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Attitudes of secondary school students towards work in learning situations

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The purpose of this paper is to characterize the attitudes of Mexican secondary school students (12–15 years old) when carrying out mathematical activities. In order to study attitude, the tripartite model of attitude was adopted and a methodological design was organized based on the adapted model. So far a learning situation focused on the subject of proportionality has been applied, in which we have been able to identify two attitudes: Acceptance and collaboration.

Keywords: Attitude, secondary school, characterization.

INTRODUCTION

Over the years, research regarding attitudes towards mathematics has grown and has studied students ranging from basic level to higher education students and teachers from the same levels. Acknowledging, the relevant role that attitude plays in the teaching of mathematics (Di Martino & Zan, 2010; Gómez-Chacón, 2000; Hannula, 2012; McLeod, 1992), our aim was to characterize the attitudes of a group of secondary school students in relation to proportionality. We considered attitude to be like the assessment carried out by a student of the resolved mathematical activity. We adopted the tripartite model (Rosenberg & Rovland,

1960), which considers attitude to be composed of emotions, beliefs and behaviors.

PROCEDURE FOR DATA COLLECTION

The learning situation regarding proportionality was carried out during a first year secondary school mathematics class. 28 students participated, working in teams. The students' activity was filmed. In order to carry out individual interviews regarding the work carried out and some aspects of a personal and academic nature, 3 teams were selected: a) 2 men, b) 3 women and c) 1 man and 3 women.

RESULTS

We identified a system of attitudes formed of two attitudes: 1) Acceptance of the activity and 2) Collaboration between classmates. Both formed a collaborative work system and were coherent with and related to each other. They were linked to emotions, beliefs, behavior and factors shown in Table 1.

The extent to which attitudes identified throughout the activity were manifested, increased and decreased. There were cases in which, at the beginning of the activity, the level of collaboration was very low, but

Emotional reactions	Beliefs	Behaviors	Attitudes	Associated factors	Associated agents
Shock	Problems containing few operations are easy.	Empathy between classmates	Acceptance	Learning contract	Parents
Confusion	Division problems require information regarding what is being divided and between how many people it is being divided.	Willingness to work as a team	Collaboration	Goals of the student	Classmates
Happiness				Interests of the student	Teacher

Table 1: System of identified attitudes

thanks to interaction between classmates, the level increased, students managed to get involved in the work and to resolve the activity. By carrying out interviews, we discovered that there were agents that indirectly influenced the attitudes of students including classmates who helped to solve problems, the teacher who assessed them and parents for whom mathematics was important and who demanded that their children obtain good grades, even better than for other curriculum subjects.

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