

## Initial training of mathematics teachers: extending the training process beyond "connect the dots"

### ARTICLE

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### Abstract

The aim of this work is to point out propositions about pedagogical practice based on studies developed in the discipline of Supervised Curricular Internship in early childhood education with mathematical concepts, in the face of the atypical scenario of the Covid-19 pandemic, which has devastated the world. The role attributed to education in this context is discussed and the indispensability of schools and teaching to the appropriation of knowledge developed by humanity and its essential role in the constitution of new generations is reaffirmed. The methodology consists of an intervention carried out with a class of children aged 3 to 4 years old at an Early Childhood Education Centre, based on the content of standardized and non-standardized measures of length, mass and capacity through teaching actions based on the Historical-Cultural Theory and the Teaching Guiding Activity, which aim to explore the content beyond "connect the dots".

**Keywords:** Teacher Training. Supervised Internship. Child Education. Mathematics Teaching.

### Formação inicial de professores que ensinam matemática: ampliando o processo formativo para além do "ligue os pontos"

### Resumo

Neste trabalho, objetiva-se apontar proposições sobre a prática pedagógica a partir de estudos desenvolvidos na disciplina de Estágio Curricular Supervisionado na educação infantil com conceitos matemáticos, diante do cenário atípico da pandemia de Covid-19, que assolou o mundo. Discute-se o papel atribuído à educação nesse contexto e se reafirma a indispensabilidade da escola e do ensino à apropriação dos conhecimentos elaborados pela humanidade e sua função essencial à constituição das novas gerações. A metodologia consiste em uma intervenção realizada com uma turma com crianças de 3 a 4 anos de um Centro de Educação Infantil, com base no conteúdo de medidas padronizadas e não padronizadas de comprimento, massa e capacidade através de ações de ensino pautadas na Teoria Histórico-Cultural e na Atividade Orientadora de Ensino, as quais objetivam explorar o conteúdo além do "ligue os pontos".

**Palavras-chave:** Formação de Professores. Estágio Supervisionado. Educação Infantil. Ensino da Matemática.

## 1 Introduction

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From the end of 2019 until the second half of 2021, education, like all social spheres, was faced with the need to undergo numerous changes and adaptations due to the Covid-19 pandemic, caused by the SarsCoV-2 virus. From early childhood education to higher education, educators searched for strategies that could somehow ensure the continuity of the schooling process.

Social distancing and isolation became necessary as a way of preserving lives. This brought challenges that we teachers had never experienced before. For this reason, and without any prediction of when things might normalize, measures began to be implemented that were planned jointly by education and health authorities, teachers, principals, supervisors, collegiate bodies, representatives, etc. One of these measures was the regulation of Emergency Remote Education (ERE) as a continuation of school work, even though, according to some educators (Cunha, *et al.* 2020; Saviani; Galvão, 2021), this was not the best form of education.

Most educational institutions, both public and private, have adopted the ERE, in accordance with the provisions of Provisional Measure No. 934, of April 1, 2020, which was converted into Law No. 14,040, of August 18, 2020 (Brasil, 2020). Based on this decision and with a view to continuing training activities in a non-face-to-face manner, the Pedagogy course at the State University of Maringá (UEM) sought to organize the supervised internship. But is it possible to reflect on the internship through online platforms and applications? How could we think about pedagogical intervention while many students had not had the opportunity to experience a classroom?

Faced with these challenges, the university's classes started to be held online. Equipment, internet access cards and digital teaching materials were distributed to students who didn't have their own means to attend classes. In the institutional spaces for

early childhood education and primary education, classes also went online and printed materials were distributed so that students could carry out activities on the programmed content at home.

During this pandemic, many teaching activities were carried out and, by socializing them, we highlight the role of education in society. To this end, in this article we report on one of these actions, which points to the partnership between the university and basic education in the human formation of professionals and students. This experience report aims to present propositions about pedagogical practice based on the studies developed in the discipline of Supervised Curricular Internship in early childhood education with mathematical concepts, in the face of the atypical scenario of the Covid-19 pandemic, which has devastated the world. As internship professors, we followed the movement made by pedagogy students and basic education schools in the search for temporary possibilities to continue the teaching and learning process.

