PET04551

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Managing the Challenges and Dilemmas of 'Constructivism in Practice'

Abstract
This paper reports on the findings of a qualitative study investigating ways in which teachers who are committed to a constructivist philosophy construct teaching and learning. In it we draw on Windschitl's (2002) framework of conceptual, pedagogical, cultural and political dilemmas to explore the experiences of four primary teachers who were participants in the study. These teachers have been involved in a South Australian Education Department innovative curriculum redesign project entitled 'Learning to Learn'. Having illuminated the challenges and dilemmas associated with 'constructivism in practice', we argue that the teachers are able to manage these problematic aspects because they are themselves immersed in a learning culture. This learning culture promotes their professional identity and supports their professional learning.

Introduction

According to Day (2000) in these uncertain times education should aim to develop those skills, processes and understandings that enable the learner to respond to and initiate rapid change and pose and solve complex problems. To achieve this aim, teachers are being expected to teach in reform-minded ways. Various labels have been attached to reform-minded teaching, including 'authentic pedagogy' (Newman & Associates, 1996), 'constructivist pedagogy' (Fosnot, 1996), 'productive pedagogies' (Lingard et al, 1998) and 'progressive pedagogy' (Semel & Sadnovik, 1999). Regardless of name, there is no doubt, according to Windschitl (2002) that these pedagogies are likely to be based on 'the rhetoric of constructivism' (p. 131).

Central to constructivism is the notion that learners play an active role in 'constructing' their own meaning. There are varying conceptions of constructivism, depending on whether the emphasis is on individual cognitive processes or the social co-construction of knowledge.   However, many educators have agreed that the constructivist pedagogies which are being advocated in the reform vision of learning represent a synthesis of cognitive and social perspectives, where knowledge is seen as personally constructed and socially mediated (Driver, Asoko, Leach, Mortimer & Scott, 1994; Shepard, 2000; Tobin & Tippins, 1993, all cited in Windschitl, 2002). Classrooms are being seen as places where 'inquiry and co-construction as well as other forms of student-centred, discourse-based interactions dominate' (Holt-Reynolds, 2000, p. 21).   The act of teaching is being reframed as 'build(ing) on learners' prior knowledge and engag(ing) them in purposeful, contextualised, challenging and interesting learning activities' (DETE, 2001a, p. 2).

With these emphases, come many challenges and dilemmas for teachers as they are involved in 'learning new knowledge, questions and practices, and, at the same time, unlearning some long-held ideas, beliefs and practices…' (Cochran-Smith, 2003, p. 9). This paper highlights some of these dilemmas, based on a study of four primary teachers who were committed to implementing classroom practices with a constructivist orientation. We argue that in order for these teachers to manage the tensions and contradictions associated with reform-minded teaching, they need to have a strong sense of professional identity and be supported in their professional learning. This is achieved by belonging to a professional learning community.

Background

Since 1999, the South Australian Department of Education and Children's Services has provided funding for selected schools to participate in a program of educational renewal through involvement in the Learning to Learn Project. It draws on and promotes constructivism as a theory appropriate to rethinking learning processes and moving towards achieving improved meta-learning. Schools in the Project receive funding to send school leaders and groups of teachers to attend a Core Learning Program, which provides the stimulus for site wide programs aimed at transformation of the local learning environment for students and teachers. Principals and designated change leaders in each site, project managers, Departmental curriculum officers and university colleagues attached

to the project meet together regularly in Learning Circles, each encompassing between 6-8 of the sites involved in the project. The purpose of the Learning Circles is to provide the opportunity for participants to reflect on and share the issues and challenges facing leaders of changing schools and share strategies for supporting learning in their school communities.

We have been in involved in the Project as university colleagues and facilitators of three of the Learning Circles since its inception. It was through this contact that we decided to look more closely at what was happening in two of the schools. We used a qualitative research approach, as our aim was to achieve a rich and detailed representation of the 'what, how, when and where' of constructivist practices and learning cultures as they are experienced in four South Australian classrooms. We selected two primary schools in Adelaide, involving two teachers in each school. Both schools are considered to be 'disadvantaged' because of their high proportion of students who require government assistance. A year 6/7 (ages 11-13) teacher and a Year R/1/2 (ages 5-7) teacher were involved at one of the schools, while at the other, two teachers who team teach two classes of Years1/2 (ages 6-7) were involved.

