INSTITUTIONAL RELATIONSHIP VERSUS PERSONAL RELATIONSHIP OF MOZAMBICAN MATHEMATICS TEACHERS TO INEQUALITIES

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The understanding and handling of inequalities by pupils is analysed into the general framework of algebra initiation. The transition from arithmetic to algebra is a deep qualitative step, which is, often assumed by pupils as an introduction of a set of rules that constitute an aim in them selves (Sfard & Linchevski, 1999)[1]. It is within this theoretical framework that this present study intends to identify the related factors that influence, in secondary schools in Mozambique, the pupils' skills and understanding of the concept of inequality and its solution. It is a correlated research where we intend to explain a phenomenon(a), relating some variables such as the institution, the teachers, and the pupils.

In terms of institution we analysed the syllabi, textbooks, and final exams. Moreover, 20 teachers of grade 10 answered a questionnnaire which aimed to collect data from the teachers them selves about inequalities so as their opinions about the performance of pupils in this topic.

These activities had as the start point the following hypotheses: (1) It seems that there is some confusion between the concepts of equation and inequality; (2) in solving inequalities, the relation between the numerical, algebraic and graphical methods, if it is done, is very incipient and (3) the resolution of inequalities seems to be assumed as a "game of mathematical symbols" without any relation to reality, loosing the sense of what one is really looking for.

The findings corroborate the hypotheses assumed beforehand. At the institutional level it seems that the inequalities are handled in a disorganized and discontinuous way as follows: (1) Different types of inequalities are treated in different ways. Some are treated as algebraic and others as function inequalities; (2) some grades inbetween do not handle inequalities; (3) Questions formulation in most of final exams allows rigidity instead of flexibility of resolution methods and (4) the syllabi and textbooks seem to reinforce the similarities between equations and inequalities. According to the results of the questionnaire, teachers are faithful implementers of what the institution sets up and pupils face a lot of difficulties when solving inequalities. This study recommends curriculum changes that help a (smooth) transition from arithmetic to algebra (Gimenez,)[2] taking into account what Banzini[3] says: "the passage from natural to symbolic language is a key point in the development of algebraic thinking and asks for special attention" (Banzini, 1999).

[1] Sfard, A. & Linchevski, L. (1994). Between arithmetic and algebra: In the search of a missing link: the case of equations and inequalities. Rend. Sem. Mat. Univ. Pol. Torino, vol. 52, WALT 1.
[2] Gimenez, J. (1996). The future of algebra and arithmetic. ICME - 8. Sevilha - Spain.
[3] Banzini, L. (1999). From natural language to symbolic expression: Students' difficulties in the process of naming. In Orit Zaslavsky (Ed.). *Proccedings of the 23rd Annual Conference of The International Group for the Psychology of Mathematics Education* (vol. 1, p. 263).