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A mathematics teacher's identity study through their teaching practices in a postgraduate training course

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Abstract: Guided by the question "Which aspects could affect mathematics teachers' identity, especially in the context of a postgraduate course that includes teaching practices as mathematics teacher educators?" we analyzed the transition between actual and designated mathematics teachers' identity in a postgraduate training course. In particular, teaching practices during the course were oriented by emerging recommendations for mathematics teacher training. We concluded that the presence of an explicit intention to develop a specific practice plays a key role in the transition between actual and designated identity. In addition, the possession of methodological tools as a means for implementing renewed practices gave support and helped practitioners to plan classes promoting mathematical activity. In the process experienced by the practitioners, mentor teacher educators were clearly significant narrators because they reinforced or hinder the desire to reach the designated identity, through their coherence with practitioner's goals or in contradiction with them respectively.

Keywords: teacher identity, professional development, teacher educators training.

Introduction

According to Beijaard, Meijer, and Verloop (2004) between 1988 and 2000 emerges the study of teachers' professional identity as a research area. An important conclusion that arises from research in this area is that the dialectical relationship between teaching practice and what teachers expect of their own performance can be explained in terms of identity. This is pointed out by several studies, driven from different perspectives of identity, about prospective teachers, teachers and teacher educators' identity (Gee, 2001; Grootenboer, 2006; Sanhueza, Penalva & Friz, 2013; Tambyah, 2008).

In this paper we analyze teachers' identity of nine qualified teachers that were attending a postgraduate training course with teaching practices performed in different teacher training institutes. By this we mean that these teachers developed their teaching practices with prospective teachers. This study will provide evidence of key aspects that influence changes in teachers' identity through their teaching practices.

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In seeking for a change in teaching practices, Goldsmith and Schifter (1997) state that teachers must have a very strong reason to undertake a teaching practice change and conclude that a key that promotes change in professional practice is teacher's motivation, which is closely related to identity. Gresalfi and Cobb (2011) studied how mathematics teachers participating in a professional development program were motivated to improve their classroom practice. These teachers were selected because they were reluctant to incorporate in their classes a new textbook oriented towards new curricular reforms. The authors conclude that a key issue for teachers who want to enhance their practices is based on the motivation to achieve teaching practices focused on students' thinking. In reference to this topic, Guskey (2002) argues that, since the aim of teaching is student learning, one way to change teachers' beliefs and attitudes consist on showing which new practices improve such learning. Guskey's "model of teacher change" suggests that such a change is not caused by the professional development programs themselves, but because they appreciate that with new practices their students will learn better.

In Molfino and Ochoviet (2015) we inquiry about the aspects that could be affecting mathematics teachers' identity configuration, focusing on elements that could give information about designated and real identity (Sfard and Prusak, 2005). We concluded that changes in teachers' identity are mainly related to the main focus teachers pay attention in their classrooms: student learning or mathematical objects. This study was carried out in the context of a postgraduate training course centered on theoretical reflections on the teaching of mathematics at the higher level at the light of recommendations of research in Mathematics Education. We pointed that "later on, this study could be complemented by other studies where changes in teacher identity are analyzed through their effective practices, since postgraduate training will be complemented with courses that include teaching practice at the tertiary level" (Molfino and Ochoviet, 2015, p. 76). Teaching practices is what we take into account in this new project.

In addition to our own previous study, we paid special attention to a paper that brought us insight to the present study: Bjuland, Cestari and Borgersen (2012). These authors analyzed the use of reflective narratives as a methodological tool that provides evidence about the teacher's professional development. Bjuland, Cestari and Borgersen identified four indicators that provide evidence of teachers' professional identity: (1) positioning in relation to students,

(2) reflecting on developing a workshop model in teaching, (3) integrating and expanding models of teaching and, (4) challenging positioning in relation to didacticians.

Upon these previous studies, we wonder in this research which aspects could affect mathematics teachers' identity, focusing now on their teaching practices and reflective narratives in the context of a postgraduate course that includes teaching practice as mathematics teacher educators.