Data collection procedures included initial interviews with each teacher, weekly/fortnightly classroom observations (of 1 –2 hours duration) throughout the first two terms of the school year (in conjunction with an interview with the teacher/s concerned), individual interviews with the school leaders and on-going document analysis. We used a collaborative approach to the research that involved the teachers as much as possible, both in analysis and interpretations. Transcripts were returned to teachers regularly for annotation and further elaboration and meetings were convened once a term to allow researchers and teachers to scrutinise the data and to compare and contrast emerging interpretations. Whilst initially it was thought that these meetings would cease once the initial analysis was completed, the meetings have continued into this year, to allow for collaborative exploration of a second theme which emerged in the collaborative analysis process – that of dilemmas. Thus, the study has not only provided some insights into 'constructivist learning cultures' but is also providing insights into the challenges and dilemmas of the teachers involved in reculturing. Prior to looking at these however, it is necessary to provide a summary of some of the initial findings, as these will provide background for the current paper.

Our initial findings confirmed that 'things were different' in these classrooms in comparison to more conventional classrooms. The differences could be seen in the nature of the learning relationships and learning conversations and in the construction of learning tasks (see Authors, 2003). The teachers were committed to the idea of developing learning cultures where learning, and those involved in it, are valued. Relationships were developed which were based on mutual respect, promoted student responsibility for their learning and contributed to the development of a learning community. There were high expectations regarding learning, with an emphasis on student engagement and participation. Students were encouraged to share their thinking and engage in talking about their learning and so many 'learning conversations' occurred in these classrooms. These conversations had the following characteristics; use of explicit language, a focus on metacognitive processes and a focus on support and challenge. As the four teachers in the study attempted to move their practice toward a more constructivist orientation they also developed learning tasks that had meaning for their students, were open-ended and built the skills for independent and collaborative learning.

Another finding that emerged from our initial analysis was that in moving towards more constructivist classrooms, the teachers were being confronted with quite a number of tensions, challenges and dilemmas. These were initially framed as four key questions (see Authors, 2003);
- How can an appropriate balance between knowledge construction and the development of learning objectives be achieved?
- How can teachers keep track of what individuals are learning?
- How much choice should students have?
- What support do teachers need to sustain the high level of energy and enthusiasm needed to develop classroom culture with a constructivist orientation?

It was clear that these dilemmas are inherent in the kinds of relationships, conversations and tasks that are evolving in these classrooms.

Theoretical Framework

Having established that dilemmas were central to the work of the teachers in our study, we realised that it was important to explore further their perceptions of this facet of developing constructivist oriented teaching. To do this we decided to use the framework identified by Windschitl (2002) in his analysis of the challenges facing teachers who attempt to implement constructivist instruction. He argued that implementing constructivist

instruction has proved more difficult than many in education realise because it is full of ambiguities, contradictions and compromises for teachers. He explained why this is so;

The most profound challenges for teachers are not associated merely with acquiring new skills but with making personal sense of constructivism as a basis for instruction, reorienting the cultures of classrooms to be consonant with the constructivist philosophy, and dealing with the pervasive educational conservatism that works against efforts to teach for understanding (Apple, 1982; Little, 1993; Purpel & Shapiro, 1995). (p. 131)

Windschitl developed a theoretical analysis of constructivism in practice by building a framework of dilemmas. He defined dilemmas in this context, as 'aspects of teachers' intellectual and lived experiences that prevent theoretical ideals of constructivism from being realised in practice in school settings' (p. 132). The four frames of reference he used to describe these dilemmas are;
- conceptual dilemmas
- pedagogical dilemmas;
- cultural dilemmas; and
- political dilemmas. (p. 133)

Under each of the dilemmas, he posed some representative questions of the kinds of concerns experienced by teachers engaged in constructivist practice.

Windschitl's paper, and in particular his frames of reference, were used by the teachers and us to inform our thinking and assist in further exploration of dilemmas. In reporting our findings in the next section, we have, once again, used his framework of conceptual, pedagogical, cultural and political dilemmas, and his strategy of identifying dilemmas in the form of representative questions. Against the four frames of reference we identify and discuss questions which represent the dilemmas that emerged as most troublesome for the teachers in our study.

Our Findings

In this section of the paper we present our study's representative questions and examples from the study to highlight each of the dilemmas.

Conceptual dilemmas

According to Windschitl (2002), conceptual dilemmas are rooted in teachers' attempts to understand the philosophical, psychological and epistemological underpinnings of constructivism. Typical dilemmas facing teachers include choosing between different versions of constructivism and determining whether all activities should result in knowledge 'construction' by learners (p. 132). For the teachers in our study the key conceptual dilemma is represented by one main question; Is it constructivism?

