Translated from Portuguese to English - www.onlinedoctranslator.com

RCMOS – Multidisciplinary Scientific Journal O Saber.
ISSN: 2675-9128. São Paulo-SP, year II, v.2, n. 2, Jul./Dec. 2022.

Preparation of the pedagogue for teaching mathematics in elementary school I

Preparation pedagogues for the teaching of mathematics in elementary school I

Adam Gomes de Souza[1]

Submitted on: 08/27/2022
Approved on: 08/27/2022
Published on: 08/29/2022 DOI:
10.51473/rcmos.v2i2.348

SUMMARY
The objective was to discuss the preparation of the pedagogue for the teaching of mathematics in elementary school I. From the research, I think pedagogy should seek to weave a human; as an agent of educating practice, showing that you can see yourself as an educator; which still as the main body of self-development, encourages the skills and knowledge necessary for teaching; finally, have the political, ethical and technical commitment to implement interventions to change the quality of mathematics education. The type of research is a literature review and the main objective of this type of research is to expose the attributes of a certain phenomenon or statement in its variables. Therefore, it is recommended that it presents the following characteristics: use atmospheric analysis as a direct source of data and use researchers as an exchange tool; do not interfere with the use of statistical techniques and methods and have a deeper understanding of the explanation. The method must be methodological and the main focus, more than the results or achievements, the appreciation of the data must be carried out in an intuitive and inductive way by the researchers.
Key words: Pedagogue. Teaching. Mathematics. Fundamental I.

ABSTRACT
The objective was to discuss about the preparation of the pedagogue for the teaching of mathematics in elementary school I. From research, I think pedagogy should seek to weave one the teachers who make up the disciplines of history, criticism and creativity are able to think of their own condition as a human being; as an agent of practice to educate, to show that you can see yourself as an educator; that still as the main body of self-development, encourage the skills and knowledge necessary to teach; Finally, have the political, ethical and technical commitment to be able to intervene to change the quality of mathematics education. The type of research is a literature review and the main objective of this type of research is to expose the attributes of a given phenomenon or enunciated in its variables. Therefore, it is recommended that you present the following characteristics: use atmospheric analysis as a direct source of data and use researchers as an exchange tool; do not interfere with the use of statistical techniques and methods and have a deeper understanding of the explanation. The method should be methodological and the focus, rather than the results or achievements, the appreciation of the data should be performed intuitively and inductively by the researchers.
Keywords: Pedagogue. Teaching. Mathematics. Fundamental I.

1. INTRODUCTION

The current work is in the education scenario, reflections on the critical dimension of teacher training, specifically, it focuses on the training of educators and the challenges faced in teaching mathematics in the first and second stages of the II Cycle of elementary education (BARBOSA, 2015).

The focus of this study was to show the importance of training in mathematics teaching pedagogy courses, This is why the academic and social relevance of this research lies in the results of national and international assessments, the quality of basic education in Brazil highlights low rates frequently acquired during studies in the area of knowledge.

Regarding this issue, teacher training has been identified as one of the main factors of this result (HERMÍNIO, 2019). Currently, in Brazil, teachers responsible for training to teach in the first years are focused on pedagogy courses, research to show that there is a problem in training these teachers to teach mathematical knowledge.

The study begins with the assumption of the first condition to overcome these difficulties is to train and practice considering the problem and the challenges that teachers face in their daily school life are recommended knowledge and skills developed n the teacher-student interaction of mathematical knowledge (BARBOSA, 2015).

1 matebio@hotmail.com

This is an article published in Open Access under the CreativeCommons Attribution license, which permits unrestricted use, distribution and reproduction in any medium, as long as the original work is correctly cited.

From research, pedagogy must seek to weave together the teachers who make up the disciplines of history, criticism and creativity are able to think about their own condition as a human being; as an agent of educating practice, showing that you can see yourself as an educator; which still as the main body of self-development, encourages the skills and knowledge necessary for teaching; finally, have the political, ethical and technical commitment to implement interventions to change the quality of mathematics education (BARBOSA, 2015).

The objective was to discuss the preparation of the pedagogue for teaching mathematics in elementary school I.

2 METHODS

The type of research is a literature review and the main objective of this type of research is to expose the attributes of a certain phenomenon or statement in its variables (GIL, 2018). Therefore, it must have the following characteristics: use atmospheric analysis as a direct source of data and use researchers as an exchange tool; do not interfere with the use of statistical techniques and methods and have a deeper understanding of the explanation. The method must be methodological and the main focus, more than the results or achievements, the assessment of data must be carried out intuitively and inductively by researchers (GIL, 2018).

