



Practices seen from the perspective of the teacher practitioner: a critical reflection on the role of the teacher tutor

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Abstract

The teaching practices of the future teacher are a key moment in initial training, constituting a space for teaching and learning where confrontations between theory and practice take place. This section presents a critical reflection from the perspective of the teacher practitioner, focusing on the role of the teacher tutor in the training of future teachers. Pedagogical and didactic aspects of the teaching and learning process of the future teacher in the subject of Mathematics are analyzed, as well as evaluation and formative accompaniment. The integration of diversity and attention to special educational needs in the teaching of mathematics, although present in various curricular documents and in the concept of inclusion, is not sufficiently implemented in practices.

Different pedagogical and didactic approaches are applied during the training process of the future Mathematics teacher, exploring theoretical and methodological concepts that contrast with the aspects of mathematics education practice. The evaluation and training support of future teachers in this degree have their own characteristics that allow their analysis and evaluation, considering the instruments used and their results. Attention to diversity and inclusion in the Mathematics classroom is a recurring theme, addressed in numerous instances, however, it is not always implemented in the different initial training courses.

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Introduction

The issue of teaching practices is a complex issue. In the training of a future teacher, what the student experiences in his or her professional practice becomes one of the most important aspects, since the institution provides the role of the tutor teacher to the student. In this way, the following question is presented: what is the role played by the tutor teacher in mathematics education? This inquiry is relevant because the training of future teachers is not limited to a single subject, but covers aspects of psychology, special education, mathematics, etc. However, the future teacher has in the tutor teacher the possibility of seeing how the teaching of mathematics in the classroom is materialized.

The objective is to critically reflect on the teaching practice of the tutor teacher who guides the training of future teachers in the subject of mathematics education. To this end, the practices of a teacher with a track record and experience in the supervision and accompaniment of future teachers in the subject of mathematics education are described. The statements are based on the analysis of the written records of the practicing teacher about these experiences. In this sense, information is included on the pedagogical approach, the evaluation and formative support activities of the future teacher and the emphasis on inclusion and diversity in the teaching of mathematics.

Conceptual framework

Teaching practices are the concrete expression of teacher training. The practice carried out in the classroom by the teacher who is in the process of training – the practising teacher – is of utmost relevance and constitutes a key stage in his or her training journey. The tutor teacher, who accompanies and supervises the teacher in training, plays a central role and his or her conception of practice determines, to a large extent, the quality of the training and professional development of the future teacher. This conception is put into play from the critique of the process of observation and analysis of mathematics classrooms carried out during training and which, crossed by the relationship with the tutor and by the development of activities in the teaching of mathematics, allow reflection on the teaching and learning of the discipline.

Supervised practice and its accompaniment constitute a space for training and professional development for the future teacher – the tenacious one. For the tenacious, practice is a space for staging what they have learned and what they have been convinced of. For the tutor, the practice is a space of transferences, in both directions. The relationship between the two connects the experiential and cognitive experience in the teaching of mathematics with the disciplinary training that both undertook, that the tenacious continue to carry out and that the tutor exercises and supervises in practice.

Description of the practices of the teacher practitioner

The practices of the teacher practitioner focus on the observation and analysis of teaching work in classrooms of different educational levels, and are developed under the supervision of a tutor teacher. The latter is a teacher in charge of a group of students in a formal educational institution, whose role is to supervise, accompany and evaluate the teaching practice of a future teacher. The design of the observation process and the analysis of the teaching activity in the classroom fall to the practising teacher, who becomes the link between the tutor teacher and the students, who are responsible for the teaching practice.

For the future teacher, tutoring represents the possibility of a transfer of practices. Permanent contact with a teacher who is in charge of a group of students, and who accompanies their training and development on a daily basis, allows the modeling of professional performance. However, it is not an easy task. The daily work, the intense workload, the difficulties associated with meeting the demands posed by the diversity of the students, and the pressure for strict compliance with the programs, constitute a challenge for the tutor who, in addition to his commitment to his students, must be prepared to accompany and support a future teacher during his training.

Classroom observation and analysis

Teaching practices are the training spaces in which the future teacher puts their knowledge into action, assuming the role of teacher in a training context that allows observation, reflection, discussion and critical analysis of professional practice. The critical analysis is justified by the need for growth of the future teacher and the tutor teacher. The future teacher's gaze is developed in the observation of the teaching of mathematics, especially in the actions of their peers and with the classroom as a focal element. The observation process is carried out within the framework of the activities of the Bachelor's Degree in Mathematics and includes the development of a series of Mathematics classrooms at the initial level.

