

# LINKING THEORY AND PRACTICE: PROSPECTIVE TEACHERS CREATING FICTIONAL CLASSROOM DISCUSSIONS

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*In this contribution we discuss a course for prospective primary school teachers aimed at providing them with theoretical tools that could support their future work. Specifically, the course is based on a theory-informed design of tasks for pupils and subsequent creation of fictional classroom discussions focused on the same tasks. Our research questions concern prospective teachers' reflections on the activities in which they are involved and on the ways in which these activities could promote their professional development. By means of a qualitative analysis, we highlight categories of prospective teachers' reflections and interpret these results in terms of levels of awareness.*

## INTRODUCTION AND BACKGROUND

Research in mathematics teacher education stresses on the need for teachers' reflection about their own practice (Mason, 1998; Jaworski, 2004). Jaworski (2004) introduces a dialogical model for teacher professional development that involves teachers' critical reflection about their practice and the sharing of these reflections between teachers and researchers within communities of inquiry. The need for teachers' reflection about their own practice and an emphasis on the role of awareness in teaching is also highlighted by Mason (1998, 2008), who stresses on the importance of leading teachers to become aware "not simply of the fact of different ways of intervening, but of the fact of subtle sensitivities that guide or determine choices between types and timings of interventions" (2008, p. 49). According to him, this requires teacher educators to promote teachers' shifts of attention toward constructs, theories, and practices that can inform and guide their future choices.

This last claim suggests to focus on the complex interplay between theory and practice within teacher education programmes. With the aim of directing teachers' attention in a way that could foster their development of awareness about their own practice, Cusi and Malara (2016) introduce a methodology of working with in-service teachers that involves the use of specific theoretical tools for both the design of classroom activities (tasks and methodology) and the a-posteriori analysis of teaching-learning processes. This methodology can be outlined through this structure: (1) *sharing and study of theoretical tools*; (2) use of the theoretical tools to analyse classroom activities and excerpts of classroom discussions conducted during teaching experiments (*analysis of the practice of other teachers*); (3) use of the theoretical tools for the design of class-

room activities and implementation of these activities in the teachers' classes (*phase of planning/action*); (4) use of the theoretical tools to analyse classroom discussions conducted by the teachers in their classes (*analysis of teachers' own practice*); (5) *shared reflections* between teachers and researchers.

In the case of courses for prospective teachers, who do not work at school, the participants cannot implement in their classes the activities they created and, consequently, cannot analyse their own practice and share these reflections (phases 3-4-5 in the methodology). For this reason, it is necessary to introduce activities for prospective teachers that enable them to imagine what could happen in the class when the designed activities are implemented. We think that introducing activities with a narrative component could represent a way to fulfil this objective.

Narrative is a promising methodology of study, widely used for the investigation of beliefs and identity (Kaasila, 2007). Organizing facts in a narrative form encompasses finding/attributing temporal and causal connections, thus turning a sequence of events in a coherent whole in which each part contributes to the global meaning (Bruner 2003). This leads the narrator, and those who read or listen a narrative, to become aware of more or less implicit relations. Hence, narrative can constitute an excellent starting point to foster self-awareness and reflection. Different kinds of narrative activity may be proposed, such as narration of previous experiences as students (Dettori & Morselli, 2010), narration of lived experiences as teachers (Zaslavsky, Chapman & Leikin, 2003), reconstruction of classroom episodes that were previously seen on videos (Dolk & den Hertog, 2008). In Chapman (2005) prospective teachers write stories of both actual teaching (from their schooldays or the running practicum), and ideal, best practice teaching. Trainees are given theoretical means to analyse their narratives so that this approach can become part of their professional competence and also used in future work.

In the present contribution we confine ourselves to a special case of narrative activity, namely the creation of fictional classroom discussions. An example may be found in Lloyd (2006), who uses prospective teachers' fictional stories as a means to investigate their emerging identities. Lloyd concludes highlighting the importance of teacher education activities that "*focus intently on the roles of teacher and students in student-centred classrooms and on relationships between the treatment of mathematical subject-matter and students' learning*" (p. 81) and suggesting that further research should address the use of story creation tasks in prospective teacher education. The author also suggests promoting teachers' analysis of their own and other teachers' stories. Our study can be set in this research development, for the explicit intention of turning story writing into an educational activity, and for the focus on the role of the teacher.

