

Becoming Knowledgeable in Practice: The Constitution of Secondary Teaching Identity

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This paper confronts the issue of pre-service secondary teaching identities. Rather than theorising learning to teach as an outcome of belief change, an aftermath of being there in the classroom, or as a function of pedagogical experience, it makes a strategic engagement with social practice theory. Drawing on Lave's work, one student is traced through the process of becoming a secondary teacher, within and between three unique contexts, each of which represents different and competing relations of knowledge, dependency, commitment and negotiation. In the telling, the student moves through legitimate periphery participation towards approximating full membership of the secondary teaching community of practice.

Teacher education's most immediate aim is the development of professional expertise for effective practice. In order to have any success at all, teacher education must engage the identities of pre-service students and must direct those identities towards education's fundamental aims of personal and collective progressive growth. This responsibility sits squarely within a burgeoning number of educational policy shifts and professional development initiatives over the past decade, focusing teachers' attention directly on to the learner. New designations for the secondary school student demand new teacher identifications, away from the knowledge-bearing, curriculum covering, embodiment of assurance and stability and ultimately autonomous teacher (e.g., Australian Education Council, 1990; Ministry of Education, 1992). Those broad shifts in pedagogical approaches, taken together with the teaching identifications construed by pre-service teachers from their own school experiences, ensure that the engagement of identities will be fraught with some obstacles.

As in previous decades, current thinking in mathematics education engages teachers' identities through those teacher capacities regarded as necessary for effective learning. There is no definitive formula for effective teaching but the sort of conditions that contribute to effective teaching have been noted in the literature. According to Sherin, Mendez and Louis (2004), effective learning is dependent on activity, reflection collaboration and community. Reporting on their work with teachers implementing pedagogical reform, they conclude that teachers must be active and reflective agents in the learning process and must be given the opportunities to work together in ways that support and nurture each others' learning. For pre-service teachers, the divisive nature of their work in schools created, among other things, by their own mathematics classroom histories and their short duration in the school, guarantees that at least some of them will feel disconnected from the supportive mathematics community in the school. In practicum arrangements, the importance of learning to teach depends a great deal on collegiality and the opportunity to construct and reflect on new understandings. Finding out what kinds of contexts and communities of practice support pre-service learning is crucial for pre-service education.

Lave gave us the beginning of a model of learning as participation in a community of practice. Her work makes a strategic intervention possible in and for teacher education. In a series of well-known classic studies (Lave, 1988; Lave & Wenger, 1991) Lave observed

people in routine activities, engaged in a way of participating in immediate, concrete, specific, meaning-rich situations (Lemke, 1997). Her social practice theories foreground some issues previously obscured for the learner because they fell outside of the scope of the discourses defining the terms of the discussion. Granted, social practice theories do not transfer unproblematically to the learner in school mathematics (see Watson, 1998), but what they do endeavour to explain is how learning occurs collaboratively in the context of shared events and interests. In a nutshell, the idea is that “[d]eveloping an identity as a member of a community and becoming knowledgeable skilful are part of the same process, with the former motivating, shaping and giving meanings to the latter, which is subsumed” (Lave, 1988, p. 65).

The pedagogical potential of Lave’s theories has often been overlooked. To date there have been few explicit challenges to the conventional ways of conceptualising learning to teach. While there has been much interest in teachers’ subject knowledge, their beliefs and their values, considerable less attention has been paid to the actual processes involved in learning to teach. The problem is that traditional theories of the process cannot account for the ways individuals refashion, resist, or even take up dominant meanings as if they were their authors.