The observation of the teaching action takes place in a teacher training institution, in which the students of the Initial Education career are in their practical training stage. At this time, students go through the experience of being tenacious in the classroom and are accompanied by a tutor teacher, who fulfills the role of supervisor and evaluator. The concern arises from the realization that the future Mathematics teacher, in this training space, witnesses the transfer of academic knowledge towards inclusive practice. Describing this experience of observation during the training and the action of the tutor teacher in mathematics education offers information on the accompaniment they provide to the future teacher on their way to inclusion in the classroom.

Training and professional development

The internship of the intern teacher is determined by the process of training and professional development that he or she receives during the career. This process is developed from the curricular design of the degree, the programs taught by the team of teachers in charge and the activities that are proposed to future teachers in the different contexts in which they perform their functions. In this sense, the following are the programs and activities that the teacher practitioner should carry out, the time he dedicates and the consequences he perceives from such training.

Training is understood as the training received by future teachers who are in charge of a class and who are preparing to be classroom teachers; by professional development to the guidance, support and supervision they receive in practice before having graduated. Throughout the career, training and professional development are combined at different points in practice. The training-related programmes are: the Teaching Practice Programme, the Teaching Implementation Programme and the Teaching Observation Programme.

Professional practice throughout the career

The professional practice of the future teacher is developed throughout the career and

covers different spaces. The first approaches to the classroom are through observation; subsequently, the future teacher becomes the support of the tutor, gradually assuming the role of teacher in recent years. The evolution in this activity is accompanied by learning that has led to changes in the way practices are faced. This process can be described from the most important milestones.

During observation, the gaze is not passive. An analysis of the observed classes is carried out and, in particular, the decisions of the tutor, the students and the texts are investigated. All the information is recorded in an observation folder, where theory can be contrasted with practice. This stage is an opportunity to observe and analyze classes from various areas in a systematic way. The observation is articulated with intense training and reflection on inclusion, based on a theoretical framework that addresses inclusion in the teaching of mathematics.

Mentoring is a difficult phase. The future teacher finds himself in front of a group of students with whom he has not been able to create a bond, so he is still indifferent to them. The evaluation of this practice is carried out from the observer's window. The first teaching practice focuses on the approach to inclusion and, although what has been learned is applied, the future teacher cannot yet put it into practice, since the experience of the students plays a preponderant role in creating a climate of trust.

Role of the tutor teacher in mathematics education

The tutor plays a fundamental role during the training of the practising teacher in professional practices. Their functions include the supervision of the activities carried out in the classroom, the accompaniment of the teacher in training throughout this experience and their evaluation. The relationship established with the future teacher has a special character, since he or she is the person who, from experience in teaching practice, will connect the training cycle with the graduate's performance as a basic education teacher. In this way, a transfer process is achieved in which classroom practices and theoretical knowledge feed back into each other. Along with this aspect of guardianship, the tutor has the responsibility of modeling his or her performance, and through this action contribute to guiding the training of a professional who, always within his or her personal style, manifests an ethical commitment to the act of teaching and to the comprehensive training of his or her students. This responsibility of the tutor, and the different way in which he exercises it in each case, gives rise to learning for both the student who practices the teaching and the teacher who exercises the tutoring. This is particularly clear in mathematics education.

The conception of mathematics that is taught in the practicing teacher, the pedagogical and didactic approaches that are put into practice, as well as the processes of evaluation and formative accompaniment that are applied, derive mainly from the perspective of the teacher who is in front of the classroom. In this sense, teaching practices are also a valuable source of information, although not the only one, for critical reflection and learning by the tutor.

Roles and responsibilities

The functions of the tutor teacher cover aspects such as supervision, accompaniment, evaluation and the relationship with the future teacher. Tutoring is not limited to the

evaluation of the work of the tenacious, but includes accompaniment in the teaching-learning process. In addition to the observation and evaluation of the various activities that the tenacious one presents, there is the task of supervising, accompanying and evaluating the final work process. The tutor-tenacious relationship is not merely evaluative but should be oriented as far as possible to the transfer of classroom practices to the future teacher; therefore, it should be a space to model the performance of the tenacious.