During the exploratory phase, a theoretical review was carried out aiming to deepen knowledge on the topic. For the second phase, which was a descriptive research through bibliographical research with the objectives described in order to present the problem more efficiently, a survey was also carried out and data processing. The search for scientific productions was carried out between 2013 and 2022 and covered freely accessible articles written in Portuguese and published in full.

Course completion works, articles written in a language other than Portuguese, duplicates, paid articles or articles unrelated to the proposed topic were excluded. The searches for scientific productions took place in the Google Academic and Scielo databases. The critical analysis of the selected articles carefully observed their objectives, methods used, results and discussions presented, thus presenting the results of this review.

3 PEDAGOGIST PREPARATION FOR TEACHING MATHEMATICS

Education is something that someone familiarizes with a culture and formal study. Therefore, education is a temporally shaped cultural activity with a strong and lasting relationship with the beliefs that are part of the culture. Currently, the image of mathematics in the community is an image of non-human things. From the point of view of ordinary people, mathematics is for suffering and mathematics is a kind of mental torture (BARBOSA, 2015).

Mathematics uses approaches to understanding and making decisions about real phenomena, “can be used to motivate curriculum requirements, and can highlight the importance and relevance of mathematics in answering important questions. It can also help students acquire transferable skills, such as habits of mind that are pervasive throughout the subject (Bssanezi, 2013). Although teachers recognize the value of engaging their students in mathematical modeling, few have had the opportunity to try modeling and many teachers are unsure how to teach it.

The mathematical model is obtained when we translate problems from the language of hypotheses into formal symbolic language, in other words, when we extract the essence of the problem situation and transform it into systematic mathematical language. In mathematics learning, mathematical modeling deals with modeling and applications in teaching mathematics, characterizes how a student's modeling competence can be characterized and how the modeling activities and applications can contribute to the construction of these skills (BIEMBENGUT; HEIN, 2014).

In fact, mathematics is linked to the notion of project work. Dividing students into small groups in a specific time to discuss a certain aspect of the topic or to work on a specific problem, whose topics of interest must be chosen to be investigated through mathematics, with the accompanying teachers. However, several techniques are suggested in the literature on teacher training (HERMÍNIO, 2019).

For example, a situation problem related to the concepts of Differential and Integral Calculus. There is a lot of research carried out dealing with the teaching and learning of mathematics at different levels of education. Mathematics is

This is an article published in Open Access under the CreativeCommons Attribution license, which permits unrestricted use, distribution and reproduction in any medium, as long as the original work is correctly cited.

characterized as a learning environment where students are invited to question or investigate, through mathematics, situations from other areas.

According to Orey and Rosa (2017), the importance of integrating everyday life situations and other areas of knowledge in the classroom, to enable students to intervene in this reality, is emphasized in this environment. With the help of mathematics, representations are used that can explain and interpret phenomena under study, and these representations are called models. A mathematical model can be understood as a set of mathematical symbols and relationships that represent a situation, a real phenomenon or an object to be studied (ROSSO, 2015).

Mathematical models can be expressed through graphs, tables, equations, systems of equations. Modeling (in general) can be defined as objectives and interests underlying its implementation, leading to a conceptual and curricular implication (BARBOSA, 2015).

Students engaged in math assignments can share their work in a variety of ways. It is important It is important to remember that the objective of sharing is for students to communicate their mathematical thinking clearly, giving meaning to both the mathematics and the context (BASSANEZI, 2013).

Mathematicians have a habit of dividing the world into two parts: mathematics and everything else, sometimes called the 'real world'. People often tend to see these two as independent of each other - nothing could be further from the truth. When you use mathematics to understand a situation in the real world, and perhaps use it to act or even predict the future, both the real situation and the resulting mathematics are taken seriously (HERMÍNIO, 2019).

Even though mathematics seems to be closer to a theoretical concept, it has several applications, starting from primary school. In higher classes, mathematical modeling can be applied and developed even in problems of greater applicability, in many other domains (OREY, ROSA, 2017).

Students must be connected to reality when solving any type of problem, to think about the coincidence between the problem data and reality, if they can be changed according to the present (this is a question that teachers must accept). They must solve more and more math problems that the community may face and they must respond responsibly when giving the solution, they have proven that when students in a standard/ traditional class had to face math problems, they answered correctly to a lesser degree than than in the case when the same problem was integrated into a realistic context (ROSSO, 2015).

