



Introduction

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This issue of the *Revista Eletrônica de Educação – REVEDUC* (The Online Magazine of Education) is organized around the theme of Mathematics Education in the early years. We realized the need to discuss what is taught about mathematics in early childhood education and early years of elementary education due to the First Meeting of Mathematics Education in the early years, held in 2011 at *Universidade Federal de São Carlos – UFSCar*.

For this issue of *REVEDUC* we gathered a set of works of Brazilian researchers, two articles from Portugal and an article elaborated by a Brazilian researcher in partnership with a Spanish one. These works attest the expansion of research in the area.

In this issue, fourteen articles were grouped in two main topics, one, with five texts, focusing on successful initial or in-service training practices and on a curriculum perspective in which the mathematical content and its teaching are under discussion. Nine other articles constitute the second main topic, referring to curricular aspects of mathematics in early schooling.

The article that opens the first topic was written by Adair Mendes Nacarato and is titled *A comunicação oral nas aulas de matemática nos anos iniciais do ensino fundamental* (*Oral communication in mathematics lessons for the initial years of elementary school*). It advocates the need to consider a new culture that enables the processes of mathematical meaning, breaking with practices focused only in algorithmic and mechanized procedures.

The article by Eliane Maria Vani Ortega and Vinício de Macedo Santos, *A matemática e o lugar do professor nos anos iniciais: o ponto de vista dos alunos da pedagogia* (*Mathematics and the place of the early years teacher: the point of view of pedagogy students*), investigates the process of knowledge construction of Pedagogy students from *Universidade Estadual Paulista “Júlio de Mesquita Filho” – UNESP*, in Presidente Prudente, a city in the state of São Paulo, in relation to the nature of mathematical knowledge and being a mathematics teacher in the early years of elementary school.

In the article *Contribuições de grupo de estudos sobre matemática em conhecimentos de professoras* (*Contributions of a mathematics study group for teaching knowledge*), the authors Vânia Maria Pereira dos Santos-Wagner and Sandra Aparecida Fraga da Silva present results of a research with teachers of the initial years who were part of a mathematics study group that influenced their classroom practices.

The following article, *A colaboração em um grupo de alunas da pedagogia que ensinarão matemática* (*Collaboration in a group of Pedagogy students that will teach mathematics*) written by Regina Célia Grando and Luana Toricelli, investigated how the collaborative practices adopted as training strategies in a study group with Pedagogy students contributed to these students (re)signification of mathematics and its teaching.

Closing this topic, the article by Cláudio José de Oliveira, which is titled *Experiência e formação docente de professores que ensinam matemática* (*Education and experience of mathematics teachers*), presents and discusses results of a research that studied the teacher training of Pedagogy graduates, from 1995 to 2008, in relation to the processes of learning and teaching mathematics. The research also studied the training experience of teacher-students who enrolled in the disciplines Mathematics Language in Education I and II from 2009 to 2011.

Opening the topic related to curricular aspects of mathematics in early years, we present the article *Los aspectos didácticos básicos del sistema de numeración decimal en los libros de texto* (*Teaching basic aspects of the decimal numbering system in textbooks*), by Maria Pilar Ruesga Ramos and Gilda Lisbôa Guimarães. This article analyses three Spanish and three Brazilian teaching collections of wide circulation in each country. It focuses on aspects that intervene in the learning of the decimal numbering system (SND) and that are presented in collections for the first three years of elementary school.

The article *Situações de aprendizagem compartilhadas: o caso da contagem por agrupamento* (*Situations of shared learning: the case of scoring by assembly*), by Laura



Pippi Fraga, Jucilene Hundertmarck, Simone Pozebon, Diaine Susara Garcez da Silva, Anemari Roesler Luersen Vieira and Patrícia Sandalo Pereira, presents a teaching unit on scoring by assembly developed in a 2nd year of elementary school classroom, in the Mathematics Club, a project that is developed by an association among a college study and research group and public schools, in the perspective of Teaching Oriented Activity.

The text *Combinando roupas e vestindo bonecos: ideias de combinatória no desenvolvimento profissional de uma educadora da infância (Matching clothes and dressing dolls: ideas of combinatorics in the professional development of an early years teacher)*, written by Antonio Carlos de Souza and Celi Espasandin Lopes, presents the case of a kindergarten teacher who participated in a study group that solved problems of combinatorics and probability and, subsequently, elaborated and applied learning activities that contained ideas related to these contents for children aged between 4 and 5 years old.

The text by Celi Espasandin Lopes, *A educação estocástica na infância (Stochastic education in childhood)*, presents a theoretical discussion about the inclusion of stochastic education in childhood, considering the stochastic as a part of the curriculum of mathematics that studies combinatorics, probability and statistics in an interactive way.

The text by Maria Auxiliadora Bueno Andrade Megid, *O ensino aprendizagem da divisão na formação de professores (The division learning on teacher training)*, states that the rescue of the learning trajectory in early math division through memory records, along with the process of (re)construction of that concept by reporting exploratory and probing activities, support the problematization of the training process for future early years teachers.

