A DIDACTIC MODEL TO FAVOR THE POSITIVE USE OF ERROR IN THE INITIAL TEACHER TRAINING

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ABSTRACT

This research presents a didactic model to favor the positive use of error in initial teacher training. The model shows how an error, from a positive perspective, implies problem solving, structuring mathematical content, improves reasoning and allows progress towards the construction of concepts. The model is made up of 3 phases and each one of them stimulates the learning of Mathematics, where error is the element that can be used to improve the learning of Mathematics. The implementation of the methodology, based on the didactic model, favors future mathematics teachers in the exercise of their work.

THEORETICAL FRAMEWORK.

The theoretical framework constitutes the support of the thesis and from this the categories are taken for the construction of the didactic model. The framework is based on the philosophical, psychological and pedagogical foundations, the referents related to the foundations of the theory of problem solving and challenge problems; and the fundamentals of pseudoparadoxes for the teaching of Mathematics. Also, emphasis is placed on the meaning of pseudoparadox and its characteristics and functions in the teaching of mathematics. In addition, the relationship between cognitive conflict and pseudoparadoxes, and what is related to the positive and constructive handling of error, are taken as references. Finally, visualization is assumed from the perspective of a tool in the teaching of Mathematics.

METHODOLOGY

Defining the research methodology is essential, as it governs and constitutes a guide for the work to be carried out, and the results depend on the methodology assumed. The research is framed in the qualitative paradigm, with a qualitative approach and an action research design. The population is made up of undergraduate mathematics students from the Antonio Nariño University in Bogotá, and the unit of analysis is made up of eight undergraduate mathematics students. The methods, techniques and instruments used and the phases of the investigation are also shown:

Phase 1: Search for the research problem

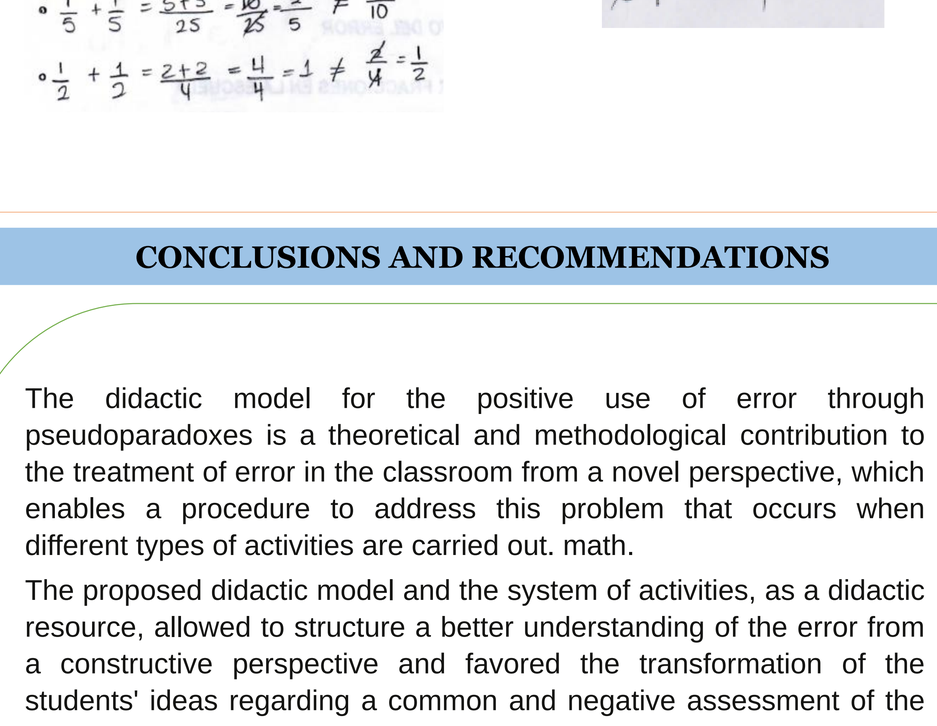
Phase 2: Theoretical framework.

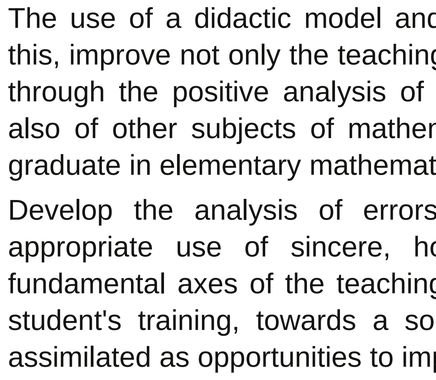
Phase 3: Design.

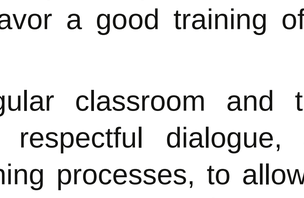
Phase 4: Implementation and evaluation.