This paper is offered as a contribution to research on pre-service teaching in secondary mathematics. The starting point is with Adler’s suggestion that “Lave and Wenger’s social practice theory provides a conceptual framework...for a study entailing teachers’ knowledge” (1998, p. 168). The following section makes those ideas concrete and focuses on learning to teach as a distinct social activity with particular social relationships, knowledge forms, and associated pedagogic modes. Central to the study is the question of how meanings and myths about teaching are created by pre-service teachers and how those meanings produce teaching identities. What follows is a theoretical account and an analysis of identity through the representation of three moments in the discourse of one student teacher I name here as Helen. These instances of narration, taken from a larger ethnographic study, investigate how teaching identity is produced and reproduced through social interaction, daily negotiations, and within particular contexts which are already overburdened with the meanings of others.

Helen’s telling is particularly acute, for her work is to construct an identity quite at odds with her own schooling experiences. Her account spells out the constant tension of confronting normative visions of what it means to be a teacher while negotiating visions yet to come. These moments were collected from field notes of my observations of Helen in each of her three practicums, from observations of her interactions within her on-campus mathematics class sessions, from photocopies of her assessed pieces from the university course work, and from the transcript of my interview with her at the end of her year. The intent in the interview was to understand how Helen understood her own process of learning to teach and, in the process, the discussion became a significant space for her own theorising.

Three Moments of Identity

The Context of Educational Biography

It is impossible to discuss learning to teach in Lave’s terms as an apprenticeship within contexts without taking into account participation in the social practices of schooling. For the student teacher, learning is the initiation into a social tradition (Salomon, 1993), an evolutionary process, necessarily involving three key contexts. Each context is

chronologically and geographically distinct one from the other; each presents a different set of assumptions and demands; and each makes available a different range of voices and discursive practices. Pre-service teachers entering the course bring with them their first over-familiar context, constructed through their own educational biography and through common sense ideas about the roles and functions of teachers in school. The second context is composed of personal student experiences in the university degree course and the postgraduate teacher education programme during which they become privy to aspects of the teaching profession. The third context is given definition from teaching practice. During the practicum, new aspects of the teacher's world and departmental and school politics are laid bare to them, and new relationships with teachers, administrators and students are made possible (Britzman, 1991). Precisely because each of the three contexts (prior educational biography, tertiary studentship, and teaching in schools) carves out its own borders, each represents different and competing relations of power, knowledge, dependency, commitment, and negotiation. More importantly, each institutionalises mandates for conformity, authorising particular frames of reference that effectuate certain ways of doing and being in teaching.

As neither wholly 'student' nor 'teacher' in the classroom, Helen brings all three contexts to bear as she attends to the task of educating others. For as long as she can remember she has wanted to be a teacher and she entered the secondary teaching course with the encouragement from her (now retired) teaching parents. Her undergraduate double major in mathematics and in statistics provided a way to put her knowledge of mathematics and her enjoyment in helping other people to use. Like many of her peers, she felt she could make a difference in the lives of students by helping them, and for her that meant more in the manner of the teachers she encountered in middle and upper secondary school than the teachers inscribed in her earlier educational biography. She spoke of her earlier experiences as 'being there to learn', and 'being silent', 'sitting in rows' and of 'one teacher to fifty students'. Yet while Helen believed there were certain limitations to her early experiences of teaching practice, her latter secondary education produced its own set of constraints:

The teacher can pay more attention to individuals. I think teachers have more time to talk to you and also to give you individual help. One to thirty is really different from one to fifty...You can sit on a group or in pairs. So there is a really big difference. And I feel that the maths class is more relaxing. But sometimes I don't feel that I learnt much in one lesson.

Helen's view of her educational history is constructed from two opposing national perspectives on the teaching and learning of mathematics both of which dictated unique conditions and circumstances for schools and for teachers and students. Such differing circumstances release a tension between an internally persuasive discourse which tells her that to be at school implies to learn, and the desire that all students should have the opportunity to learn, even if individual attention necessitates a slower pace. To make sense of this conflict Helen's work was to construct an identity which could celebrate individuality whilst simultaneously pressing for curriculum coverage. In Lave's terms she had to give due consideration to the "integral nature of relations between persons acting (including thinking and learning) and the social world, and between the form and content of learning-in-practice" (Lave, 1997, p. 20). In order to continue as a student teacher Helen had to learn to value those differences and find new sources of validation. She had to negotiate her own space, ever mindful of the definitions of schooling mapped out by her own secondary school experience as a learner.