Context and research question

As teachers of the postgraduate course *Methodological contributions for the teaching of mathematics in Mathematics teacher training* (MC), we conducted and observed the processes experienced by the students, nine mathematics teacher educators, whom we proposed to perform a teaching practice consistent with the professional future of those who they were going to train: future mathematics teachers.

By consistency we mean that transpositions should depend on whom we are training (Farfán, 1997). Consequently, if intended for mathematics student teachers, teaching practices should address the emerging recommendations:

> Future mathematics teachers should be taught in a similar way to the one they will teach - exploring, elaborating conjectures, communicating, reasoning, and everything else. (NCTM, 1991, p. 259)

From this perspective we designed a course including: commented readings, discussion forums, task design and teaching practice in mathematics teacher training. Readings and course activities were selected and designed to provide methodological tools for the trainee teachers.

It was a theoretical course with teaching practice carried out in parallel and supervised by both the course teachers as well as a mentor teacher educator. The guiding ideas that oriented the design of the course were:

- Teacher educators' practices should be consistent with those expected to be developed by future mathematics teachers in their secondary school classrooms.
- In order to achieve this consistency teaching planning should take into account the way in which content is presented and the methodology developed in classes. Task design plays an important role in learning and methodological aspects will be

defined considering the mathematical activity student teachers should experience while learning mathematics.

- Thinking about teaching a specific class, implementing and reflecting on it are essential aspects of teachers' development as critical professionals.

Therefore, this course had a theoretical component encompassing the study and analysis of the expected practices in teacher training (Marcelo, 1994; Santaló, 1994; Ochoviet, 2010), concrete pedagogical tools for conducting classes and task design (Alibert & Thomas, 1991; Legrand, 1993; Zaslavsky, 1995, 2008; Oktaç, García & Ramírez, 2007), knowledge base for teaching (Shulman, 2005) and a study about teacher educator models in mathematics teacher training (Olave, 2013). Additionally, discussion and activities to promote reflection over these documents were carried out. The practical component of the course consisted of a 20-hour teaching practice in a mathematics initial training class under the mentor teacher's supervision and the guidance of one of the MC course teachers, who visited each trainee three times to observe his classes. After each class, the trainee, the MC course teacher and the mentor teacher met to analyze it.

It is important to notice that in a course of this nature, the student-teacher pair is amplified by a third actor: the mentor teacher. By which we mean the teacher who is in charge of a course of initial teacher training in which the trainee teacher develops his teaching practice.

Although we have succinctly presented the course, it is easy to appreciate the challenge it implied for trainees. They were asked not only to design and implement teacher training classes but also to carry them out guided by the reference documents of the course. Albeit some of the nine trainees were working as mathematics teachers in teacher training, this was not the general case; they worked mostly as mathematics teachers in secondary schools.
In this context, various dilemmas arose, for example, different degrees of conviction about appropriateness of suggested methodologies for teacher training, in a range that vary from total conviction to a deep level of doubt. In the latter case teachers were concerned about the rigorous treatment of the contents, which might be neglected, and about the required amount of time to address the stipulated curricula.

Throughout the course we observed changes in some trainee teachers' attitude and practices, in some cases detected and explained by their selves in their written reflective narratives or orally, in interviews after their teaching practices. In other cases we could appreciate these

changes through their written activities or the teaching methodologies developed in the process of the teaching practice. The changes we are referring to are not objective nor static, but related to what teachers believe of their own practices and of what are expected from them. As we have already suggested in the introduction, these changes could be explained through the analysis of teacher identity.

We pose, therefore, the question that guides the research we have been carrying out about teachers' identity: which aspects could affect mathematics teachers' identity, especially in the context of a postgraduate course that includes teaching practices as mathematics teacher educators?

Theoretical framework

Sfard and Prusak (2005) provide a definition of identity that works as an analytical tool to investigate learning understood as a culturally modeled activity: "… we suggest that identities may be defined as collections of stories about persons…" (p. 16).

Sfard and Prusak (2005) define identity as: "… narratives about individuals that are reifying, endorsable, and significant" (p. 16). The reifying quality of narratives implies they reflect what people presently are, have got or can do rather than what they do, and they are usually accompanied by adverbs like always, never, usually or up to now, suggesting the idea of something repeated over the time. Endorsable means that the identity-builder acknowledges that the narrative accurately reflects reality. Significant means that any changes in it can affect the storyteller's feelings about the identified person.

