findings prove its effectiveness. It is worth examining the possibility of developing a training program for teachers as part of continuing education to implement this approach in schools.

A main limitation of the study is the small size of the sample, it would be worthwhile to carry out a follow-up study on a larger number of students, a larger study sample in different places in Israel would have made it possible to strengthen the conclusions of this study.