In organizing the report, we first discuss the supervised internship and its implications for initial teacher training, given the limits and possibilities that the ERE has brought to education. Next, we address periodization, highlighting the relationship between child development and the ways of organizing pedagogical procedures for learning elaborate culture, according to the Historical-Cultural Theory. Next, we report on an intervention carried out with an Infant 3 class at a public Early Childhood Education Centre, using the content of standardized and non-standardized measures of length, mass and capacity, based on the theoretical-methodological Teaching Guiding Activity (AOE) developed by Moura *et al.* (2011).

With this report, we hope to contribute to discussions about the organization of mathematics teaching in early childhood education, as it is essential for teachers to work with this stage of education, aiming for human formation and the development of all those who enter the school.

## 2 The supervised internship, early childhood education and the pandemic

The Supervised Curricular Internship is the first experience of teaching for many students and provides the opportunity for observations and work in the classroom that enable them to understand and learn about everyday school life. In addition, it is a compulsory curricular component, in compliance with the National Education Guidelines and Bases Law (LDB) No. 9.394/96 (Brazil, 1996), for teacher training courses. This component is recognized by authors (Broering, 2008; Pimenta; Lima, 2017) as indispensable to the teacher training of academics, as it helps to build their professional identity.

Broering (2008, p. 110) points out that "[...] the internship should be seen not only as a field for applying knowledge, but also as a field for producing knowledge", which influences the training of future teachers. In view of this, the author summarizes, "the internship, as part of the teacher training process, can only be a personal adventure, which presupposes choices and involves inner and outer journeys" (Broering, 2008, p. 128).

In this sense, the internship is an "opportunity to learn about the teaching profession and build a professional identity" (Pimenta; Lima, 2017, p. 99). This opportunity provides an understanding of the elements present in teaching; therefore, it is necessary to break with the beliefs that the internship is just a bureaucratic requirement and recognize it as a formative possibility.

Given this relevance to the training of future teachers and the context of the pandemic, we sought to adopt temporary measures that would contribute to the learning of academics and students in basic education. Even with major uncertainties and challenges in the organization of internships, education could not exempt itself from participating and intervening in society and students, because, as Arruda (2020) points out:

Education is of the utmost importance at any time, and even more so in times of unprecedented health crisis. Therefore, deciding on the inoperability of the school could mean not only the weakening of this institutional space, but also the promotion of a wide range of inequalities, since being away from the school, but in daily contact with its pedagogical actions, is less harmful than not being in contact with the school at all over many months of confinement (p. 264).

Thus, with the intention of "strengthening the public and universal nature of education" (Arruda, 2020, p. 274) and highlighting the need for its existence, possibilities for action had to be realized through teaching. Among these possibilities, we highlight the importance of the internship, "[...] in its theoretical and practical foundations, being this space for dialogue and lessons, for discovering paths, overcoming obstacles and building a way of moving forward in education in order to favor better learning results for students" (Pimenta; Lima, 2017, p. 117).

In this study, we advocate, through the assumptions of the Historical-Cultural Theory, that education should not fail to fulfill its social function, guaranteeing teaching that promotes psychological development for all students, regardless of their conditions, as we discuss below.

### 3 Knowing and intervening in teaching practice

We began the supervised curricular internship by proposing the study of authors and texts that discussed the role of the pedagogue, the importance of systematized and intentional teaching, and the appropriation of scientific knowledge in such a way that it had meaning and significance for the teacher and, especially, for the student. We asked the students to interview teachers who were working in the schools, so that they could see the complexity of planning for hybrid or online classes, without losing focus on children's development. With each lesson and discussion, their understanding of the role of teachers and the need for intentional, planned teaching grew.

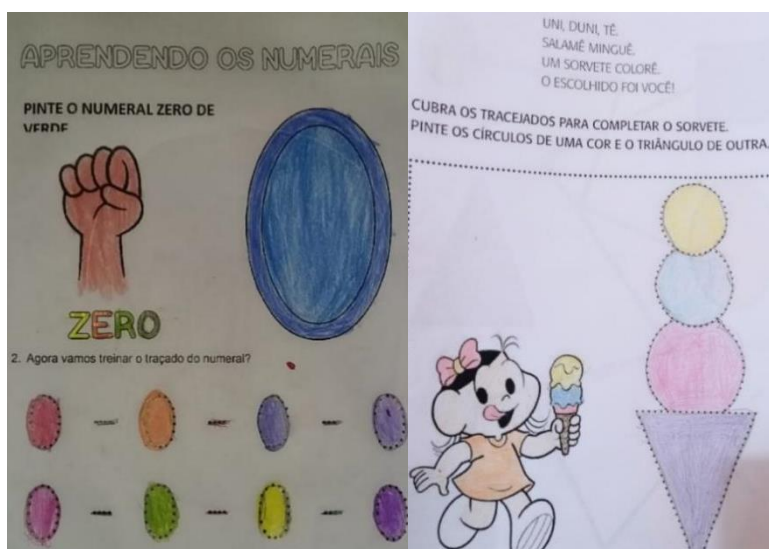
Study groups, workshops and analysis of online or video lessons were held in an attempt to reconstruct the teaching and learning scenario. The students entered the Municipal Early Childhood Education Centers (CMEIs) virtually. Almost all the stages of the supervised internship, which would be experienced in face-to-face teaching, were done virtually, such as: interviewing the staff, recognizing the institution, analyzing the Pedagogical Political Project and planning. The pedagogical team scheduled an interview, recorded videos introducing the CMEIs and the teachers in charge of each class, but