Mathematics is used to understand and solve problems in reality, as a teaching and learning strategy. This allows you to use the chosen themes, in order to understand the problems that exist within them and try to solve them with the help of mathematics (BARBOSA, 2015).

Mathematics takes a models and modeling perspective, which asserts that students develop representations conceptual sentences or models expressed using spoken language, written symbols, concrete materials, diagrams, images or other representational media (BASSANEZI, 2013).

When students are given non-trivial problems to solve - ones that relate to their lives - they develop models that are continually being projected onto the outside world. These models receive mathematical meanings as students interpret and refine them to solve the problem (HERMÍNIO, 2019).

For example, when students identify the quantities and variables in a problem and establish relationships between them, they are using mathematical knowledge to make sense of the problem. By doing this, they are developing a mathematical model and using it as a tool for thinking.

Expressions of such mathematics include the ability of students to aggregate scores; weigh or classify data for decision making; or to generate tables, graphs, or lists to compare, combine, or eliminate data (OREY; ROSA, 2017).

A plausible solution model would be one where students were able to obtain a cost-effective layout design that fits the dimensions of the floor. Students can be encouraged to determine whether they can optimize their solutions through cost and material savings. According to Rosso (2015), as there are several ways to solve the problem, teachers first need to familiarize themselves with the task. This will help them anticipate the various layout designs (templates) and possible floor covering orientations.

This preparation will allow teachers to not only better understand students' mathematical reasoning in

This is an article published in Open Access under the CreativeCommons Attribution license, which permits unrestricted use, distribution and reproduction in any medium, as long as the original work is correctly cited.

problem solving, but also help them facilitate the session more safely. When students are involved in mathematics tasks, the interaction between students and the teacher produces a learning situation in which cognitive immersion occurs (BARBOSA, 2015).

PBL contrasts sharply with the "organized" problem solving found in textbooks, where there are sure-fire ways to find the solution, involving neat numerical figures. In a PBL environment, students develop problem-solving skills and habits of mind valued in the mathematics curriculum. Due to the nature of the task, which requires students to test and revise their designs to refine their models, a high demand is placed on their metacognitive capabilities. Situating mathematical modeling in a PBL environment, therefore, promises to be an excellent platform for developing students' mathematical thinking (HERMÍNIO, 2019).

Therefore, it is imperative that model-based pedagogies intended for STEM education classrooms be further researched in order to contribute to integrated STEM literacy. Authentic STEM education must be driven by developing interaction between STEM disciplines in parallel with maintaining the integrity of each discipline. If this vision is to be reinforced, it is of utmost importance that the implementation of any model-based authentic educational activity is supported by evidence-based frameworks and recommendations for teaching practice (ROSSO, 2015).

Therefore, it is imperative that model-based pedagogies intended for STEM education classrooms be further researched in order to contribute to integrated STEM literacy. Authentic STEM education must be driven by developing interaction between STEM disciplines in parallel with maintaining the integrity of each discipline. If this vision is to be reinforced, it is of utmost importance that the implementation of any model-based authentic educational activity is supported by evidence-based frameworks and recommendations for teaching practice (BARBOSA, 2015).

3.1 TEACHING MATHEMATICS IN ELEMENTARY SCHOOL I

Mathematics should ideally be integrated into the school curriculum as part of a coordinated national strategy for mathematics education involving the wider community. According to Salvan (2014), school programs must allow all children in a country or jurisdiction to be exposed to this subject through the school curriculum. The introduction of mathematics education must be preceded and based on an assessment and analysis of the situation and level of mathematics education provided through existing curricula and the current level of mathematical literacy of children and young people (SILVA, 2015).

According to Salvan (2014), the content of the learning structure may vary depending on national circumstances, regional or local areas, the identification of particular talents, needs, aspirations and gaps, the structure and requirements of the educational system and cultural or religious considerations, as well as the approach taken to introducing mathematics education in schools. In this regard, in some countries or jurisdictions, it may be necessary to develop learning structures on mathematics education at the regional or local level.

Ideally, learning structures in mathematics education should encompass knowledge and understanding; skills and behaviors; as well as attitudes and values. This can also include entrepreneurial skills. In general, learning frameworks on mathematics education in schools provide some guidance for schools and teachers or for local authorities (SILVA, 2015).