Is it constructivism?
A tension for the teachers in this study was whether or not what they were doing in their classrooms was 'constructivist'. All four teachers, varied in their view of what they understood by constructivist teaching. Gail described some characteristics of such teaching as 'hands on, open ended questioning, exciting' while Chris felt it was 'a child-centred approach' and 'about giving children a language for talking about what they're actually learning about'. David emphasised making the 'curriculum relevant' and 'children having a say and an understanding of why they're doing it…and making discoveries for themselves'. For Nancy it was about 'building on from prior knowledge, thinking skills and letting children have choices but knowing there's consequences for their choices'.

The teachers were reluctant to describe themselves as constructivist teachers as they did not use what they perceived to be 'constructivist practices' all of the time. Rather they explained that it was 'a part of their thinking' or they were 'to some degree'. The following comment by Gail is illustrative of their views;

> … I would consider myself to be constructivist to some degree. I'm not sure what degree and I'm not going to put a number on it.

Clearly the teachers had their own views of constructivism. However, what came through in our conversations with them was that they did subscribe to constructivism as a theory of learning and recognised that as it plays out in the classroom, it challenges many taken for granted assumptions about teaching and learning.

Pedagogical dilemmas

Within Windschitl's (2002) framework, pedagogical dilemmas for constructivist teachers are those that arise from the more complex approaches to designing curriculum and fashioning learning experiences that constructivism demands. They might include dilemmas about managing classrooms where the students are talking to one another rather than to the teacher and determining which assessment tasks will capture the learning that is fostered (p. 132). Pedagogical dilemmas which were of particular concern to the teachers in this study can be represented as; 1) How can an appropriate balance between knowledge construction and the development of learning objectives be achieved? 2) How much explicit teaching is appropriate? and 3) How should I allocate my time in the classroom?

How can an appropriate balance between knowledge construction and the development of learning objectives be achieved?
All of the teachers work in government schools, which means they need to frame their curriculum within the South Australian Curriculum Standards and Accountability (SACSA) Framework (DETE, 2001b). They are aware that although they value incorporating students' individual interests and questions as starting points for knowledge construction, and having them initiate and manage learning as much as possible, they need to also plan around learning objectives that fit within the 'broad outcomes' and 'essential learnings' of the SACSA framework. Chris highlighted the tension that can occur between what her students value in the learning program, and what she knows to be important objectives of the prescribed curriculum;

> I was having a conversation with my children a couple of weeks ago and my question was, 'What is it in this classroom that's worth learning?' And I realised afterwards that they had interpreted 'worth' as meaning 'fun'… and one of the things they said they didn't like was writing. …They didn't like when we had to do a recount on Mondays or had to do a narrative.

All the teachers found that in planning their learning program they must, to some extent, be guided by the prescribed learning outcomes of the SACSA Framework, even if these are not always congruent with students' needs and interests. So, for instance Gail described how in planning a unit of work on Space that had arisen from students' interests, she first studied the SACSA Framework to find where she could make links. Chris, too, provided an example of how, in more recent times, she has tried to manage this dilemma;

> In … negotiating the curriculum, I gave the year 1's and 2's a copy from the draft (SACSA) English document in 'Text and Context' and 'Reading' and said, 'What can you do from this? What do you need to do?' And together we worked out what we're going to do over the next few weeks from those pages and they told me what they wanted to start with.

Intrinsic to this dilemma of managing to balance system prescribed learning objectives with opportunities for students' to construct knowledge from individual starting points, is another pedagogical dilemma of how to make learning tasks meaningful to students. All four teachers employed meaning making strategies such as basing tasks on students' interests, giving students choices and using their existing knowledge as a starting point (Authors, 2003). However, because they accepted that there were some aspects of curriculum they needed to focus on to achieve prescribed outcomes, they felt it was not always possible to make those aspects have any immediate relevance for students. For Gail, one such aspect was developing students' knowledge and skills in 'written exposition', which she believed was an important component of her curriculum for Year 6/7 students, but not one they would realise they needed or choose to engage in.

How much explicit teaching is appropriate?
The teachers favoured using collaborative, open-ended learning tasks where possible, with multiple entry and exit points. As students engaged with these tasks the teachers circulated to monitor and address learning needs of individuals and groups, so much of the teaching that was done was responsive and on a one-to one- or small group basis That is not to say that there was not also teaching that was explicit and to the whole class in the form of explanation, demonstration and involving the use of models and scaffolds (Authors, 2003). All of the teachers accepted that explicit teaching has its place, as can be seen in Chris' comment; 'It shouldn't all be knowledge construction by learners, there are times when you're much more explicit than that.' However, an ongoing dilemma for the teachers was trying to reconcile their use of explicit teaching with their valuing of student centred enquiry as a basic tenet of constructivism.