More recently, Zazkis, Sinclair and Liljedahl (2009a, 2009b) advocate the use of lesson play, as a way to improve the traditional lesson plan by inserting zooms "*on one specific aspect of a lesson – interaction with students in general and with students' emerging conceptions in particular*" (p. 43, 2009a). The authors claim that writing a

virtual dialogue between teacher and students leads the prospective teacher to focus on the process of the teaching, on the mathematical language used for communicating, on the various forms of mathematical reasoning that might emerge in the classroom and on the possible models of pupils' conceptual schemes. The planning, implementation and evaluation of teacher education activities grounded on lesson play is discussed in Zazkis, Sinclair and Liljedahl (2009b), where the task design and prospective teachers' professional development is analysed referring to Mason (1998)'s three levels of awareness: *awareness-in-action*, that is the ability to act in the moment (for instance, a teacher is able to pose a question or correct a mistake, but is not able to justify his action); *awareness-in-discipline*, that is awareness of awareness-in-action (in comparison to the previous example, the teacher is able not only to take instructional choices, but also to justify them); *awareness-in-council*, that is awareness of awareness-in-discipline (the teacher is also aware of what is necessary to develop awareness-in-discipline).

### **A COURSE FOR PROSPECTIVE TEACHERS FOCUSED ON THE CREATION OF FICTIONAL CLASSROOM DISCUSSIONS**

In tune with the perspective outlined in the previous paragraph, in the last years we have designed a course for prospective elementary school teachers based on an adaptation of the methodology introduced by Cusi and Malara (2016).

The prospective teachers participating in this course are attending their first year of degree courses (5 years totally). Prospective teachers are involved in different training activities within schools, but only starting from the second year. So, when they participate to our course, they do not have any experience in teaching. For this reason, besides the activities aimed at the *sharing and study of theoretical tools* (namely tools useful to frame the classroom activities and to analyse the roles played by the teacher during classroom discussions) and those focused on the *analysis of the practice of other teachers*, we involve prospective teachers in activities during which they are asked to *design tasks for pupils and create fictional classroom discussions* focused on the same tasks. An important requirement is to explicitly refer to theoretical tools for both the design of tasks and the creation of fictional discussions. The course also encompasses moments aimed at the *sharing and comparison between the different tasks and fictional classroom discussions* created by prospective teachers.

### **RESEARCH QUESTIONS AND RESEARCH METHODOLOGY**

As teacher educators, we want to investigate the effectiveness of the activities presented in the previous paragraph in promoting professional development.

In this paper, we focus on prospective teachers' perception of the activities in which they are involved during the course. Specifically, we address the following research questions: (a) *What kind of reflections do they propose on the activity of creation of fictional classroom discussions?* (b) *What kind of reflections do they propose on the role played by theoretical tools?*

In order to investigate these aspects, at the end of the course, we asked to prospective teachers to write some reflections on the course, focusing on: (1) strengths/weaknesses of the activities faced during the course; (2) difficulties met when facing the activities; (3) usefulness of the theoretical tools when working on the activities; (4) reflections on their future work of teachers.

We collected 67 prospective teachers' written reflections and performed a qualitative analysis of data (Patton, 1990), aimed at identifying categories of reflection. Each researcher analysed data separately. Afterwards, emerged categories were compared and discussed so as to reach a shared system of categories.

## ANALYSIS

In our analysis we identified categories of reflection on three specific foci: the activity of creating fictional discussions, the role of the theoretical tools, the course as an educational project. In the subsequent part we discuss such categories of reflection. The categories are presented on a list and after exemplified by means of representative excerpts from data. For each excerpt the pseudonym for the author appears at the end of the sentence.

In their reflections prospective teachers adopted the perspective of *students* who have to carry out a task assigned by their educator, or the perspective of *future teachers* who look at the assigned activity as support for their future practice. Hence, for each category, we consider the perspective of the narrating subject (student vs future teacher).

