

Editorial

Special Issue “Practice and Specific knowledge for teaching mathematics in early childhood education”

This special issue responds to the interest in Brazil to promote research in Mathematics Education and, in particular, to promote research on the Early Childhood Education teacher regarding the teaching of Mathematics. This concern is aligned with international research that, usually focused on the student's learning processes, is starting to focus on this teacher, on his practice, on his knowledge and on his specific competences, to enhance the student's mathematical learning. This is the first special issue in Acta Scientiae journal that addresses this research focus.

Five international papers are collected In this issue. They are developed from a diversity of research perspectives and methodological designs, although all share a qualitative methodological approach. The notion of practice is conceived from a broad perspective, integrating the teacher's work in his classroom, as well as his participation in the learning contexts. Both of them are considered during his pre-service education stage and in collaborative professional development contexts. Although the research on the teacher usually focuses on the cycle from 3 to 6 years, a study is included that specifically considers the stage from 0 to 3 years old.

In the first article, José Luis Cortina, Jana Visnovska, Jesica Peña and Claudia Zúñiga develop an instructional theoretical proposal to guide the practice of a third-grade children teacher. This proposal, developed and validated through a teaching experiment, aims to promote the development of sophisticated numerical understandings involved in the sequence of instructions for patterns and partitions.

The following three articles take early childhood teachers as informants and consider the development of the *noticing* competence.

Joana Cabral, Hélia Oliveiras and Fátima Mendes develop their research in the context of the early childhood pre-service teachers' education. The research objective is to understand the functional thinking of these teachers in the context of repeating patterns and to explore how it is related to their ability to perceive the algebraic thinking of students.

They adopt a qualitative methodological approach, based on the analysis of the productions of two pairs of pre-service teachers who solve two professional tasks. Together with the response to the objectives, the authors provide a specific and original instrument for the analysis of the noticing competence on the algebraic thinking of these students about repeating patterns.

The research developed by Yuly Vanegas, Joaquín Giménez, Montserrat Prat and Mequè Edó describes the design process of a professional task. In this task, prospective early childhood teachers observe, analyze and reflect on real experiences that promote logical-mathematical reasoning in the 0-3 year cycle. This task allows them to notice teaching situations in a structured way. This study is developed through an intervention research design.

In the following article, Gloria Sánchez-Matamoros, Mar Moreno y Julia Valls identify characteristics of the instrumental process of a prospective early childhood teacher, Pedro, when he notices a classroom situation using a learning trajectory of length and its measure as an artefact. The instrumental genesis allows identifying what schemes the prospective early childhood teacher constructs and how he acquires his professional noticing. In addition, it provides guidelines for prospective early childhood teacher's education, such as to give meaning to the transitivity element and a variety of contexts related to conservation.

The last article differs from the previous ones by focusing on how a collaborative context of professional development supports the construction of specialised knowledge in inservice teachers. Mónica Ramírez-García, Juan Miguel Belmonte, Noemi Pizarro, Nuria Joglar-Prieto advance in the characterization of the specialised knowledge that the early childhood teacher needs to design and implement activities on length and its measurement. This objective is approached from two perspectives: a) the knowledge that four researcher-teacher educators consider that an early childhood teacher needs to implement an activity designed by them on such content and b) the specialized knowledge mobilized by two early childhood teachers when they reflect on this activity. The collaborative research allows all members to enhance the connection between theoretical and practical knowledge, resulting in the improvement of the early childhood teachers' education.

We expect this special issue contributes to promoting reflection and discussion on the dimensions of the teachers' practices and knowledge that are specific to his or her professional work.

We wish you a useful reading of the articles in this special issue.

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