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## **DOPRINOS FIGURATIVNIH BROJEVA RAZVOJU VIZUELNO LOGIČKOG PRISTUPA REŠAVANJU ZADATAKA SA BROJNIM NIZOVIMA**

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### **Apstrakt**

Savremena nastava matematike na svim nivoima obrazovanja uglavnom se svodi na primenu algebarskih formula i algebarskih postupaka. Vizuelno-logički pristup sagledavanju i rešavanju matematičkih zadataka vrlo malo je prisutan u nastavi matematike. Takvu praksu bi trebalo promeniti jer je vizuelizacija od velike važnosti u procesu učenja i razumevanja matematike. U ovom radu prikazujemo uvođenje figurativnih brojeva u nastavu matematike šestog razreda osnovne škole i njihov doprinos razvoju sposobnosti učenika za uočavanje zakonitosti među brojevima i primeni uočene zakonitosti u rešavanju raznih problema sa brojnim skupovima. Istraživanje opisano u ovom radu započeto je ispitivanjem sposobnosti učenika šestog razreda da uočavanjem zakonitosti rešavaju zadatke sa prirodnim brojevima. Konstatacije do kojih smo došli bile su u velikoj meri nezadovoljavajuće. Zbog toga smo organizovali upoznavanje učenika sa odabranim primerima koji demonstriraju uočavanje zakonitosti među brojevima i primenu uočene zakonitosti u rešavanju zadataka. U cilju upoređivanja rezultata u istraživanju, formirali smo dve grupe učenika, eksperimentalnu i kontrolnu, pri čemu je eksperimentalna grupa radila sa figurativnim brojevima a kontrolna nije. U obe grupe smo formirali male tročlane grupe od učenika različitog nivoa matematičkog znanja za saradničko učenje. Organizovali smo tročasovno vežbanje vizuelno-logičkog pristupa rešavanju zadataka za obe grupe. Pre početka i nakon završetka planiranog rada izvršili smo testiranje učenika obe grupe. Pre-test je pokazao da nije bilo značajnih statističkih razlika između eksperimentalne i kontrolne grupe. Na post-testu obe grupe su ostvarile napredovanje pri čemu su rezultati u eksperimentalnoj grupi bili značajno bolji od rezultata u kontrolnoj grupi. Istraživanje je pokazalo da bavljenje figurativnim brojevima doprinosi razvoju sposobnosti učenika u uočavanju zakonitosti među brojevima i primeni uočene zakonitosti u rešavanju zadataka.

**Ključne riječi:** figurativni brojevi, vizuelno-logički pristup rešavanju zadataka.

## **NUMBERS TO DEVELOPMENT OF VISUAL LOGICAL APPROACH TO SOLVING TASKS WITH NUMEROUS STRINGS**

### **Abstract**

Contemporary teaching of mathematics at all levels of education is mainly reduced to the application of algebraic formulas and algebraic procedures. A visual-logical approach to the examination and solving of mathematical tasks is very little present in mathematics teaching. Such a practice should change because visualization is of great importance in the process of learning and understanding mathematics. In this paper we present the introduction of figurative numbers in mathematics classes of the sixth grade of elementary school and their contribution to the development of students' abilities to perceive legality among numbers and to apply the observed laws in solving various problems with numerous strings. The research described in this paper was begun by examining the ability of students of the sixth grade to solve tasks with natural numbers by observing the laws. The findings we received were largely unsatisfactory. That is why we organized a student meeting with selected examples that demonstrate the observation of legality between numbers and the application of observed laws in solving tasks. In order to compare the results in the research, we formed two groups of students, experimental and control, whereby experimental group was working with figurative numbers and control was not. In both groups we formed small three-member groups of students of different levels of mathematical knowledge for collaborative learning. We organized a three-hour exercise of visual-logical approach to solving tasks for both groups. Before the start and after the end of the planned work, we carried out testing of the students of both groups. The pre-test showed that there were no significant statistical differences between the experimental and the control group. At the post-test, both groups achieved progression, with the results in the experimental group being significantly better than the results in the control group. The research has shown that dealing with figurative numbers contributes to the development of students' abilities to perceive legality among numbers and to apply observed laws in solving tasks.

**Key words:** figurative numbers, visual-logical approach to solving tasks.