Evaluacija razvoja početnih matematičkih pojmova kod dece predškolskog uzrasta

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Apstrakt

Poznato je da razvoj početnih matematičkih pojmova počinje na predškolskom uzrastu, pre upotrebe pisanog jezika, što značajno otežava postupak praćenja napredovanja dece. Istraživanja pokazuju značaj ranog praćenja razvoja u svim oblastima: motoričkom, kognitivnom, socijalnom i emocionalnom, sa ciljem da se blagovremeno identifikuju potencijani problemi, preduzmu mere za njihovo prevazilaženje i obezbedi povratna informacija o valjanosti postojećih programa, uspehu rada dece i vaspitača. U ovom radu iznosimo rezultate teorijske analize, modele i postupke standardizacije slikovnih testova, izrađenih za potrebe naučnog istraživanja, koje je za predmet imalo ispitivanje razvoja mentalnih predstava o matematičkim pojmovima kod dece uzrasta 6 do 7 godina. Psihometrijska analiza pokazala je zadovoljavajuće merne karakteristike testova, što rezultate sprovedenog istraživanja čini naučno validnim. Sa druge strane, kvalitativnom analizom postignuća dece došli smo do podataka o razvoju značenja pojma broja, aditivnih shema, relacijama među brojevima, shvatanju parnog i neparnog broja, razumevanju značenja pojma nule, aritmetičkog pravila zamene mesta sabiraka, sposobnosti intuitivnog sabiranja i oduzimanja. Postojeće testove moguće je transformisati u elektronsku interaktivnu formu, kreirati bazu rezultata i na taj način doprineti efikasnosti i ekonomičnosti evaluacije razvoja početnih matematičkih pojmova kod dece predškolskog uzrasta.

Ključne reči: *evaluacija, početni matematički pojmovi, slikovni testovi, standardizacija testova, elektronski interaktivni softveri*

Evaluation of the development of mathematical concepts in preschool children

Apstract

It is well known that the development of mathematical concepts begins at pre-school age, before the use of written language, which makes the process of monitoring children's progress much harder. Studies show the importance of early monitoring in the areas of children's motor-skill, cognitive, social and emotional development, in order to timely identify potential problems, take steps to overcome them and provide feedback on the quality of the existing syllabi, and achievements of both children and preschool teachers. In this paper we present the results of a theoretical analysis, as well as models and procedures of standardization of picture-based tests, designed as part of a scientific research, which aimed to examine the development of mental representations related to mathematical concepts in children aged 6 to 7 years. The psychometric analysis showed satisfactory metric characteristics of tests, which makes the results of the research scientifically valid. On the other hand, a qualitative analysis of children's achievements helped us gather the data on their development of the concept of number, additive schemes, relations between numbers, their understanding of even and odd numbers, and of the concept of zero, of arithmetic rules on changing the positions of summands, and intuitive skills of addition and subtraction. The existing tests can be transformed into an interactive electronic form, with a database of results being created, thus contributing to the efficiency and economy of evaluating the development of initial mathematical concepts in preschool children.

Keywords: *evaluation, initial mathematical concepts, picture-based tests, test standardization, electronic interactive software*