Referring to the topic of 'written exposition', cited earlier, Gail explained that this was an area in which she struggled to use a constructivist approach;

I suppose you could allow children to discover how to write exposition but I don't think you'd be very successful very quickly. It would be a fairly painful process. So explicit teaching is required and… down the line, when students are skilled in such writing then perhaps they can write an exposition of their choice.

Nancy felt that there were some aspects of particular Learning Areas, in which it was important to use explicit teaching, but found that her views were in conflict with other teachers in the area;

One of my pet things is (that) I think you need to teach people how to draw and how to do lots of things explicitly so I do that and I talk about the maths involved in that, where to put it on the paper all that sort of thing. And it was interesting, we went to this conference and on the notes it said that you shouldn't do that because it stifles creativity.

In reflecting on these contrasting views, she felt reassured that her explicit teaching of drawing cartoons, had not stifled students' creativity when it came to the next opportunity for using this skill. Only three students still asked for explicit support, while the others were all able to take what they had learnt and apply it in a range of creative ways to a new subject.

Interestingly, David, felt that he was more comfortable employing an enquiry-based approach in those Learning Areas, such as Music, in which he had considerable expertise himself. He thought that having a deep understanding of a subject area would give you more confidence to 'let the kids explore more'. However, he also speculated that sometimes having expertise may mean that teachers feel more tempted to draw on this to 'to tell someone else about the subject', rather than facilitating a discovery process.

How should I allocate my time in the classroom?
Finding the most effective and equitable way to allocate time in the classroom is a dilemma for most teachers, but these teachers felt that striving towards constructivist approaches presented them with particular time-related dilemmas. Although they spent some of their time working with the whole class, the majority of their time was spent circulating to interact with individuals and groups of students. During these interactions they posed probing questions, sought clarification and additional information, offered encouragement, monitored progress and provided feedback (Authors, 2003). The teachers realised that it was unrealistic to expect to be able to spend time with every child in every lesson, as can be seen by Gail's comment;

Although I'm fairly busy and active in lessons I don't always speak to every student in every lesson to have intense in-depth, questioning conversations….I simply can't do that for every lesson every day and take into consideration all sorts of other things that need to happen as well.

However, because they viewed these interactions as important to developing students' knowledge and skills, they were concerned about the extent to which they spent lots of time with some students, and not very much time with others. Nancy expressed it in this way;

…(there are) these kids who just cannot cope with what we are trying to do with them and you spend so much time with them that at the end of the day you look back and you think, 'I don't think I even had a conversation with that child today,' and that is really scary.

Overall, finding pedagogical approaches that balanced knowledge construction and the development of system determined learning objectives, balanced self-discovery and explicit teaching, and enabled the teachers to spend quality time with each student, presented daily challenges for them.

Cultural dilemmas

Windschitl (2002) claimed that cultural dilemmas emerge between teachers and students during the radical reorientation of classroom roles and expectations necessary to accommodate the constructivist ethos. For example, constructivist teachers need to work out how to contradict traditional, efficient classroom routines and generate new agreements with students about what is valued and rewarded (p. 132). The cultural dilemmas that most challenged our teachers were; 1) What is non negotiable - where do I draw the line? and 2) To what extent can students manage their own behaviour?

What is non negotiable – where do I draw the line?
In these classrooms the traditional rules, roles, responsibilities and relationships of teachers and students were being renegotiated to develop a learning community in which teachers could be learners and students could teach each other, while also taking more responsibility for managing their own learning and behaviour. Integral to this renegotiation was students' active involvement in classroom decision-making (Authors, 2003). However, the teachers were fully aware that the ultimate responsibility for managing the learning program rested with them, and that there were times they had to intervene, and in some cases over-rule students. One of the things they all agreed on was that students' learning was paramount, so they would over-ride choices made by students that impeded learning. One of the areas in which students could not exercise choice, was in whether to work or not. David put it this way;

> We have a similar (view), saying, 'Sorry but you've given us no choice but to say your choice has finished.' There's a time where that's it, no more.

Living with the results of students' decisions was sometimes difficult for teachers, as was the case for Chris, when she allowed groups of students to decide how to re-arrange the furniture in the classroom;

> …the first group rearranged them in groups with tables together, a week later the second group (arranged them in) straight rows and every teacher who came through said, 'Mm, what's happening here.' But at the end of each week, having sat in the arrangement that the particular group had put them in, we discussed the pros and cons and what you liked and what you didn't like and they're back now into groups.

