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# RELEVANCE OF LEARNING LOGICAL ANALYSIS OF MATHEMATICAL STATEMENTS

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Our work focuses on logic and language at the university, in the Cameroonian context.

The mathematical discourse is carried by the language which generates some ambiguities, as Durand-Guerrier (2013) and Fuchs (1996) have presented in their work. At the university, symbolism is introduced to clarify those ambiguities; however, because it is not taught in secondary school, it becomes a source of difficulties for students. According to Duval (1988, p. 18), the transition from the natural language to the formal one is a very difficult exercise for students. It should also be noted that the opposite operation should not be taken for granted. In fact, these exercises are essential in order to build proofs in the first case (Selden & Selden, 1995) and to understand formal statements in the second case.

Our thesis is as follows: "The determination of the logical structure of mathematical statements is necessary in order to properly use them in mathematics".

Our study is conducted in the theoretical frame work of predicate calculus, and our work has two main parts.

In the first part, a summary of predicate calculus is presented. It is followed by a logical analysis of two complex mathematical statements, where we focus on their logical structure. That analysis highlights the high level of complexity of some mathematical statements' structure used by students and the difficulty they should have to determine this type of logical structure.

The second part is a report of two sequences of an experiment that was conducted with first-year students at the Higher Teacher Training College in Yaounde (Cameroon), in December 2010. In both sections of the experiment, interactions show that knowledge of the logical structure of statements enable students to clarify the ambiguities raised by language: a choice should be made regarding the possible interpretations of a statement given in natural language. Moreover, from a cognitive point of view, students can save efforts if they can recognize the form of the statements they manipulate.

Making the logical structure of mathematical statement explicit should be practiced regularly by the teacher and the students in order for the latter to master the rules of logic and their use in the context of mathematics.

One outcome of this study will be to develop the inverse activity, which is the transition from formal language to natural language. I think that such activity can help in developing the linguistic competence of the student.

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