### Focus 1: reflections on the activity of creating fictional classroom discussions

Prospective teachers report that, when creating fictional discussions, they experienced some *difficulties* that can be organized into the following categories: a) imagining pupils' interventions (not having at disposal any direct field experience); b) creating efficient interventions of the teacher, on the basis of the theoretical tools that were presented in the course; c) creating effective classroom interactions, alternating pupils' and teacher's interventions.

- a. It was difficult because I never worked with pupils in the classroom context, then imagining how pupils could answer to some questions was not easy – Lor
- b. Creating classroom discussions was quite hard. Imagining pupils' answers was nice, but finding the good inputs from the teacher not so much; the teacher was supposed to help pupils, but not too much, not to give the answer but lead the pupils to find it. ... when writing down the teacher's intervention we also had to think about the strategy we wanted to be activated - Pi
- c. I found difficult to create a quite complete discussion between teacher and pupils: understanding which answers the pupils could give to the teacher's answers and which input the teacher could give to pupils – Ba

The aforementioned categories may be related to the perspective of a *student* who has to carry out a given task (creating a fictional discussion, possibly referring to the theoretical tools that were presented in the course). The subsequent categories refer to

reflections on the way the activity of creating fictional discussions may *support* the future teaching practice. Adopting the perspective of *future teachers*, they report that the creating classroom discussions helped them in: a) identify themselves with both the pupils and the teacher; b) understanding the complex work of a teacher; c) doing “mental experiments” of their future work of discussion planning and managing; d) becoming aware of those competences that must be improved to become a good teacher.

- a. One of the strength of the activity was the fact that we had to adopt different points of view; we had to figure out the possible difficulties of a pupil (hence, we had to think as a pupil); it was very useful to create a suitable activity and a related discussion (hence, we had to think as a teacher) – Esp
- b. Imagining the conversations between pupils and teacher I could reflect on the fact that such roles, once you are in class, must be played in an active way, and teacher’s interventions must be done in a goal-oriented way. What is difficult is finding a balance between a conversation that develops by its own, where the teacher gets cues from pupils’ answers, and a goal-oriented conversation, with well crafted interventions aimed at eliciting specific issues and promoting learning- Cal
- c. This activity makes you hypothesize what could happen in the class and think about how to guide the discussion. This is important, if you see the activity as an experiment you do in your head, and not as a rigid mental scheme. Carrying out this activity is a work on thinking ability and, moreover, creating the conversation one can see how different kinds of questions that are attributed to the teacher lead to different scenarios of discussion – Za
- d. I had the opportunity to reflect on classroom discussion as a way to check understanding; [...] hence, as a hint for the future I think I’ll try to improve my argumentation and discussion competences so as to to use them in class - Mar.

## Focus 2: reflections on the role of the theoretical tools

In general, prospective teachers describe the theoretical tools as useful. Those who adopt the perspective of *students* recognize that theoretical tools may help in carrying out the assigned task. We identified the following categories of *support* provided by the theoretical tools: a) Theoretical tools as a way to remedy to the lack of field experience; b) Theoretical tools as a source of inspiration for planning activities; c) Theoretical tools as a support for the creation of fictional discussions.

- a. Studying theory was very useful! Being at the beginning of the academic studies, theory allowed to remedy to my little field experience – Fon
- b. Creating a totally different activity would have been very complex because it is very difficult to structure a complete mathematical activity without the necessary theoretical framework and the good examples to understand - Fer
- c. I found very useful the roles of the teacher that were presented during the course, because they helped us to understand what were the roles of the teacher who asked specific questions - Pi

The prospective teachers who adopt the perspective of *future teachers* value theoretical tools as useful *supports* for their future practice, since they: a) provide guidelines for the teacher; b) help understanding the complex work of the teacher and reflect on her responsibility.