Sfard and Prusak (2005) recognize *actual identity* as those stories about the actual state of events "connected to the present discursive practice" (Stentford and Valero, 2009, p. 104), and the *designated identity* as narratives that describe the expected state of events, if not now, in the future. In the discourse we can recognize actual identity's features with phrases like "I'm a good driver" or "I have an average IQ", while designated identity can be recognized by phrases expressed in the future tense, or expressing desire, obligation or necessity. This distinction allows us to analyze how identity is configured; the transition between both constructs indicates any changes in it.

Designated identities tell us about scenarios that are seen as mandatory but not necessarily desired. A person can expect to become a better person, that is, to have certain type of endorsable stories for different reasons: because he genuinely thinks is good for him, because they are appropriate for a person of his cultural origin or because it is the kind of stories that a person is designated to have according to other people, particularly those belonging to groups of power that somehow exert authority over him. The control that groups of power can exert (from Van Dijk (2001)'s point of view) may lead a person to accept as good for him a given discourse without being aware of possible alternatives.

The authors argue that learning is seen as a means to close the gap between actual and designated identities as, explicitly or implicitly, the students have an intention to change their identity, to what constitutes their designated identity.

The definition of identity Sfard and Prusak suggest is, unlike others (Gee, 2001; Holland, Lachicotte, Skinner and Cain, 2001), operational because allows us to answer questions such as "Why do different individuals act differently in the same situations? And why, differences notwithstanding, do different individuals' actions often reveal a distinct family resemblance?" (Sfard and Prusak, 2005, p. 14). Thus, from this perspective, identity is seen as a set of narratives that can be modeled by collective speeches, while individual voices are combined in a community discourse. As during the course, participants were asked to write reflective narratives and relevant thoughts about their teaching practices, we decided to adopt Sfard and Prusak's perspective to conduct the present research. This perspective was a valuable tool for our previous study, and it was also used as a framework in Bjuland, Cestari and Borgersen (2012). The research questions of this latter study are similar to the ones we pose in this work and both studies use the same kind of evidence.

In any narrative we can identify three components: the identified person, the person who tells the story and the one who receives it. Sfard and Prusak (2005) use a notation for characterize a narrative: ${}_{B}A_{C}$ where A represents the identified person, B the narrator and C who receives the narrative. The authors state that the narratives that describe people's identity more accurately and which have great impact on their actions, are of the kind ${}_{A}A_{A}$: those in which the person *speaks of him/herself about him/herself*. The logs requested in this course are of this kind. But since these logs are tasks of a course it is feasible that trainee teachers understand them as narratives that speak of themselves to the course teacher (${}_{A}A_{Teacher}$) even

when they were not marked, as in this case. The other reflective narrative we use as a source is, without doubts, of the kind *I speak of myself to the course teacher* ($_{A}A_{Teacher}$) because it was part of the activities that were going to be marked.

In this sense, we are aware that narratives we use as evidence are strongly mediated by the particular context in which they are written because as they were tasks of a course they were mandatory and influenced the opinion that course teachers had about trainee teachers.

Method

The study that was carried out was qualitative in nature and consisted of a multi-case study. The source used to obtain information about the actual and designated identities consisted mainly of four logs and a reflective narrative that was one of the course activities. In addition, trainees' lesson plans were also used.

The use of narratives to describe teachers' identity and possible learning is presented in Sfard and Prusak (2005). Bjuland, Cestari and Borgersen (2012) discuss the use of reflective narrative as a methodological tool that can provide evidence of teachers' professional development. Meanwhile, Connelly and Clandinin (1999) argue that teachers elaborate narratives in order to make sense of both personal aspects and classroom practices. According to them, by telling stories teachers discover and reveal aspects of their professional identity.

Participants

The nine participants are secondary school mathematics teachers (they possess a four-year degree including training in mathematics, educational science and mathematics education/teaching practice) who are pursuing postgraduate studies to teach mathematics at the higher level. They were students of the MC postgraduate course, specifically oriented towards teaching mathematics in initial teacher training. That is, to teach in the degree they have already achieved.