It will also require the identification, within the learning framework dedicated to mathematics education, of specific links with other subjects and the provision of case studies and examples to teachers of relevant classes. According to Salvan (2014), mathematics education in schools should begin as early as possible (preferably in kindergarten and primary schools) and last at least until the end of the formal curriculum.
and, as far as possible, the end of high school. The learning framework will need to be age/grade-adapted to develop students' temporally sound math skills in school.

To be effective, mathematics education in schools must be integrated into broader community, national and/or regional initiatives. It also requires the commitment and involvement of a potentially wide range of

This is an article published in Open Access under the CreativeCommons Attribution license, which permits unrestricted use, distribution and reproduction in any medium, as long as the original work is correctly cited.

Stakeholders from different horizons: government, regulatory bodies, mathematicians, central banks, education systems, teachers, parents, the community and students must be involved. It may be relevant and appropriate to seek commitment from private mathematical institutions, business leaders and experts from non-profit associations, local networks and international organizations (BARBOSA; MOURA; BARBOSA, 2014).

Each stakeholder's role and degree of involvement will vary depending on national circumstances, education and culture systems. However, the definition of responsibility and accountability of each interested party in the process should, preferably, be established at the beginning of the project (SILVA, 2015).

According to Salvan (2014), key and central functions must be performed by a central coordinating body (generally composed of public authorities), with the support of the education system, teachers, parents and community, as well as students, teachers and school staff. school; parents and community; students: a central role Due to their pedagogical experience and close relationships with students, teachers must be at the center of introducing mathematics education in schools.

There must be special efforts to involve teachers at all stages of the process, convince them of the importance of mathematics education for students and themselves, and to provide them with the resources and training necessary to make them feel confident in teaching. of mathematics education in classes. School leaders, such as school principals and executive staff, can also play a key role in effectively promoting mathematics education among teachers, students and their parents, relatives and the wider community (SILVA, 2015).

The framework can also provide guidance on the most effective teaching methods in developing mathematics education. This may include a description of the recommended general approach, such as using relevant real-world examples or inquiry-based learning. According to Salvan (2014), teaching methods should not focus exclusively on developing knowledge, but should provide engaging contexts in which students can develop skills, attitudes and behaviors.

Opportunities for students to practice their skills and develop behaviors in authentic contexts Tentative and engaging materials should be recommended and examples provided. Interactive and experiential learning opportunities are recommended (BARBOSA; MOURA; BARBOSA, 2014).

According to Salvan (2014), he realized the need to 'launch' these lessons to all year groups, but with a focus on specific topics of relevance to different age groups. So while 7th or 8th graders are often interested in learning about savings, pocket money, and cell phones, older students will be more motivated to study topics that are relevant to them when they leave school, such as budgeting, housing expenses, or insurance.

Importance of mathematics education, children and young people growing up are currently exposed to an increasing range of mathematical decisions, from day-to-day activities such as whether or not to download apps and online music, to long-term decisions about whether or not to attend university and pay monthly fees (SILVA, 2015).

According to Salvan (2014), in the UK, for example, equipping young people with the skills, knowledge and confidence in mathematical matters to navigate these life decisions must remain a key priority. Mathematics education as a planned program of study, which equips young people with the knowledge, skills and confidence to manage their money well - can play an important and central role in achieving this.

For Salvan (2014), the mathematical and consumer landscape in which young people grow up has changed drastically in recent years, with technological change facilitating their involvement in mathematical decision-making since childhood.

younger age and fundamentally changing their concept of money compared to previous generations.

Children and young people's interactions with money continue to evolve with these changes, with decisions sions that they should take while they are still in school. These include: Opportunities to spend - children are given an increasing number of opportunities to spend large amounts, including through phone contracts and debit cards (including prepaid debit cards like Osper and GoHenry from as young as 8). Many parents also pay into a digital account, many of which provide digital currencies for games or credit for online stores (SILVA, 2015).

This is an article published in Open Access under the CreativeCommons Attribution license, which permits unrestricted use, distribution and reproduction in any medium, as long as the original work is correctly cited.

CONCLUSION

This research taught about teacher training as paths, processes, personal and career paths. frog; as being "Unfinished", therefore permanent, with the purpose of training educators, autonomous subjects, subjects capable and free to build and rebuild and continue to learn what they have learned in practice.

Therefore, this work shows that teacher training is not limited to what they develop during graduation. On the other hand, this instance is considered to represent an exercise for teaching work. Although initial training is important, however, in research the subjects expressed about their training and curricular analysis of the five pedagogy courses. The focus on research, mathematics teaching, and teacher training is insufficient, full of weaknesses.

