

**ELEMENTARY TEACHER’S UNDERSTANDING MATHEMATICS IN MEXICO. RATE OF CHANGE CONCEPT.**

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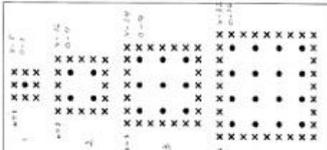
*We report the findings about teacher’s understanding on rate of change concept. For this purpose, we design a questionnaire that contained two tasks: description of the concept and non-routine problems solving; this applied in a teacher update program. The analysis of their answers, considering Skemp, Sierpinska and Carpenter ideas, mainly, revealed the poor level of conceptual understanding, however the solution trajectories show the understanding bounded at the instrumental level and existence of intermediate levels of understanding.*

**INTRODUCTION**

We ask the question: What is the level of teachers’ understanding in basic education in México, about rate of change? According to that we found some related research, Singh (2000), Lamon (2007), Teuscher & Reys (2010) explores students’ cognition; Behr (1992) discusses the meanings and designs a proposal and; Ellis (2007) explores the rate of change in teachers of the higher level, none of them related to Mexican teacher understanding.

**METHODOLOGY**

The research is carried out in the context of a teacher update workshop in four regions of the state of Mexico with 36 preschool, 79 primary and 36 secondary school teachers. About them we consider their gender and age and, professional profile: experience in years, refresher courses, specialty, as well as the last degree of studies. For the workshop we designed a questionnaire with two tasks. The first ask to describe several concepts, including rate of change. The second contains two problems, we report here only one (see figure 1), adaptation of the one included in the PISA exam (2002):

A farmer sows apple trees. To protect the garden from the wind, plant conifers, using a model like the one shown in the drawing. X = conifer; ● = apple tree	
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**RESULTS**

The instrumental understanding predominates in this community of professors not only on rate of change concept, but of all the mathematical concepts that they have to build. This situation urgently demands to design programs in Mexico aimed at improving the understanding in mathematics the teachers.

**References**

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