There were lots of teachers in my past who I thought I'd really like to be like. Many of them and all in different ways. And there was one lecturer – his teaching style, like, to me, was excellent because he introduced a really difficult concept. Because it was like he was telling you a story. It's not a story really but the way he said it was like he was telling a story. I thought this could be a really good model for me.

The Context of the Teacher Education Program

If, as in Lave's understanding, teaching identities are constituted and negotiated within contexts of ongoing participation (Lerman, 1998), then those identities are constantly on the move. Within and between different contexts student teacher identifications are marked by competing meanings of experience, circumscribed by differences in time, place, events, and commitment. It makes little sense then to reduce the complexity of pedagogical activity to a technical solution. Yet prospective teachers want and expect to receive practical ideas, automatic and generic methods for immediate classroom application. Pre-service teachers seek out "the all too mechanical transmission of a collection of facts to be learned" (Lave, 1997, p. 17), bringing to their mathematics teaching course a search for recipes for putting across the mathematics content. Such a process sits comfortably within the tradition "institutionalised in Western schooling, in which teaching/transmission is considered to be primary and prior to learning/internalising culture" (Lave, 1997, p.10).

I expected that the teachers' college course would teach me how to teach maths. I didn't know in what way. Maybe the best thing is to give them ten questions to do and then warm up to the main work, like copying down into notebooks, or like how you organise your lesson. Like what's the first thing that you want the students to do and next, how do you set up your notes on the board, and the way you get students to do the exercises. The organisation is really important. Sometimes I feel that students are slack during the period. The teacher might not have the control to deal with that because the whole class won't do any work. So I also wanted to know how to handle the classroom.

Two expectations are collapsed into one: knowing how to teach and knowing how to gain and sustain classroom control. Helen looked to the course as the source rather than the effect of pedagogy. She expected to acquire 'tricks of the trade'. She sought methods for classroom discipline presumably in order to put across the mathematics content and ultimately to gain respect as a competent member of the teaching profession. The central issue here is that mechanistic applications present knowledge as an accomplished fact, separate from discursive practices and the relations of power it presupposes. Becoming knowledgeable in a practice, in Lave and Wenger's (1991) understanding, entails more than learning *from* talk about techniques for immediate classroom application; it involves learning *to* talk within and about the practice. Technical approaches, which encourage learning from talk, are "devoid of creative contributions" (Lave, 1997, p. 17), by the student teacher. Such approaches seriously limit the student teacher's understanding of the relationship between pedagogical practice and theory to one unencumbered by the specificity and political commitments of the pedagogical act. Helen's course work did not provide her with the methods she desired.

Helen: I didn't think we would learn so much about creative thinking.

MW: Did you think that the course might tell you that this is the best way to do things; that you start with this and then move onto that?

Helen: Yes, that's right. And, like, give you a couple of ways to work through a problem, instead of so many ways.

MW: Have you found that confusing?

Helen: No, not at all. It's really interesting. And I think that it's important because, like, if you can stimulate your brain then you can also stimulate your students. That's really important. I think the teacher has to be all the time thinking and being creative about maths.

The course gave consideration to the more messy questions of what to teach and why particular methods are suitable. It required students to discuss and debate the main terms of the prescribed curriculum and their theoretical underpinnings, and work through the types of practice born out of such theorising. It also focused on the technologies of lesson preparation, computer software evaluation and the critique of the microteaching of peers. In Helen's estimation, those approaches did provide pre-service teachers with an opportunity to unmask their own relationship to mathematics. In the process it offered "more a set of landmarks for [pre-service] learners than specific procedures to be taught to learner" (Lave, 1997, p. 23). It endeavoured to shape opportunities for the activity of teaching and hence the process of learning to teach.