Data sources

According to the guiding ideas that oriented the design of the MC course, mentioned in the 'Context' section, we proposed different activities in order to achieve course's goals. On the one hand, they were conceived as pedagogical tools: tasks which promote a reflection on the lectures, tasks that imply a reflection over teaching practice at the light of such lectures and,

finally, logs and a reflective narrative, which mean meta-reflection over the process each participant was carrying out. On the second hand, some course activities, such as logs, have been proved to be successful to study teachers' identity in previous studies (Molfino and Ochoviet, 2015). Therefore, we designed those activities not only with pedagogical purposes but also for research goals.

The source of information for this study comes from the logs written by the participants (four per participant) and a reflective narrative that was part of a course activity.

The following table shows the formulation for each of the four logs.

Log I (LI) 1) In this question we expect you to position as a mathematics teacher in mathematics teacher training. If you are not a mathematics teacher trainer, we ask you to picture yourself in that situation. How are your classes? What aspects are very relevant to you? Which not so? What matters do you emphasize? What aspects have a central place in your class? 2) We ask you now to imagine you are the teacher who you would like to be, that is, there are no impediments of any kind, whether human or material, in order for you to achieve all you aim for as a mathematics teacher in teacher training. What the teacher is alike? What do you like from your class and what do you not? What are your classes like? What are your goals? 3) What are your expectations about this course?
Log II (LII) We expect reflections developed from the readings and tasks performed, as well as discussions with fellow students. You may express doubts, interesting ideas to leave registered, opinions, in short, everything that you realize you have thought so far. We do not ask for a summary of the readings that have already been evaluated in activities delivered. Remember that it is a personal work, something like a notebook or field journal.
Log III (LIII) Identical formulation to LII

Log IV (LIV)
While the structure is free, it is important to note that you should express your reflections on course contributions from the point of view of the addressed contents. That is, what the readings made me think, how I could interpret phenomena already detected in my practice which I could not yet explain, new ideas for my classes, for designing activities, for the formulation of questions to my students, for the organization of my classes, what this course has moved in myself (during/as a result of), how research results can impact on practice, etc. We do not ask for a summary of the readings that have already been evaluated in activities delivered. Finally, we stress: (1) development of the log should focus on a personal reflection on course contents, (2) its approach and extension are free -the questions above are presented only as guidelines.

LI was proposed at the beginning of the course, prior to the reading of the documents. LII was proposed at the end of Unit I (Teaching practices in teacher training). LIII was proposed after completion of Unit II (Methodological aspects of teaching). LIV was proposed at the end of the course, after Unit III (Knowledge Base for teaching and teacher trainers' models). Below we present a table summarizing the course structure and reference documents.

Units	Documents
(I) Teaching practices in teacher training	Marcelo, 1994; Santaló, 1994; Ochoviet, 2010
(II) Methodological aspects of teaching	Alibert and Thomas, 1991; Legrand, 1993; Zaslavsky, 1995, 2008; Oktaç, García and Ramírez, 2007
(III) Knowledge Base for teaching and teacher trainers models	Shulman (2005); Olave (2013)

In addition, as stated above, a reflective narrative was used as a source of information. It was part of a course activity in Unit III:

Reflective narrative (RN)

We are now asking you for a personal reflection on your practice as a trainee in mathematics teacher training. Which of the models identified by Olave (2013) do you feel more identified with? Why? What aspects of your teaching practice lead you to recognize yourself in that model? Looking ahead, what kind of math teacher trainer would you like to become? Why? What has not been reached yet?

Other sources

On three occasions the trainees taught classes in their practice class and were observed by the mentor teacher and an MC course teacher.

The lesson plan designed for these three classes constituted evidence about the appropriation of the methodological tools provided in the MC course because it contained all the details of the class that the trainee teacher was going to develop.