In the article *Números decimais na sala de aula: os conhecimentos de um grupo de professores e a relação com sua prática pedagógica (Decimal numbers in the classroom: the knowledge of a group of teachers and the relation with their teaching practice)*, the authors Anelisa Kisielewski Esteves and Neusa Maria Marques de Souza present a survey carried out with teachers in a municipal school in Campo Grande/MS. It investigated the knowledge held by 5th-grade teachers on decimal numbers and the relation between this knowledge and their teaching practice.

The authors of the text *Caracterizações do pensamento algébrico em tarefas realizadas por estudantes do ensino fundamental I (Characterizations of algebraic thinking in tasks performed by students of elementary education)*, Daniele Peres da Silva and Angela Marta Pereira das Dores Savioli, taking Early Algebra as a research area that seeks an approach to early algebra teaching and learning, present an analysis of attitudes, questions and written productions that provide clues about the behavior of children in solving tasks

The last two articles of this topic are about Geometry. The one written by Marinês Yole Poloni and Nielce Meneguelo Lobo da Costa, *Formação continuada do professor dos anos iniciais: revisitando figuras planas com software de geometria dinâmica (Continuing education for teachers of the early years: revisiting plane figures with dynamic geometry software)*, presents episodes of teaching practices of two primary school teachers whom, during a course of continuing education, have revisited some geometrical concepts. The developed content focused on the plane figures theme using the software *Cabri-Géomètre*. The article by Maiza Lamonato and Cármen Lúcia Brancaglioni Passos, *"Siga os exemplos" dos alunos: aprendizagens em aulas exploratório-investigativas no 4º. ano do ensino fundamental ("Follow the examples" of students: learning in exploratory-investigative activities in the 4th grade of elementary school)*, examines the learning of a teacher who participated in a study group and of her students in classes with exploratory-investigative geometrical content.

Three essays, three experience reports and a case study close the theme of Mathematics Education in the early years in this REVEDUC issue.

The essay *Conhecimento matemático para ensinar: papel da planificação e da reflexão na formação de professores (Mathematical knowledge for teaching: the role of planning and reflection in the training of teachers)*, by the Portuguese researcher Maria de Lurdes Marquês Serrazina, sets an important theoretical discussion as it explains that, apart from knowing the mathematics that is being taught, the teacher who teaches mathematics in the early years of education must also know how to teach and how to assess the resulting learning.

The essay *Que matemática é preciso saber para ensinar na educação infantil? (What knowledge is required to teach mathematics in early childhood education?)*, written by



the Brazilian researcher Regina Maria Simões Puccinelli Tancredi, discusses how the training of kindergarten teachers should be developed in order to introduce young children into the world of mathematics.

The text of the Brazilian researcher Mauro Carlos Romanatto, *Resolução de problemas nas aulas de matemática (Problem solving in mathematics classes)*, seeks to demonstrate that the methodology of teaching through problem solving can be applied in all levels of education without major disruptions in the work of teachers who teach mathematics.

Concerning the experience reports, this issue of *REVEDUC* brings one by Mie Kato Yokomizo, Keli Cristina Conti and Dione Lucchesi de Carvalho, which is titled *Primeira experiência com a construção de gráfico: os animais de estimação dos alunos do 1º. ano do ensino fundamental (First experience with the construction of graphics: the pets of first year of elementary school students)*, which presents, from a perspective of literacy, how the statistical study was conducted. The report *A história, o lúdico e as atividades de ensino: reflexões sobre a formação inicial do professor de matemática (Story, ludic and teaching activities: reflections about the mathematics teacher education)*, written by Amanda Gonçalves Ribeiro, Naysa Crystine Nogueira Oliveira and Wellington Lima Cedro, is an experience developed by undergraduates in Mathematics from *Universidade Federal de Goiás – UFG* (Federal University of Goiás) with students of the 5th year of elementary school. The third report, *Uma experiência extracurricular de matemática com crianças carentes (An extracurricular experience of mathematics with deprived children)*, refers to an activity carried out in Portugal. In this text, the author Adelaide Carreira describes the planning and implementation of an extracurricular project - "O Continhas" - simultaneously conceived and oriented to pre-school and primary school students and their respective teachers.

The case study, *Estudo de caso: como duas crianças passam a compreender a combinatória a partir de intervenções? (Case Study: how do two children start to understand the combinatorics from interventions?)*, by Cristiane Azevêdo dos Santos Pessoa and Laís Thalita Bezerra dos Santos, analyzes the performance of two students of the 5th year of elementary school when working with combinatorial problems.

Although the authors worked with diverse investigative issues, with different theoretical approaches, the texts have similar aspects and legitimize common concerns about mathematics in early education, teacher training in Pedagogy courses and professional development of teachers.

The results of the investigations, which are gathered in this issue, show that the mathematical content taught in the early years and the important mathematical ideas for the development of numerical, algebraic, geometric, statistical and combinatorial reasoning since the early years of education have been widely studied.

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