One classmate in the teaching college in the course introduced Pythagoras with the areas, you know, the squares - the little squares that add up to the big one. And I thought that was a great idea and most of the students would like that idea as well. I thought that if I didn't introduce the idea properly, then I'm going to have a heap of trouble for the following two or three weeks.

The Context of Teaching in Schools

During three blocked weeks of the course year students worked in schools under the supervision of their associate teacher. The practicum is the time when a sustained structure of support is made available to student teachers, and is founded on the presupposition that school life is the authentic moment for knowing, thinking, and understanding about teaching. Like the apprentice tailors in Lave's analyses, student teachers observe 'experts' and others at work as well as the 'products' of their labour. They are, in Lave's understanding, located in a situation whose "specific characteristics are part of the practice as it unfolds" (Lave, 1997, p. 19). It is a time when they "learn to think, argue, act and interact in knowledgeable ways, with people who do something well" (p. 19). The practice phase is carried out usually with one-off lessons at first, and builds to a much longer set of sequenced lessons. A reasonable execution of the various constituencies such as questioning, and facilitation of student engagement is important but it is the overall pedagogical encounter which the associate and student teacher will be developing.

In Lave's terms, we can speak of the constitution of teaching identities as positioned in relation to levels of legitimate participation, from peripheral to full, yet never totally realised, participation in a community of practice. Newcomers, like student teachers, move through the process from legitimate peripheral participation (LPP), towards greater mastery. Full membership represents knowledge: to become a full member requires access to what the activity theorists call cultural tools—that wide range of practices or cultural resources including 'experts', other members, information, artefacts, technologies, symbol systems, rituals, ways-with-words and opportunities for participation. The intervention of such cultural tools becomes highly significant to the process of learning to teach precisely because student teachers access and mobilise the practices of the community through these tools in order to develop understandings of teaching in relation to other relevant and meaningful systems and practices.

Arguably access to such practices enables peripheral participation, yet it may also obstruct or deny. The practice and its meanings needs to be *transparent* (Lave & Wenger, 1991, p. 102) by the community for access and mobilisation to take place. Becoming

knowledgeable about teaching practice, then, is not an issue of receiving the unitary position on the nature of the teacher's work and the identity one must assume. The student teacher is not a static product but increases participation by continually shaping and being shaped by the dynamics of the practice, structure and history, and by the way in which the community makes the meaning of those practices "visible in the form of extended access to information" (Lave, 1997, p. 102). Helen talks of the ways in which the practices of the mathematics department at her school, and the 'inner workings' of those practices, were made transparent for her:

There were about 1100 students and there are about seven maths teachers, I think, including the junior teachers...In the maths teachers' meeting I felt like I'd come to a classroom, because there was one speaker and I sat at one table and they were looking at assessment and it felt like being in the classroom. But then, after a while, I felt it's great to work with a team. They made me feel part of the group though they didn't talk to me but I knew that they saw me as another maths teacher. Those teachers were really sharing, and my associate maths teacher gave me a lot of help as well. They talked about what they had done in class all the time. So that's really helpful for other teachers to know and try out. They just talked about it as normal talk.

From the student teacher's standpoint, the 'expert teacher' knows the material backward and forward. His or her work is aspirational. In observing the 'expert teacher' the student will often mark a check list of behaviours of practice. For Lave's apprentice tailors, the check list to be learned "encoded complex forms of order integral to the process of becoming a master tailor" (1997, p. 21). Theorising about such connections for the pre-service teacher allows a double insight into the meanings of their relationships to individuals, institutions, cultural values and events, and how these relationships constitute his or her own identity, values, and ideological orientations. This kind of insight is helpful to the new teacher who can, in turn, participate in shaping and responding to the special forces which impinge and construct teaching identity.