Methodology of narrative analysis (logs or reflective narrative)

Sfard and Prusak (2005) recognize that conversations with oneself ($_{A}A_{A}$ narratives) often have an immediate impact on our actions; therefore, when analyzing designated identities we paid attention to the presence of an explicit intention of wanting to change teaching practices or being in the process of doing so. Consequently, when analyzing sources of information, we pay attention to speech revealing intention to change and other factors that could favor or hinder that change. For example, the possession of methodological tools to plan the classes or other voices that may influence what trainees do or are as the opinion of their mentor teacher.

We analyzed each of the participants' process and elaborated an inform following the same structure: first we described their starting point about actual and designated identity (Sfard and Prusak, 2005) trough the study of LI, which was specially designed to find out these two aspects. Afterward we searched for any changes from this starting point, analyzing LII and LIII, to get evidence about the transition between actual and designated identity, as well as lesson plans and the implementation of classes in the participant's practice class. Finally, we concluded about the final state of each participant in respect to his actual and designated

identity, identifying any changes in identity as well as the factors that could have motivated them.

In the analysis of each of these sources we focused on the participant discourse: phrases that reflect actual identity are those expressed in the present tense like "I do", "I am", and "What I like about my classes is". Instead, features of designated identity are evident in sentences expressing desire, obligation or necessity, to be materialized in the future: "I would like to experience different practices", "I would like to teach better", "I wish I could foresee the mistakes of my students". This distinction allows us to analyze how identity is shaped and highlights aspects of the transition between the two constructs.

Discussion

To discuss the issue on which we focus we will present information about four of the studied cases because they illustrate well the nuances of the different processes experienced by the trainees. We chose these cases after elaborating participants' informs. As our aim is posed on the aspects that could affect mathematics teachers' identity, we will focus on changes on identity paying attention to the transition between actual and designated identity. That is, the desire to change teaching practices and the realization of that change. As in this study identities are defined as *collections of stories about persons*, narratives written by the participants (LI, LII, LIII, RN) are the stories that will provide evidence of the changes achieved or not by the participants. These stories would be, theoretically, according to Sfard and Prusak (2005), of two possible kinds: ${}_{A}A_{A}$ in the case of LI, LII, LIII and LIV narratives and an ${}_{A}A_{Teacher}$ narrative in the case of RN.

Analyzing L1, which is an ${}_{A}A_{A}$ narrative, we discovered that these four cases have different starting points in reference to their actual identity. Three of the teachers recognized themselves as traditional teachers[1] (T1, T2, T3) at present and the fourth (T4) makes explicit that she is involved in a process of change of her teaching practices focusing on developing classes centered in their students' mathematical activity.

[1] By 'traditional teacher' we mean a teacher which prioritizes the content rather than students' learning. Consequently, his teaching method consists, basically, in expository classes. Then, the teacher asks the students to apply the content taught to solve exercises and problems.

As we have already mentioned, Sfard and Prusak (2005) recognize that conversations with oneself ($_{A}A_{A}$ narratives) often have an immediate impact on our actions; therefore, when analyzing designated identities we decided to pay attention to the presence of an explicit intention of wanting to change teaching practices. In this sense, T1, T2, and T4's designated identities announced the desire to develop a teaching practice different to the traditional one while T3 expressed a circumvented intention to change because he was torn between a genuine interest in turning to a more student-centered teaching model and the implicit personal mandate that moved him to prioritize content and to present it clearly and accurately.

The desire expressed by T1, T2 and T4 from the beginning of the course in LI, was reinforced by the first readings because they provided evidence about the expected practices in mathematics teacher training. These readings gave relevant foundation to support the designated identity. That is, they give strength and reasons to reach the goal of a change in teaching practices. The authors of those documents officiated as significant narrators because they reinforced the desire to reach the designated identity outlined in LI. However, it is probable that the narratives contained in those documents (or other similar) were already known by the trainee teachers and that is why they became part of their designated identity: "Like any other story (in reference to the designated identity), it is created from narratives that are floating around. One individual cannot count as the sole author even of those stories that sound as if nobody has told them before" (Sfard and Prusak, 2005, p. 18).

T3 is more cautious regarding the issues raised in the readings. He doubts if the recommendations for student-centered teaching practices can be implemented in teacher training and in all courses. He suggests that perhaps they could be considered in some courses or when teaching some subjects. He further argues other impediments to implement the recommended methodology: the time that the planning and the implementation of these classes would require, hampering the full treatment of all content prescribed in the curricula.