without any direct contact with the students. As they are very young, the Department of Education decided that teaching would continue by sending printed activities to the students every two weeks and, when necessary, some videos with guidance for families and guardians.

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Each teacher designed activities based on a repertoire of content defined by the teaching team. Some teachers worked collectively, while others chose to plan separately. When we started with the academics, we came across the organization at the CMEIs and realized that concern for the child and their development, as well as their specificities, was being sidelined, since the emphasis was only on printed, disconnected activities. Families and those responsible for the children would go to the institutions and collect, from the teachers, a collection of printed tasks that had to be done at home and returned to the school for correction. In these tasks (Figures 1 and 2), commands to paint and connect the dots predominated, as can be seen in the following examples.

**Figures 1 and 2** - Examples of activities sent home to students



Source: The authors.

The tasks did not allow students to reflect on and analyze knowledge. The commands contained ready-made content and were carried out by the students through



mechanical and reproductive actions. These tasks practically disregarded the content and the students' higher psychic functions.

Leaving scientific content in the background means removing from teaching the possibility of contributing to the development of cognitive capacities in students that allow them to analyze reality not only in terms of what it is, but also in terms of what it can become (Sforni; Galuch, 2006, p. 155).

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We understand that there is often a demand from society for more and more homework to be done as proof of the work being done. However, when we only emphasize tasks like these, we lose the essence of school or, as Saviani (1985) warns, we occupy most of our teaching time with ancillary activities, distracting us from the true role of education.

In fact, this deviation is the norm in our schools today: from the exaltation of the '64 movement to curiosity about the indigenous people, from the veneration of mothers to June festivals, from tributes to soldiers to the cultivation of folklore and praise for children, there is time for everything at school, but very little is allocated to the process of transmitting and assimilating scientifically developed knowledge. This situation must be reversed. You pedagogues have a great responsibility in this effort to reverse it. As specialists in school pedagogy, you have the task of working with scientifically-based content, organizing it in the forms and methods most conducive to its effective assimilation by students (Saviani, 1985, p. 3).

In view of this, we understand that the curricular supervised internship is not intended to reproduce the pedagogical practice observed in schools. As Almeida and Pimenta (2014, p. 29) point out, the supervised internship is "a field of knowledge that involves studies, analysis, problematization, reflection and proposing solutions for teaching and learning, and which includes reflection on pedagogical practices". The teacher's work when organizing teaching actions needs to be situated "in social, historical and cultural contexts" (Almeida; Pimenta, 2014, p. 29).

From this perspective, the intervention reported here was carried out with a Kindergarten 3 class at a CMEI, with the mathematical content of standardized and non-standardized measures of length, mass and capacity. In organizing the pedagogical intervention, we considered, based on the studies carried out in the supervised internship course, that the teacher needs to study the subject and look for the best strategies to teach

it. In this specific case, we can't ignore the fact that children have relationships with standardized and non-standardized measures of length in their experiences inside and outside of school.

This is important for planning activities because, as Leontiev (2006, p. 63) points out, there is "[...] dependence of psychic development on the dominant activity and not on the general activity". In the author's view, at each stage of development, there is an activity that directs the child's learning. This means that it is necessary to organize teaching situations linked to the activity that dominates children's development at that stage of education, i.e. that guides the learning of new knowledge in each period.

Studies and experiments developed by the Historical-Cultural Theory point out that the discussion of the concept of activity that guides each period of child development "[...] aims precisely to provide the educator with subsidies for a more precise intervention" (Pasqualini, 2011, p. 67). Thus, analyzing the evolutionary particularities of the stages and periods of child development provides teachers with psychological foundations and pedagogical principles to guide the teaching of early childhood education.