The teacher is a really caring person. He showed a great interest in his students in the way he explains...Like the way he speaks. I can't think of any examples. He sort of talked to each of them, although he was talking to the whole class but you felt that he was talking to you - only talking to you so that's really good. And he also moved to the centre of the students, or quite close to the students so that the students won't think, oh, he's just so far away from us, so far away. And also he moved around the classroom. When he was introducing a new topic he'd use some activity and he used to involve his students. Once he bought a box of ice cream to share with everyone. They were doing the Poisson Distribution. He had the little lollies in the ice cream - Hokey Pokey. He used this to chat a little bit with the students...I think that another thing is that he tried to make things easy and clear. Say, like, he introduced 'exponential'. He just said it's a special number because he didn't need the students to know exactly so he just made it simple for students and linked it with natural log.

Normative notions of teaching style tend to ignore the social basis of pedagogy. In Lave's understanding, however, every pedagogy is influenced by the complex social relations between teachers, students, school culture, and the larger social world. Within this compulsory relationship teaching style cannot be construed as an extension of one's personality. Rather, in social practice theory contradictions and social dependency are inevitable dynamics, and teaching style becomes subject to social negotiation. As Britzman (1991) has noted, teaching style then turns out not so much an individual determined product as a dialogic movement between the teacher, the students, the curriculum, the knowledge produced in exchange, and the social practices that make pedagogy intelligible.

Another teacher was a really old teacher - he was due to retire in two or three years. The way he taught is that he knew whatever things the student knew, you know. Like say, for example, in [the local town] he used the highway that everyone knows. He knows the road names and all that. All

the students know where he was talking about and he used this to kind of apply a really difficult formula. The topic was 'making x the subject', and he used this formula. He introduced this by telling them how the highway is built and all the students were focused on it. I'd like to be like this teacher, this older teacher.

For Helen this older teacher became Lave's 'master tailor'. He provide her with a "way in" (Lave, 1997, p. 21) to the community of practice which would lead to her own attempts at practice. At first these steps were tentative; they constituted an intellectual and emotional activity. In time she came to replace her desire for a unitary teaching identity to one which better represented teaching as an ongoing process and challenge, demanding and constructing complex social relationships:

I don't think I managed classroom control until the last about two weeks of my third teaching experience. I suddenly got some idea of how to control students. It's very slow, but at last I know that. At the beginning of the course I didn't expect that teaching would be so hard. And now although I think it's still a hard job I still think I'm capable. I mean I'm quite happy about it. I feel it's still difficult but I think I can do it.

Final Comments

In this paper I have taken an unconventional approach to theorise preservice teaching identity. Understanding student teaching identifications has been the focus of a large number of studies in mathematics education, yet historically those studies have employed a distinctly mechanistic conception of teaching. The relentless activity to 'explain' the teacher's success in mathematics tracked along a number of pathways to argue that successful teachers had evolved a particular suite of behaviours, beliefs and had experienced optimal classroom advantage which equipped them better for success. All this activity led mathematics educators and policymakers to form excessively simple ideas of both the purposes and practices of teaching.

I have drawn on Lave's social theory of practice to make a case for apprenticeship learning in a community of practice. I investigated the process of becoming knowledgeable in teaching practice for one secondary preservice education student. Initially Helen looked for 'recipes' for teaching but soon came to the understanding that such a quest reduces pedagogy to its most mechanical moment. Teaching means more than mere application; it demands and constructs complex social relationships. It is a process of dependency, struggle and social negotiation rather than the application of mere methodology, and required coming to terms with one's intentions and values, as well as one's knowing and being, in a setting of contradictory realities. Helen, through a process of formation and transformation, finally at the end of the year, understood who she might become.

...identity is not the goal but rather the point of departure of the process of self-consciousness, a process by which one begins to know that and how the personal is political, that and how the subject is specifically and materially engendered in its social conditions and possibilities of existence (de Lauretis, 1986, p. 9)

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