STUDENT´S TRANSLATIONS BETWEEN MODES OF REPRESENTATIONS AND ITS UTILISATION IN DIDACTICAL RESEARCH

Marie Tichá, Academy of Sciences of the Czech Republic, Mathematical Institute, Prague

Results of many investigations confirm great significance of the development of representations for the process of education. Halford (1993) noted agreement between theorists „... that understanding means having an internal representation or mental model that corresponds to a concept, task or phenomena (p. 9)." Bills and Gray (1999) pointed out the relationship and connections between internal and external representations. Lesh, Post and Behr (1987) identified five types of representation relevant for the teaching of mathematics. Janvier (1987) stressed that the level of understanding is related to the continuous enrichment of a set of various modes of representation and Bönig (1994) emphasised the development of student's capability of translation between modes of representation.

These works inspired the present research that follows the previous investigation (Tichá, 2000). This contribution focuses on the study of possibilities for utilising the students' translations between modes of representations (a) as a diagnostic means in the course of study of images and understanding, misunderstandings and obstacles for understanding of the notion of fraction, and (b) as a re-educational method that helps to eliminate students' difficulties, insufficiency and obstacles for understanding.

Sample: 10 - 13 years old students from 15 classes at various places in the Czech Republic. Classes were in no manner specialised. In one of classes the students worked in groups since we wanted to observe communications.

Background: Students' formulations of word problems with fractions to the given calculation or to the given pictorial representation.

Method: Analysis of written work. Students were asked to write only on the sheet with printed problem, without erasing anything. With some of them, we discussed "their problems" after they submitted the test.

References

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