Tutoring is especially significant in accompanying practice in the area of mathematics. In the context of a discipline that in itself is a source of inclusion and exclusion, the tutor must remain attentive to the aspects of inclusion in the approaches of the tenacious, to the barriers that arise for the different groups of students in order to be able to guide the tenacious in generating teaching environments that contemplate the diversity of students and that favor in all the possibility of learning and enjoying of mathematics.

Tenacious tutor relationship with the future teacher

The relationship established by the tutor teacher with the tenacious teacher in training is essential for the practice of teaching mathematics to become an object of research for the future teacher. For this relationship to fulfill its function, it is necessary that the tutor is not only in charge of supervising, accompanying and evaluating the teaching of the tenacious, but also shares his knowledge and experiences. The transfer of practices thus becomes one of the main objectives of the tutor-tenacious relationship. Therefore, it is key that the tutor acts in the classroom so that the future teacher turns his gaze towards this practice. In this sense, Crubellate states that "one of the ways in which practice constructs knowledge about teaching is for the teaching action of the teacher in training to be a field of observation for others" (2009, p. 154). At the same time, the tutor becomes a model for the tenacious trainee, who can observe, analyze and discuss the performance of the tutor teacher according to the proposal he or she carries out. The tutor-tenacious relationship should encourage the future teacher to observe, analyse and discuss the practice of teaching mathematics according to the objectives set out in the theoretical spaces of the training, taking into account the principles of mathematics teaching and the diversity of the classroom.

This relationship between the tutor and the tenacious also faces challenges that generate significant learning for the tutor teacher. It is possible that the tutor observes a practice that is far from the principles that guide his own teaching, which may awaken in him the need for reflection and reanalysis of his practice in the classroom. This reflection can lead to an awareness of the importance of including all students in the proposal and to the search for strategies that favor the learning of those who present more difficulties.

Challenges and learnings

Throughout the career, different opportunities have arisen to put into practice what they have learned in the specialty subjects. Each of these experiences, in different contexts, contributed something, even if it was not easy or enjoyable. In the beginning, the guards were greater; then, the perception of risk was modified. The fear of not being able to answer the questions, situations or proposals raised was no longer there. The difficulties were present, but with a different look, and the attitude was changing. In the activities that were not satisfactory, the learning lay in being able to propose what would be done differently.

The first experience in the teaching of a Mathematics curricular space was in a third year of middle school. It was taught in double schooling and the relationship with the students was good. Despite this, it was the space that generated the most demotivation, since the contents were considered empty and alien to reality, which was manifested in the lack of interest and in the results obtained in the evaluations. From then on, work was done to make Mathematics more enjoyable, and the following experiences were in fourth and seventh grade of primary education. At this level, the way of teaching was different; In addition, the teacher in charge of the practice space and the face-to-face support in the classroom of the tutor teacher facilitated the bond with the students, who were more receptive than at other levels.

5. Critical perspectives from the experience of the bachelor's degree in mathematics

During the course of the career, observation activities have been carried out in primary and secondary education classrooms; teachers have been seen in action and these situations have been analyzed. Different kinds of mathematics have been analyzed, but the analysis is not limited to those subjects. In the accompaniment in the practices of future mathematics teachers, we have tried to be attentive not only to the classes they teach, but to all of them. The focus has been, first of all, on knowing how and what the tutor teachers have learned and what the future mathematics teaching teachers have learned.

The pedagogical and didactic training of future mathematics teachers has been based on the project-based model and research as the main teaching strategy. They have carried out one project per year, in groups of four to six people. In the process of developing the projects, they have had three fundamental learning spaces: the research space, in which they searched for and analyzed information; the space for the design of the proposal, in which they developed the activities and the necessary material; and the implementation space, where they applied the activities designed in the schools and carried out the evaluation. In the last years of the degree, complete mathematics classes have been designed and put into practice.

Pedagogical and didactic approaches

The pedagogical and didactic approach used by the tutor in the training of the future teacher is of utmost importance for the professional development of the person who is starting his career, but also for the teacher at the level at which he or she is being trained, as it is a first teaching experience. This future teacher is carrying out, in a way, his first teaching practices. This future teacher is carrying out, in a way, his first teaching practices. The type of teaching that is carried out in these classrooms, and that is subsequently observed in other classrooms, cannot be independent of the teaching principles that are constituted throughout the training.

The supervision and evaluation of the work carried out by the future teacher plays a fundamental role in the training process. The supervision model used, the communication channels established, the instruments used to evaluate the teaching process and results, are aspects of great importance. The issue of inclusion and diversity, which becomes crucial in the teaching of mathematics, translates into the design of inclusive practices, the identification of barriers to learning and the search for strategies to overcome them.