This dimension formed in the education and teaching of mathematics in the research course curriculum highlights small burdens of time spent on this type of training, averaging 4.5% of the total training time per course. The method appears to be an essential aspect of training is not conducive to the teaching content of future teachers.

In fact, teaching mathematics in the context of schools, the development of cyclical organization requires that the program consider a flexible mathematical perspective to allow teachers to work more autonomously, respecting the student's maturation process. It is in works of this nature that are created and recreated by the apprentice from the beginning when he appropriates the basic idea for the logical deduction stage of thinking.

REFERENCES

AGUIAR, L.M.**Education and technology:**a necessary dialogue. Education for the world of work, ed. 185, year 16 – Aug. 2013.

BARBOSA, Eduardo Fernandes; MOURA, Dacio Guimarães de; BARBOSA, Alexandre Fernandes**.**Inclusion of information and communication technologies in education through projects. Work presented at the Annual Information Technology Congress - CATI, 2014, São Paulo - SP.**Annals**of the Annual Information Technology Congress, 2014. v. 1. p. 1-13.

BARBOSA, JC Modeling in Mathematics Education: Contributions to the theoretical debate. APNED Annual Meeting, 24, Caxambu.**Annals.**Rio de Janeiro: APNED, 2015.

BASSANEZI, R.C.**Teaching-Learning with Mathematical Modeling:**A New Strategy. 3rd ed. 4th reprint. São Paulo: Editora Contexto, 2013.

BIEMBENGUT, M. S; HEIN, N.**Mathematical Modeling in Teaching.**5. ed. 4th reprint. São Paulo: Editora Contexto, 2014.

BITTAR, Marilena; GUIMARAES, Sheila Denize; VASCONCELLOS, Monica. The integration of technology in the practice of teachers who teach mathematics in basic education: an action research proposal.**REVEMAT**-Electronic Magazine of Mathematics Education. V3.8, p.84-94, UFSC. 2018.

GIL, A Carlos.**How to design research projects**. 5. ed. São Paulo: Atlas, 2018.

HERMINIO; MHGB**The process of choosing Mathematical Modeling Project Topics.**Masters dissertation. Institute of Geosciences and Exact Sciences. UNESP-Rio Claro-SP. 139 f. 2019;

OREY, DC; ROSA, M. The Critical Dimension of Mathematical Modeling: Teaching for Sociocritical Efficiency. National Congress of Modeling in Mathematics Education, 5., 2017, Ouro Preto.**Annals.**Ouro Preto: Federal University of Ouro Preto. 2017.

PONTE, João Pedro da. Information and communication technologies in teacher training: What challenges?**Magazine Ibero-American Education.**OEI. N. 24, September/December, 2015.

RIOS, CMA Technologies in Youth and Adult Education: in search of new propositions.**FAEE-BA Magazine.** Education and Contemporaneity, Salvador, v. 14, no. 23, p. 63-72, Jan./Jun., 2015.

ROSSO, Ademir José. Error and teaching and learning Mathematics from the perspective of developing student autonomy.**BOLEMA:**Mathematics Education Bulletin. v.23. no 37. p.1011.Rio Claro-SP. 2015;

SALVAN, A.F.M.**Assessing learning difficulties in mathematics.**2014. 60 p. Monograph (Specialist in Mathematics Education) - Universidade do Extremo Sul Catarinense UNESC, Criciúma.

This is an article published in Open Access under the CreativeCommons Attribution license, which permits unrestricted use, distribution and reproduction in any medium, as long as the original work is correctly cited.

SENA, R. M; DARSIE, MMP**Educational computing and mathematics education:**evolution of teachers' conceptions from a training course. Working Group GT19: Mathematics Education; Caxambu - MG, 2015.

SILVA, JAF**Reflecting on learning difficulties in mathematics:**some considerations. 2015. 11 p. Catholic University of Brasília-UCB.

SOUZA, Isabel Maria Amorim de; SOUZA, Luciana Virgília Amorim de. The use of technology as a facilitator of student learning at school.**Forum Identities Magazine.**V.8, UFS. 2014.

XAVIER, Maria Aparecida Alves. Technology in awakening interest in learning: An interactionist view. **ABPp Magazine**. n.64, nov. 2016.

This is an article published in Open Access under the CreativeCommons Attribution license, which permits unrestricted use, distribution and reproduction in any medium, as long as the original work is correctly cited.