Training of Future Teachers for the Work with Ethnic Minorities in Mathematics

Jan Melichar

Universities have to react flexibly to social changes. The problem of the education of ethnic minorities was highlighted by the increasing number of immigrants to Czech Republic. According to this special educational institutions were founded, namely ,,zero classes". Society has formed new category of job-gipsy assistant.

Pedagogická fakulta Univerzity Jana Evangelisty Purkyně in Ústí nad Labem is training elementary school teachers mostly for the regions Děčín, Chomutov, Litoměřice, Louny, Most, Ústí nad Labem and partly for the region Česká Lípa. In these regions there are basic and special schools with a certain rate of children mostly from gipsy and partly from Vietnamese minorities. At the basic school in Most – Rudoltice and Ústí nad Labem – P)edlice is the number of gipsy children nearly hundred per cent.

Future teachers must be prepared for teaching at these schools, especially elementary school teachers.

Within the framework of a cooperation with these schools, me and Doc. Červinka we have prepared additional textbooks of mathematics for 1st – 4th class of basic schools.

We assumed that the most suitable period for education of a gipsy child is till the age of ten. In the later age child is influenced by a puberty and its interest of education declines. Therefore we have concentrated on the first four years of a compulsory education when it is important to form good basis.

What is exceptional on these textbooks? Our textbooks contain basic subject matter of mathematics and we presuppose that mathematics is generally educational subject.

We put the stress on a real life of gipsy child where money play important role. Textbooks allow communication between the textbook and pupils, especially pupils whose mother tongue is not Czech. Exercises are very simple, successful solution of problems helps children to join the society of the class. Shared feeling of success when solving an exercise encourage
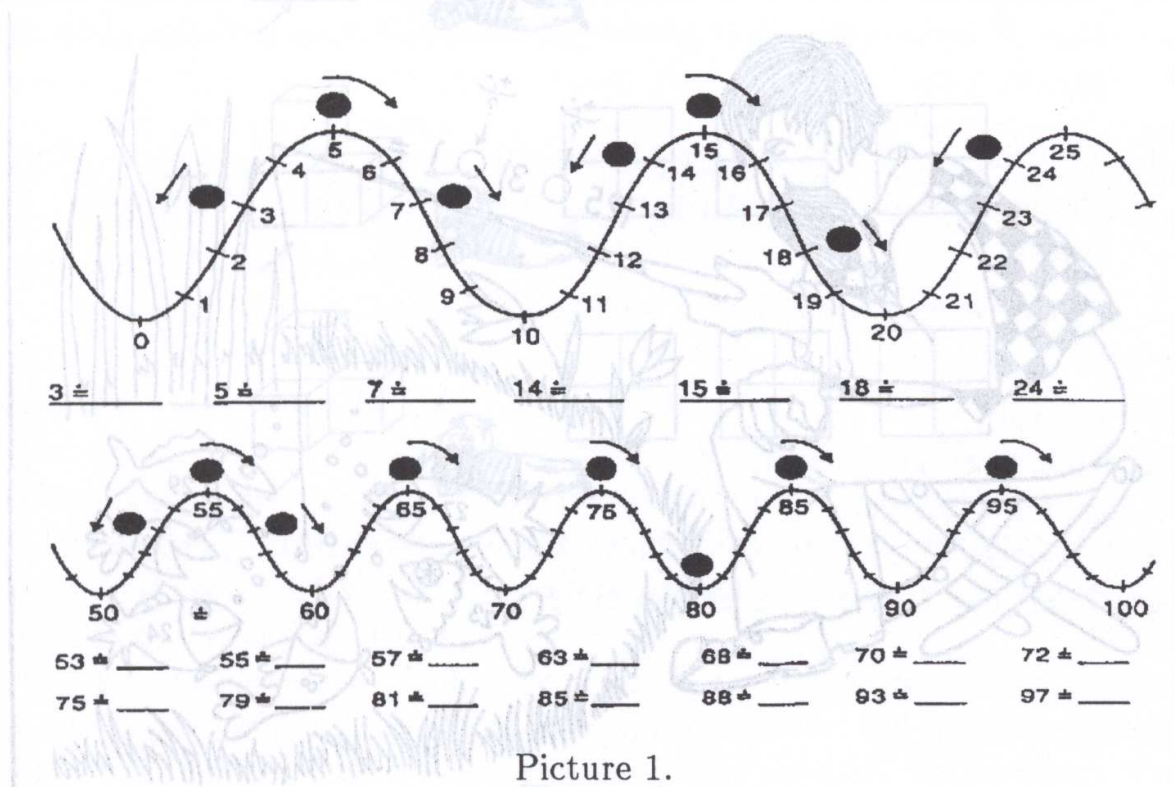
children from ethnic minorities in their feeling of oppurtenance to the class.