Evaluation and training support

The evaluation process and training accompaniment of future teachers is an essential function of the tutor teacher. Future teachers practice in mathematics teaching situations that, in general, are not in accordance with the principles of teaching and learning in mathematics; This, added to the little or no professional development in mathematics didactics, can make the classroom practice of student-tutors a space where teaching practices far from inclusion and diversity are replicated and reinforced. Therefore, the attention that can be given to them is crucial, since they are part of the first real teaching experience and are an opportunity to validate, build and/or modify their practices in these areas.

The evaluation of future teachers in their internships is carried out by a tutor teacher and a supervising teacher. The former assumes responsibility for formally evaluating them, while the latter carries out a follow-up more focused on accompaniment, guidance and training. This division of functions does not exempt tutors from the responsibility of accompanying the practice, but this is not its main axis. Although the formal evaluation process is planned in an evaluation notebook with descriptors, there is no single evaluation instrument that governs it, but each tutor uses his or her own approach and instruments, as well as the criteria he or she considers most appropriate. This responds to a relationship of trust with the future teacher, in which the evaluation is not merely formal.

Emphasis on inclusion and diversity in mathematics teaching

The approaches used in the practices by the tutor teachers who work in the area of mathematics teaching, from the point of view of the future teacher, show that not all teachers comply with the principle that inclusion must be an integral and fundamental part of teaching. In several of the classrooms observed, an apparent inclusion was made, but it was far from effective. The presence of some students with learning difficulties in the subject became a hindrance or a distraction for the rest of the group, who were not really included or comfortable in these activities, and the teacher was not able to perceive it. In others, the barriers that existed in teaching were recognized and tried to modify them through the necessary resources and adjustments in the tasks, although the final result was not as expected, since inclusion went beyond ensuring that all students ended up doing the activity and that the result was correct.

Finally, in other classrooms, it was observed how the teacher was aware that the needs of all students were not being met and that barriers to learning were being generated. Even so, the teacher did not have the resources and strategies necessary to make it effective. In this way, the future teacher could rethink the relationship between diversity and the learning and teaching of mathematics, as well as the way in which training activities are being processed and the type of materials that are being used, so that they effectively adhere to the characteristics of each one and improve inclusion and diversity in mathematics classrooms.

Implications for teacher education

The findings presented and the contrast between theory and practice allow us to propose ideas that can contribute to improving the training of future teachers, in particular, their practical experience. On the one hand, it is considered that the design of the Didactics and Professional Practice courses, especially the moments in which students must act in the

classroom, could be more linked to what is addressed in the different subjects of the career. A greater coupling would allow the integration between theory and experience to be carried out more effectively.

On the other hand, it is perceived that the task of the tutor teacher of professional practice is complex and that, although there are guidelines for their performance, they should be more explicit and complemented by accompaniment and formative evaluation that allows reflection on their fulfillment. This could require teacher education teachers to take steps towards Inclusion and diversity in mathematics teaching are axes of great relevance. These themes appear explicitly in the statements of the materials used by future teachers and in the design of the course. However, they do not always materialize in practice, although students are often aware of this and can identify barriers or difficulties. What is more uncertain is whether they have been able to transfer to their future teaching practice strategies that favor inclusion and consider diversity.

Proposals for professional practice in the curriculum

The proposal of a professional practice component in the curriculum is a recurring theme in discussions on mathematics teacher training. The experiences reported are also varied and the possibilities that their inclusion opens up for the training of future teachers are very rich. But, without an adequate design, they do not necessarily turn out to be a space for integration between theory and practice. On the contrary, they can become a space where, without realizing it, old practices are repeated and attitudes that contradict the discourse are formed. It is essential not to lose sight of the responsibility that this part of training – and especially its proposal and design – has on the future practice of teachers in training. It is not only a matter of preparing a future mathematics teacher who meets the demands of the institution or the subject, but also needs – and should be able to – do so from an inclusive approach and with attention to diversity that enriches the mathematical experience of their students.

The gaze of those who occupy the role of tutors or supervisors is also of particular importance. Their participation in the training of future teachers should be considered as an extension of their activity and not as an extra task. Consequently, the approach and proposals for improvement should include and contemplate the perspective of those who occupy these roles. Finally, the creation and maintenance of communities of practice that involve practicing teachers, their tutors and their supervisors can contribute to the improvement of everyone's practice, in a climate of trust and constant reflection.