Based on these assumptions and knowing that the children in Kindergarten 3 have manipulative-object activity as their guide and role-playing as an accessory line, we began to reflect, with the students, on the tasks sent home and realized that, although they could contribute in some way to learning, they disregarded the specificities of child development.

Our intention was to overcome the limits of these tasks and provide something that could significantly advance development. For this reason, we worked together on planning, discussing what we could do to expand the possibilities for teaching and learning, based on the Teaching Guiding Activity developed by Moura *et al.* (2011). The students suggested using children's literature and, given the content to be worked on, they selected the story "Guess how much I love you", by Sam McBratney (2018).

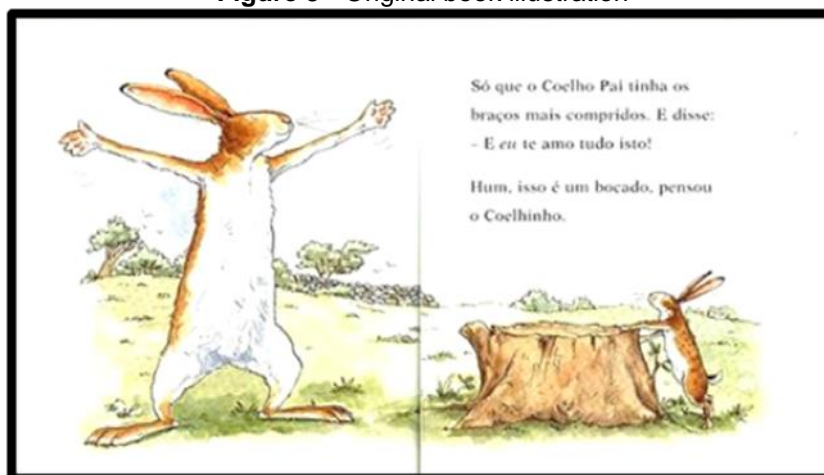
The proposal was to prioritize learning activities that would allow children to manipulate different objects and reflect on the concepts of standardized and non-standardized measures of magnitude. Concerned with considering the specificities present in the manipulative-object activity, we sought to guarantee the children of Kindergarten 3,



based on guidance from their teachers and families, social procedures for acting with objects, including mathematical concepts.

During remote planning, the idea arose to problematize some of the images in the book to suggest that some of the actions carried out by the characters could also be done at home with the children. With the help of the head teacher, we guided the families through videos recorded taking into account the specificities of remote teaching and the children. In the first orientation video recorded by the students, we highlighted the general characteristics of the characters based on the central question of the story: "Guess how much I love you?". Based on this question, the suggestion was for the family to present the following image from the book.

Figure 3 - Original book illustration



Source: Sam McBratney (2018).

After reading this page, the family should draw the child's attention to the Father Rabbit stretching out his arms and propose a comparison between the arms of a family member and those of the child, in other words, the proposal was to open his arms as the Father Rabbit does in this image and make a comparison. The intention was to get the child to compare the length of their outstretched arms with the length of the outstretched arms of someone else in the family and observe the direct relationship between the sizes. As Lorenzato (2011, p. 55-56) points out, in the process of measuring,

[...] children have a long way to go, starting with comparison, based on visual perception and estimation. As they prefer direct comparison, children often use the displacement of one object on or next to another and, in this action of moving objects in space, they admit that they can change size. In short, at this stage, "to measure is just to put and see": the comparison is direct and without a unit of measurement.

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To ensure that the children could overcome this direct way of measuring, the academics provided various objects in a bag along with the literature book. The bags, which were produced and sent to the children's homes, contained a photocopy of the book, ribbons and string of different lengths and textures, matching pieces, paper and various pens, as can be seen in Figure 4.

**Figure 4** - Bags with materials that were sent home



Source: The authors.

The trainees recorded videos to show the families the need to talk to the children, question them and not just hand them the bag. They suggested asking the children how they could use these objects to measure the length of their outstretched arms, manipulating and exploring the characteristics of string, ribbons, etc. The idea was to ask the children to

choose an object and explain how they could use it to measure the lengths of their outstretched arms.

