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Didactics Varieties in Geometry

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The common and differentiated formation in mathematics in Chile includes an area called "geometry axis", which is fundamentally formative, orientated to the development of intuitions, to the establishment of arguments, to the abstraction, to the searching of solutions of problems and to the establishment of relations and properties of plane figures and geometry bodies.

The deficiencies detected in this area of the school mathematics at secondary level has permitted to consider the problem solving as a relevant and pertinent element in the educational process. The recognition of the problem solving in geometry, has permitted a wide analysis by considering various approaches, some of them are the concern for clarifying in a general way its meaning as an activity, as a study of solving strategies and others in relation to their classification.

A learning-teaching proposal based on problem solving through the building of a didactic model called Mathematical Didactic Varieties (VDM) is presented in this study. One didactic variety mathematics is a situation of learning associated to mathematics that is built with problems situations, type of problems and registers of expression. This model centres on a problem situation which acts as distinguished variable and establishes other variables which support it. The distinguished variable is the mathematics framework and the associated variables are the context and registers of expressions. There are several mathematics framework and several contexts and registers of expressions for only one mathematical concept. This model relates registers of expressions as representation forms and types of mathematical problems. The types of problems have been considered according to their nature as routine and non - routine, and according to their context as real, realistic, fantasy and purely mathematics.

This qualitative research in Geometry related a didactic view of Mathematics in the teaching of geometry concepts and problem resolution, specifically that concerning the area of similarities of plane figures. The research was supported by instruction material mainly based on problem types categorised according to their nature and context, which was devised as an effective working tool.

Based on the analysis of the application of this didactic strategy, we can identify a substantive increase in the development of the ability of problem solving. This could be verified in the level of achievement of the students during class work with solving types of mathematical problems in geometry. Finally, in order to respect the mathematical learning style in the student it is necessary to support the didactic of the solving of types problems in geometry beginning with the basic level and with mathematical texts support.

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