Improvement strategies for tutors and supervisors

The opinions and arguments presented throughout the analysis of the practices are the result of the critical gaze of a teacher who is trained and who is in a stage of development and construction of his professional practice. Although the strengths and difficulties they found in the activities throughout the internships are exposed, the focus is on the figure of the tutor teacher and their performance. All the aspects that future teacher practitioners consider relevant for the training of a teacher tutor who is in charge of their training in the classroom and who is expected to meet the quality of supervising, accompanying, guiding and evaluating the training process of a future teacher.

Three themes emerged from the analysis that they considered key to contribute to the role of the tutor teacher. Firstly, the pedagogical and didactic approach assumed by the tutor teacher in the teaching practice carried out during the period in which a teacher practitioner is in the classroom. Secondly, what is the process of evaluation of the practice of the practising teacher, what instruments are used and what are the results of these evaluations. Finally, the differentiated attention to the characteristics of the teacher practitioner and their professional development in the context of teaching and learning mathematics that allow the teacher tutor to respond to the diversity of these students.

Development of communities of practice

Teacher training is a complex and long-term process, which begins in the training career and continues in professional practice. As teachers begin to practice, they approach the school with a certain vision of the teaching and learning process based on the practices they have observed, lived or suffered. These initial ideas constitute the starting point of their training process, which is not exhausted at the end of the degree but continues in professional practice. For this reason, it is important that the first connections with the world of work are established from initial training.

The implementation of a systematic community of practice structure would strengthen the training process in practices and contribute to the professional development of practitioners. Building a community of practice can take place at different educational levels and can involve different actors. The proposed community of practice could include all active teachers at a level, a sector or an area of the level. The activities that are developed will vary according to the type of training that is being carried out. In the case of tutoring, the training accompaniment carried out by the tutors and supervisors of the interns could be accompanied by a community of practice that allows exchange and reflection on the training of the future teacher.

On the other hand, at all educational levels, it is expected that interns, based on the experiences they are living, begin to develop processes that allow them to make professional decisions. In this sense, the idea is also established that the experiences they live in their practices, both positive and negative, are an important source of reflection and learning. However, in initial training they are given little opportunity to share these experiences and the meaning they give them. The implementation of communities of practice would allow practitioners to exchange information about their experiences, to reflect on them and that this process of reflection can contribute to the construction of professional knowledge that will serve them to address future experiences.

Ethical and professional considerations

The ethical aspects of professional practice are essential for the proper development of classes and the relationship with students. Every future teacher must be sufficiently aware of the great power that he has in his hands, and that it can be used for or against the students. Confidentiality is one of the rules that students should keep in mind. A teacher tells a classmate about the family situation of one of her students or some economic debt and this information spreads by word of mouth. What begins as a joke ends up being a burden for the child who suffers in silence. To be a teacher is to be responsible for the future of students. During the time they share together, their future will be in the hands of teachers.

Teachers must guide students' learning in the best possible way. There is a lot of talk about students with learning disabilities, who are not able to perform the simplest operations. But there is also little talk about the fact that many times, these problems come from a lack of motivation and lack of attention. Attention is affected by lack of concentration, which in turn is influenced by family, economic, emotional, inclusion problems, etc., and is often a vicious cycle in which the teacher is nothing more than a spectator. What can the teacher do to break this cycle? The answer is simple: many things. It is obvious that problems have to be solved at home, but the school can help to ensure that these conflicts do not affect teaching-learning. And how do you do this? Being close to each of the students, giving them the importance they deserve and supporting them in times of difficulty. It doesn't matter if the students' problems are big or small, the only thing that matters is that they are problems for them.

Conclusion

The results obtained allow us to conclude that the role of the tutor teacher in the training of future mathematics teachers in the practice of teaching is attractive and, at the same time, challenging. It is a unique moment for teacher training, since it must be a true model of teaching in the classroom. Supervision, accompaniment and evaluation are areas that require a high sense of responsibility and interest in the training of future teachers. The relationship between the tutor teacher and the future teacher becomes a privileged moment in teaching, a context where the transfer of practice and the modelling of performance are at stake. The evaluation of practice is an aspect that, in general, is blurred and implies an act of great responsibility.

The complexity of teaching and diversity in the classroom must be present in teaching practice, although they are not always materialized. Three examples are presented in the accompaniment of the practice that allow the analysis of the challenges faced by the future teacher and that also become a learning opportunity for the tutor teacher.

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