In one family's narrative, a child ended up choosing a piece of tape to measure the length of his mother's outstretched arms. As the length of the tape was longer, the child made a mark with the pen provided by the trainees. In this case, the mother reported that it was necessary to ask the question "Who loves more, me or you?". In addition to this question, the mother asked the child if the tape used to measure her outstretched arms could also help her measure the size of her arms. Faced with this question, the child manipulated the objects in the bag and selected another tape. This action on the part of the child shows that she has not yet understood that, in order to determine which arm is longer, the same piece of string must be used. This required further intervention on the part of the family, based on guidance from the trainees, as it is necessary to enable children to make

[...] indirect measurement, that is, [when] they realize that it is possible to discover differences between two objects, A and B, by making two comparisons of them with a third object C (any unit), that is, A with C and B with C, and not A directly with B, as they did in the previous stage (Lorenzato, 2011, p. 56).

According to Lorenzato (2011), the process of measurement requires comparing two elements using a third object or instrument as the unit of measurement. This approach proposed by Lorenzato (2011) was reproduced by the students in the problematization of the images in the book, which we present below.

Figure 5 - Other illustrations from the book selected by the students



Source: Sam McBratney (2018).

The trainees told the families to first read this page and then the child and adult should raise their arms like the rabbits did in the illustrations. At this point, they could ask the children: "Who do you love more, me or you?". The rabbits say: "And I love you all my height". The challenge for the children was to relate the measurement of their height to that of the adult accompanying them and compare who they loved more. The solution presented by one of the Kindergarten 3 children was to outline their body (Figure 6) to see who was taller. This way of recording height comparisons is not the most efficient or accurate, but it is a solution.

**Figure 6** – Representation of the measurement taken.



Source: The authors.

Each week, the trainees were able to expand the problematizations, showing the need to question the children and get them to think about the relationship between the objects. Over the course of the internship, the interventions needed to be more specific, as the photos that the families sent indicated that some aspects needed to be pointed out. In the case of Figure 6, we suggested that the child be asked about the point of reference considering the feet of the subjects represented in the drawings. The solutions presented were sent in conversations via the WhatsApp messaging app.

These actions represent a starting point in the study of concepts about standardized and non-standardized measures of length, in other words, they were opportunities created for children to think about these relationships from early childhood education.



We would point out that this whole process required a lot of pedagogical work, without losing sight of the specificities that govern the students' psychological development. During the course of the work, with the bag at home, the children began to want to go to the CMEI to look for other activities, showing that they were motivated by different things. They said: "What's different today for us to take home to study?".

We realized from this report that the internship brought a lot of learning to the future teachers, different from that made possible by classroom teaching. After all, recording videos with explanations, selecting materials, answering messages, analyzing photos sent, thinking of different continuities for each family, as well as planning without knowing the child personally, based only on theoretical studies, was an undeniable learning experience. At the end of the internship, the students evaluated the training process and highlighted some of the difficulties and lessons they had learned:

*Trainee 1: "Without this internship opportunity, it would have been very difficult to start a career without the knowledge that this course has given us. In this way, I end the course with a feeling of learning and thanks to everyone who contributed to my learning/development."*

*Trainee 2: "It wasn't easy, people. We temporarily moved our classrooms to the internet. We developed our internship, trying to go to the school where it is today, and at the moment it is on the screens of electronic devices, bringing knowledge to the students through online resources and trying in every way to meet the individual needs of each one. It was an unforgettable experience because, in the midst of all the social isolation, being able to be with the students and see the smiles on the faces of those learning something new was significant."*

These accounts show what all of us educators feel in the face of the moment of uncertainty and social and educational challenges that the pandemic has caused: the need to continue teaching. The measures taken in education have been and will be temporary. School, especially early childhood education, is face-to-face, but at this time it couldn't be. We looked for strategies to overcome printed activities, combining theory and practice, getting to know other forms of teaching, in order to react to the problems. Despite so many difficulties, with successes and new possibilities, the children had access to mathematical knowledge that can only be appropriated when it is organized intentionally, systematized and contextualized by a prepared teacher.



## 4 Conclusions

The experience report presented here points out propositions about pedagogical practice based on studies carried out in the discipline Supervised Curricular Internship in early childhood education with mathematical concepts, in the face of the atypical scenario of the Covid-19 pandemic, which has devastated the world.

This scenario caused different reactions. Some argued for the school year to be interrupted, others for it to continue, and still others proposed sending printed activities or lessons via internet apps, etc. There were many proposals without a consensus on the best one - if there was a best one.

Our decision was to participate in the daily life of the CMEIs at this time, with their dilemmas and challenges. Initially, we analyzed what was available at the time - printed tasks - and found, from our studies and discussions, that this would not be the most appropriate way to achieve the goal of providing teaching aimed at creating social and cultural conditions capable of exploring the guiding activity, influencing each period of development more directly.