The declared intention of developing different practices was a key element in the transition from actual to designated identity in the case of T1, T2 and T4. When teaching in teacher training courses through practices that were consistent with reference documents recommendations, these teachers used tools provided in the course about tasks design. That is, they appropriated the methodological contributions of the course in order to plan classes

that give rise to mathematical student work. T1 planned to use tasks that require comparing and contrasting, tasks demanding the construction of a mathematical object and open-ended problems, T2 planned to give her students tasks that require comparing and contrasting propositions and T4 planned tasks that demand to consider alternatives. The contributions of the course about tasks design and scientific debate enabled these teachers to plan classes using alternative approaches to the traditional ones: "Proposing such activities allowed mainly to place the center of the classroom activity in the students and not in the teacher" (T1, LIII). The impact that methodological tools had in the development of new practices is well expressed in T2's words:

> In this process what has stricken me most, so far, have been those practices where I carried out activities based on the readings. (LIII)
>
> On the other hand, I visualized the urgent need for finding ways to design learning activities for teacher training articulating the contents of teaching points with appropriate methodologies for teaching. (LIV)

The process made by T3 was different. In his designated identity two positions that could be considered antagonistic coexist. On the one hand, he argues that content in teacher training should be presented in a clear and rigorous manner and on the other; he is convinced that the mere exposure of the content to student teachers is not enough to achieve learning. In this fragmented identity two aspects coexist: a desire of proposing problems that allow students to experiment and elaborate conjectures, and the fear of using open-ended problems because the diversity of answers from students would generate insecurity to himself as a teacher educator.

When trying to plan and implement classes centered in students mathematical activity, the role played by the mentor teacher educator was crucial. T1 mentor teacher's profile did not help her to feel supported and he did not give her enough freedom to develop innovative classroom practices. T1 felt great control by her mentor teacher over what might or might not include in her lesson plan. T1 identified a gap between the working methodology of the mentor teacher and the recommended methodologies in the MC course. T1 says:

> … at a pedagogical level, I see with some concern the methodology developed by my mentor teacher, which is usually centered on himself. (LIII)

We want to emphasize that T1 expressed she was not entirely satisfied with his teaching practice because he failed establishing links between the mathematical content student teachers were studying and the ones these student teachers will be teaching in the future. T1

pointed out this aspect of his mentor teacher's practice negatively, which she regretted deeply. In short, mentor teacher's practices were not consistent with the reference documents and were more focused on his needs rather than on the students' one. This situation affected T1 and impeded her to achieve her designated identity.

Meanwhile, even with teaching practices that could be considered "traditional", T2's mentor teacher favored a process of consolidation of her designated identity, allowing her to achieve some of its aspects. T2 states that this was possible because she worked in a "protected" environment: she was not the teacher responsible for the group and she was supported by her mentor teacher and by the MC course teachers.

As a summary of his process, T2 writes in his RN ($_{A}A_{Teacher}$ narrative):

> In my search for not showing a cloistered mathematics, but instead as the result of a debated construction and of an agreement in the class, I turn from my first classes where I was too careful about what I said to the last one where I could guide the interventions of the students. I could visualize this process in the classroom. (RN)

Finally, T3 and T4 had the same mentor teacher. They transited through different processes but they both positively assessed the mentor teacher's practices. T3 and T4 found these practices consistent with course readings recommendations for mathematics teacher training. With different degrees, these two teachers felt the support of their mentor teacher, through the feedback given about the pre-planning classes and the classes taught, "Indicating successes and failures" (T3, LIV).

T4 emphasizes that she could see in practice what the studied documents of the course addressed:

> All we have been studying, about methodological aspects, is shown in one way or another in my mentor teacher class and that is very rich for two reasons: the first one is because it is great to see in action things that may look nice in the text but one wonders about its applicability in any subject … (LIII).

In addition, T4 states she feels free to plan and carry out innovative proposals in her classes, while supported and guided.