When working on these textbooks we set the basic subject matter at first and then we have formed banners of the subject matter.

The problem of communication ,,textbook-pupil" were solved by pictograms as well as verbal exercises are set by pictograms. It is mathematics in pictures. It is not in mind what has not gone through sense at first. We use visualization in the education of mathematics. The term visualization covers an ability of visual perception and remembering of things which were seen before. Visual perception is accompanied by sense of hearing which leads to the development of speech. Mathematical skills develop better when they are supported by changes. It is a dynamic conception.

Let us look at examples from textbooks of mathematics for ethnic minorities:
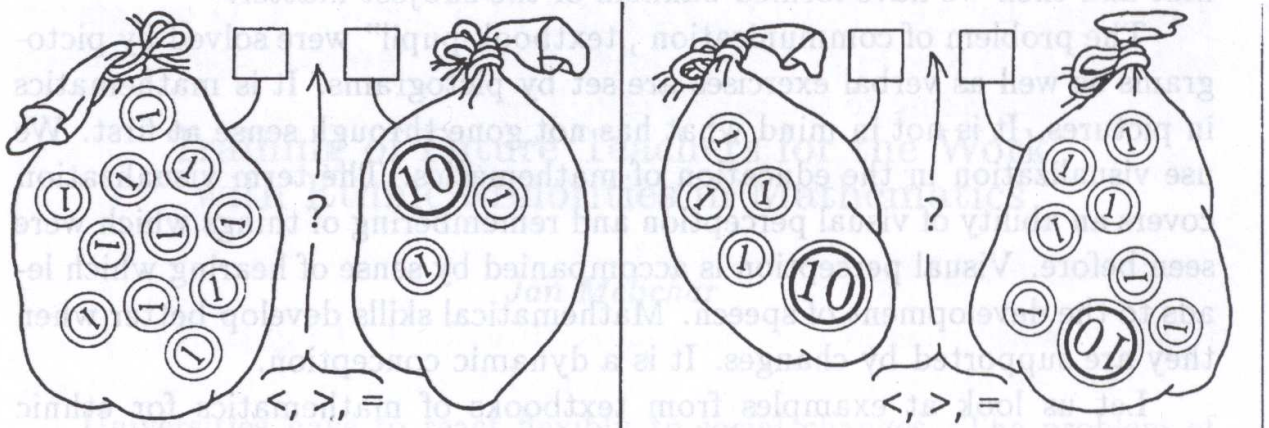
The rounding off is explained on a curve numeric axis. The visual perception is supported by the use of motion (changes) and we also use knowledges from practical life (physics).

Picture 1.