The teaching activities carried out during the internship were designed to explore teaching activities beyond "connect the dots" and promote the manipulation of various objects, with a view to perceiving the social uses of standardized and non-standardized measures of length, mass and capacity in various contexts. The aim was to expand the possibilities for developing other mental functions in children.

With this report, we don't wish to advocate that remote teaching replaces face-to-face teaching, quite the contrary. However, we cannot deny that some of the actions developed during the pandemic can be maintained when students return to school.

We believe that looking for strategies to teach young children in the face of the pandemic has been a challenging learning experience that has materialized, in a concrete way, some opportunities to reduce the impacts and damage in the pedagogical sphere, reaffirming the need for education and teachers.

## References

ALMEIDA, M. I.; PIMENTA, S. G. Centralidade do Estágio em cursos de Didática nas Licenciaturas: rupturas e ressignificações. In: ALMEIDA, M. I.; PIMENTA, S. G. (Orgs.) **Estágio Supervisionado na Formação Docente: educação básica e educação de jovens e adultos**. São Paulo: Cortez, 2014.

ARRUDA, E. P. Educação Remota Emergencial: elementos para políticas públicas na educação brasileira em tempos de Covid-19. **EM REDE Revista de educação a Distância**. Universidade Federal de Minas Gerais, v. 7, n. 1. p.257-275, 2020.

BRASIL. **LEI Nº 14.040, DE 18 DE AGOSTO DE 2020**. Disponível em: <https://www.in.gov.br/en/web/dou/-/lei-n-14.040-de-18-de-agosto-de-2020-272981525>. Acesso em: 22.mar.2022.

BRASIL. **Lei n. 9.394, de 20 de dezembro de 1996**. Estabelece as diretrizes e bases da educação nacional. Diário Oficial da União, Brasília, DF, 23 dez. 1996.

BROERING, A. de S. Quando a creche e a universidade se encontram: histórias de estágio. In: OSTETTO, Luciana Esmeralda (org.). **Educação Infantil: saberes e fazeres da formação de professores**. 4 ed. Campinas: Papirus, p. 107-126, 2008.

CUNHA, L. F. F.; SOUZA S. A.; SILVA, A. P. O ensino remoto no Brasil em tempos de pandemia: diálogos acerca da qualidade e do direito e acesso à educação. **Revista com censo: estudos educacionais do Distrito Federal**, v. 7, n. 3, p. 27-37, 2020.

LEONTIEV, A. Uma contribuição à teoria do desenvolvimento da psique infantil. In: VIGOTSKI, L. V.; LURIA, A. R.; LEONTIEV, A. N. (Org.). **Linguagem, desenvolvimento e aprendizagem**. São Paulo: Ícone, p. 59-83, 2006.

LORENZATO, S. **Educação infantil e percepção matemática**. 3ª ed. Campinas: Autores Associados, 2011.

MCBRATNEY, S. **Adivinha quanto eu te amo**. 1ªed, São Paulo: Martins Fontes - WMF, 2018.

MOURA, M. O. *et al.* Atividade Orientadora de Ensino: unidade entre ensino e aprendizagem. **Diálogo Educacional**. Curitiba, v. 10, n. 29, jan./abr., p. 205-229, 2010.

PASQUALINI, J. C. A educação escolar da criança pequena na perspectiva histórico-cultural e histórico-crítica. In: MARSIGLIA, Ana Carolina Galvão. (Org.). **Pedagogia histórico-crítica: 30 anos**. Campinas, SP: Autores Associados, 2011.

PIMENTA, S.G.; LIMA, M.S.L. **Estágio e docência**. 8ª ed. São Paulo: Cortez Editora, 2017.

SAVIANI, D.; GALVÃO, A. C. “Educação na Pandemia: a falácia do ‘ensino remoto’”. **Universidade e Sociedade**, ANDES-SN - Ano XXXI, Nº 67, janeiro, p.36-49, 2021.

SAVIANI, D. Sentido da pedagogia e papel do pedagogo. **Revista ANDE**, São Paulo. nº 9, p.27-28, 1985.

SFORNI, M. S. F.; GALUCH, M. T. B. Conteúdos Escolares e Desenvolvimento Humano: Qual a unidade? **Comunicações**. Piracicaba, ano 13, p. 150-158, 2006.

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