METHODOLOGY

DIDACTIC PROPOSAL







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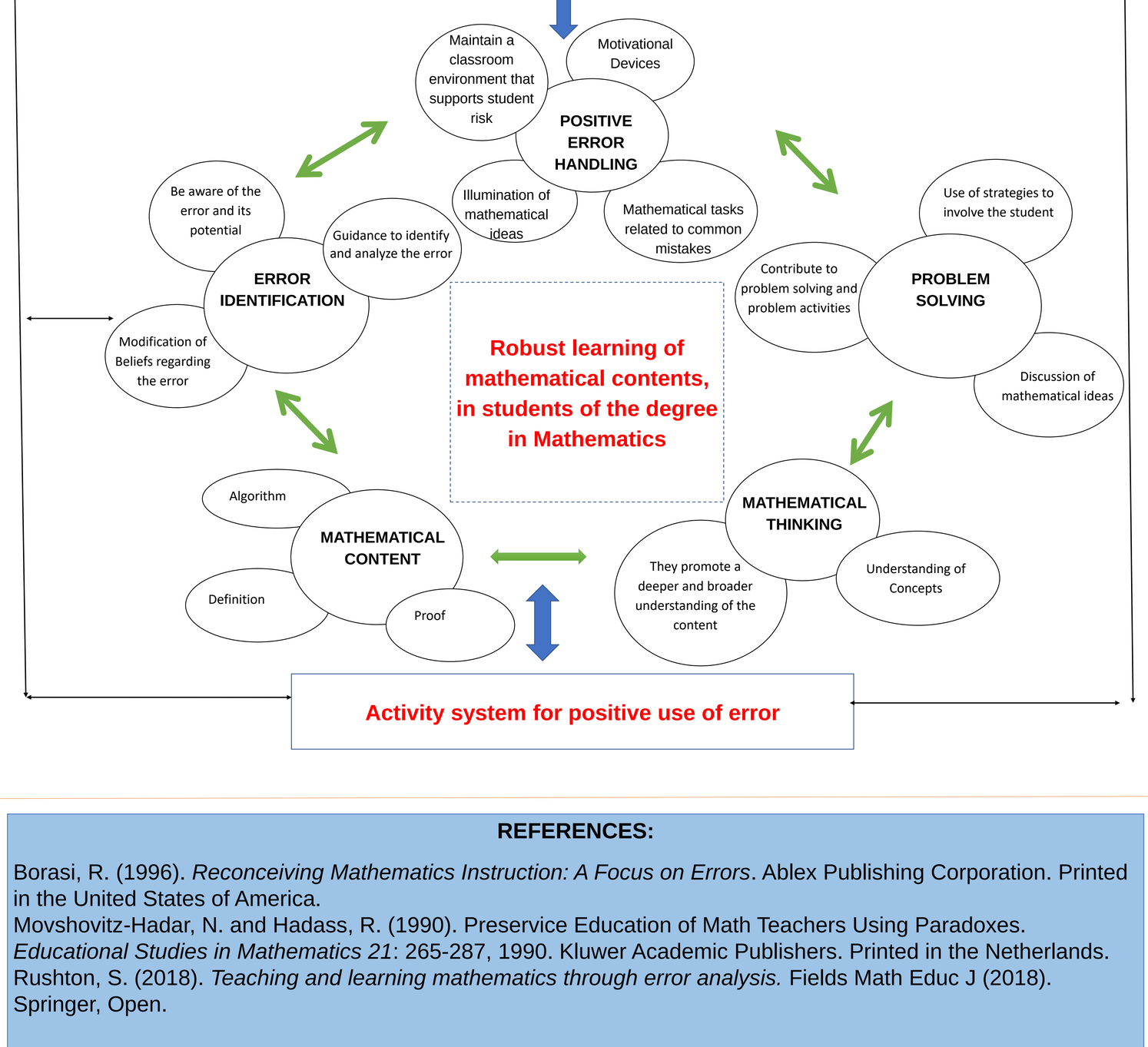

CONCLUSIONS AND RECOMMENDATIONS

The didactic model for the positive use of error through pseudoparadoxes is a theoretical and methodological contribution to the treatment of error in the classroom from a novel perspective, which enables a procedure to address this problem that occurs when different types of activities are carried out. math.

The proposed didactic model and the system of activities, as a didactic resource, allowed to structure a better understanding of the error from a constructive perspective and favored the transformation of the students' ideas regarding a common and negative assessment of the error.

The use of a didactic model and a methodology in accordance with this, improve not only the teaching and learning processes of concepts through the positive analysis of an error and pseudoparadoxes, but also of other subjects of mathematics to favor a good training of a graduate in elementary mathematics

Develop the analysis of errors in a regular classroom and the appropriate use of sincere, honest and respectful dialogue, as fundamental axes of the teaching and learning processes, to allow a student's training, towards a society where error and guilt can be assimilated as opportunities to improve life.

Continue improving the studies for other types of errors and their relationship with the resolution of problems related to this, the use of didactic models even more strengthened than the present one, to improve teaching-learning processes in the formation of Bachelor's degrees in Mathematics.

REFERENCES:

Borasi, R. (1996). *Reconceiving Mathematics Instruction: A Focus on Errors*. Ablex Publishing Corporation. Printed in the United States of America.

Movshovitz-Hadar, N. and Hadass, R. (1990). Preservice Education of Math Teachers Using Paradoxes. *Educational Studies in Mathematics 21*: 265-287, 1990. Kluwer Academic Publishers. Printed in the Netherlands.

Rushton, S. (2018). *Teaching and learning mathematics through error analysis.* Fields Math Educ J (2018). Springer, Open.