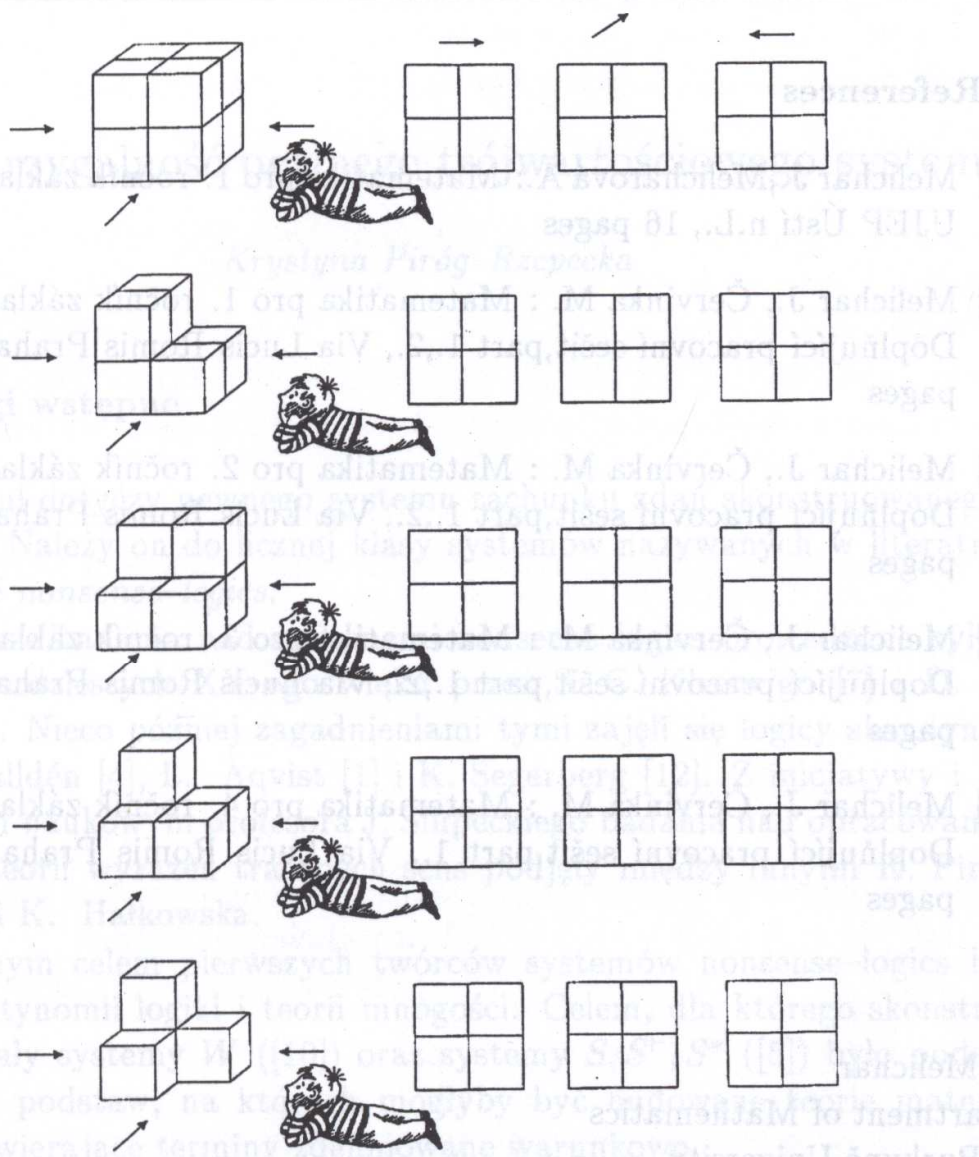Comparison of numbers is motivated by money:

Picture 2.

The exercise is given by a picture:

Picture 3.

Dynamism and visual perception encourage special imagination:

Picture 4.

Nowadays we are preparing students of elementary education for a work in ,,zero classes'' according to the sphere of so-called mathematical images. We are also working on a content of a brain education in this area. We concentrate on an introduction to space orientation, relations between elements of a group of objects-classification, ordering, coordination and due to this we can introduce numeration and basic numerical operations.

Quite big problem is relationship between teachers and gipsy assistants and specification of their role at basic schools. This hard job is still before us.

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