However, the learning processes of T3 and T4 were different: T4 put in practice the methodological tools studied in the course, thus, she achieved the designated identity she expressed at the beginning of the course. In LIV shows her perception of these achievements: "working with a mentor teacher fully aligned with the proposal of the course allowed me to

experiment with ways of teaching that did not get in conflict or contradiction with the proposal of my mentor teacher".

Meanwhile, T3 presented difficulties with appropriating methodological tools, even considering them theoretically positive. When trying to implement those methodological tools -the few times he intended to- he faced difficulties in his attempts to put them into practice in different situations: while designing tasks, for example, open-ended tasks, when encouraging students' interactions in class, when promoting mathematical activity in class. In his narratives, T3 pointed out he applied the methodological tools studied in the course and at the same time he expressed failure implementing them. Even though he tried to implement active classes, he manifested his lack of conviction about the necessity of a change in his practices, particularly, at teacher training level. Finally, T3 admits that he did not succeed, stating that "I would like to be a better teacher than the one I am now and, fundamentally, to teach better than I did it in my practice" (RN).

Ending remarks

We have described four cases that show how, facing similar situations, different people act differently. The four teachers were participants of a course in which theoretical and methodological tools that support and justify specific practices in mathematics teacher training were offered. They had the opportunity to observe mathematics courses at teacher training level and to plan and implement classes for those courses under the supervision of a mentor teacher educator.

However, only two of them effectively moved toward their designated identity (T2 and T4). In these two cases, the declared intention of a change was explicitly stated, they appropriated methodological tools for planning their classes, they managed to implement them with relative success and they felt the support of their mentor teacher in such implementation.

In the case of T1, she showed a broad alignment with the proposed tools (in fact she was the practicing teacher that used them at most in her classes) and she was avowedly open to achieve aspects of her designated identity at the beginning of the course but, in her words, she failed to reach his designated identity. In this case, the mentor teacher's profile seems to emerge as an adverse factor. The practitioner understood the mentor teacher was not developing the teaching practices mathematics teacher training demand today. Therefore, she

felt no confidence to carry out the activities she planned consistently with those recommended for teacher training.

Meanwhile, in the case of T3 we identified an adverse factor that impeded the implementation of active classes: the doubts of the practitioner about the real and feasible need for a change in mathematics teacher training. While showing a clear intention to do so, at the same time, he always presented conflicting reasons. This lack of conviction seems to become a limitation when trying to appropriate course tools and apply them consistently in class. Molfino and Ochoviet (2015) identified one aspect that could hinder the designated identity to become actual identity: the focus of the teacher in mathematical objects. This seems to be the case of T3 because he was more concerned about the presentation of the content clearly and precisely than in problematizing the learning of students.

As Sfard and Prusak (2005) stated, stories are "words that are taken seriously and that shape one's actions" (p. 21) then, indeed, the stories told by T1, T2 and T4 contributed to make them moved, in different degrees, from their actual to their designated identity. T3's actions were consistent with the fragmentation which was present in his narratives, something that went through all his stories.

When facing the challenge of promoting, through professional developing courses, new teaching practices, we detected that the explicit intention of the practitioner played a key role. In addition, the possession of methodological tools as a means for implementing renewed practices, pointed as well by Guskey (2002), gave support and helped practitioners to plan classes that promoted mathematical activity.

In the process experienced by practitioners, mentor teacher educators were clearly significant narrators because they reinforced or hinder the desire to reach their designated identity, through their coherence with practitioner's goals or in contradiction with them respectively. The accompaniment of a mentor teacher whose teaching practice is consistent with the ones developed by the practitioners or the accompaniment of a mentor teacher that even with traditional practices enables the proposals made by the practitioners; promote a designated identity to become actual identity.

Trough this study we learnt that is very difficult to change teaching practices if the teacher is not firmly convinced about the necessity to perform a specific practice. In this sense, the analysis of the reference documents of the course that linked research and practice in teacher training motivated the desire to implement different classes in several of the teachers who participated in the course. As Goldsmith and Schifter (1997) state, teachers must have a very strong reason to undertake a teaching practice change; in the case of our study, this reason was based on the fact that the recipients of the teaching were prospective teachers and that a change in the way in which they are taught is imperative in the light of the current recommendations for teacher training.

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