- a. Thanks to the course I could look at mathematics in a different way and from a different perspective; taking into account the process more than the final result, making thinking visible, collaborating, using a mathematical language... these are all principles that I will keep with me and use in my future classes – Esp
- b. I found very useful the focus on the roles of the teacher, because it made me reflect on the multiple facets of the work of a teacher. [...] This means that, when in class, we'll have to think about the direction we are taking. This reminds us the teacher has a great power in her hands - Za

### Focus 3: reflections on the course as an educational process

Prospective teachers propose deep reflections on the whole *educational process* in which they were involved thanks to the course, highlighting their development of awareness about the educational project that frames the course. These reflections can be subdivided into the following main categories: a) reflections that highlight the different focus of the course and the corresponding educational aims; b) reflections that highlight how the course has fostered prospective teachers' shifts of attention (Mason 1998, 2008); c) reflections that stress that the activities carried out during the course contributed in the changing of prospective teachers' vision of mathematics; d) reflections that identify the activities of the course as initial steps in a wider educational process in which prospective teachers are involved.

- a. A further strength of the course was the possibility, for us, to take the challenge of developing and adopting two different perspectives. I am referring to the perspective of the pupils (when we solved problems) and the perspective of the teacher (when we analysed the different activities). Since I do not have any field experience in school, this enabled me to actually “enter” in my future work and to overcome my point of view of a student, putting myself in a professional perspective. - Ca
- b. I particularly appraised the activities during which we had to reflect on didactical aspects related to the mathematical problems proposed to us. This made us reflect on important issues for our future work, such as the analysis of the teachers' actions, formative assessment etc. - Bi
- c. The course succeeded in rekindling the interest; it made us, future teachers, feel the protagonists of the solution of the proposed activities, as if we were mathematicians at work. – Po
- d. It could seem simple, but actually it requires dedication and a metacognitive reflection, the capacity of “diving” in a situation and bringing out the best. These activities were a sort of training: at first everything is new, then little by little you get confident [...] and you get trained, as an athlete. The road is long, but these activities were a good and useful starting point. – Pe

The course made people who are at their first academic year, with no field experience in school, acquire a first mindset; it gave them a first grid through which to look at mathematics lessons. I have no experience in working in the classes, but this course made me feel more prepared for the second year field experience. I feel I found the coordinates. - Za

## **CONCLUSIONS**

The aim of this contribution was to present and discuss a prospective teacher education course aimed at promoting the link between theoretical tools and teaching practice by means of specifically crafted activities, namely the theory-informed design of tasks and the subsequent creation of fictional classroom discussions. Creation of fictional discussions is in tune with Zazkis et al. (2009a, 2009b)'s idea of lesson play; moreover, during our course prospective teachers are explicitly encouraged to make a link between theoretical tools and the planning of tasks and the creation of classroom discussions. Our research questions concerned prospective teachers' perceptions of the course and of the activity of creating fictional classroom discussions, with a special focus on their comprehension and appreciation of theoretical tools. To this aim, we performed a qualitative analysis of prospective teachers' final written reflections on the course. We identified categories of reflection, which concern the specific activities, the theoretical tools and the general organization of the course. Creating fictional classroom discussions was valued as a sort of "mental experiment", where prospective teachers could sketch teacher's interventions, imagine pupils' interventions, craft powerful interactions between the different actors of the discussion. Interestingly, prospective teachers reported a general appreciation of the theoretical tools, that were seen as a support in carrying out the assigned tasks, but also as relevant guidelines for their future practice as teachers. This suggests that the activity of creation of fictional classroom discussions could foster a change of perspective, from university students to future teachers.

Referring to Mason (1998)'s levels of awareness, we may identify different levels of awareness in prospective teachers' reflections. Those who reflect on how they carried out the assigned tasks (planning an activity, creating a fictional discussion) without any reference to the theoretical tools at disposal, show an awareness-in-action. Those who, in their reflections, connect their planning and creative process to the theoretical tools, thus using theory as a real support, show also awareness-in-discipline. Finally, those who get the sense of the whole educational project of the course, thus linking activity, theoretical tools and their professional development, demonstrate also awareness-in-council.

As a further step of our research, we plan to analyse fictional discussions created by prospective teachers, as a mean to study their professional development throughout the course. Moreover, we plan to explore the potentiality of a side activity that was carried out during the course, namely the comparison of fictional discussions created by different prospective teachers.

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