Gail confronted an even more challenging dilemma when her whole class decided they wanted to paint the classroom as their 'enterprise project';

> There are times when you feel really backed into a corner and that is a dilemma and I knew I couldn't cope with repainting the classroom. I knew that that would be nervous breakdown stuff for me because I just loathe anything like that and I knew I couldn't handle it and I had to say so.

To what extent can students manage their own behaviour?
To participate effectively in the learning programs in these classrooms students needed to learn to interact respectfully, work independently and cooperatively and take increasing responsibility for their learning and actions. All four teachers took a lot of time in first term to establish the norms of responsible and respectful behaviour and developing a positive and effective 'learning culture' (Authors, 2003). The teachers were challenged with finding various ways to support their students to develop self managing behaviour, rather than responding in ways that managed their behaviour for them. In doing this, many traditional attitudes around the roles of teachers and students needed to be confronted and it became clear that some children coped with this more easily than others. All four teachers talked about the amount of time they spent talking 'over and over again with some students about appropriate responses'. As David explained; 'You wouldn't mind so much if it's the only time you deal with it…but it's this ongoing day after day stuff with the same kids.'

Chris reflected on the difficulty of trialling approaches that focus on students' developing self management skills;

> I was trying different ways of managing behaviour and things went … from bad to worse there for a while and I'm just coming to pull back a little bit (and) maybe not give the children so much leeway. And they're (almost) back to where I'm happier with them, but it's challenging when you get these ideas and you think, 'Yes, that's great, that sounds really what I want for my children,' but I found that it didn't always work.

The following example from David, also illustrates the difficulty of maintaining a positive, student centred approach;

> We had a discussion the other day down on the carpet because, to be honest with you, we'd just had enough and we were sick of the backchat and the whinging and the crossed arms and all that. … We were talking about collecting data on negative interactions within the classroom, which is probably the wrong way to go. We should actually probably do it the other way round, do the positive, but that wasn't what the discussion was about, it was negativity.

In establishing a learning culture, the teachers were committed to the notion of students managing their own behaviour but were continually challenged by their children's responses to this invitation/expectation. The

dilemma then appeared to be; 'To what extent can students manage their own behaviour?' All four teachers acknowledged that there were many variables involved, as their children came with a diverse range of emotional and social needs, as well as academic needs. Gail explained;

> I have a lot of demanding students in my class and they demand my attention for a whole range of reasons but I don't think it's any easier or more difficult depending on the task, they are just kids who aren't engaged generally or can't cope for all sorts of reasons or they don't feel they have the skills even if they actually do.

Overall, it can be seen that when teachers try to change the way that teaching and learning occur in their classrooms, it creates particular dilemmas in terms of classroom management. The teachers in this study managed ongoing tensions around when to intervene in students' decision making and the extent to which they could expect students to be self managing.

Political dilemmas

For Windschitl (2002), political dilemmas are associated with resistance from various stakeholders in school communities when institutional norms are questioned and routines of privilege and authority are disturbed. Such dilemmas might include working out how gain the support of administrators and parents for teaching in such a radically different and unfamiliar way, or questioning whether constructivist approaches can adequately prepare students for high-stakes testing or for college admissions (p. 132). Our teachers, too, were concerned with similar questions; 1) How do I respond to stakeholders' expectations? and 2) How do I sustain 'reform-minded' practice?

How do I respond to stakeholders' expectations?
As in all schools, these teachers engaged with the expectations of a range of stakeholders including students, parents and caregivers, school leaders, teachers in their own and other schools and system policy makers. Each time they began with new classes, they knew that their ways of operating would not conform with the expectations of many students and parents who were used to more traditional approaches. This meant that they had to convince both groups of the importance of developing the kinds of learning cultures and programs they valued. They also knew that at the end of each year their students would be moving into new classrooms to work with teachers who might expect them to operate in very different ways. The teachers could not help but worry about how their students would cope with this transition, as can be seen in Nancy's comment;

> …we've got children we've had for 2 years so they will probably go on as year 2's. What are they going to be like in a classroom that's not like ours, I wish I could be a fly on the wall. When they go into year 3, which I think is different to what we do, how do they get on? Do they just slot back into the way we probably used to work a few years ago?

For Gail, this concern was compounded because her year 7 students would be moving into the secondary sector, a somewhat daunting prospect for them and their parents;

> When I speak with parents of students who are in year 7 their main focus is, 'Will he or she be okay, are they ready to go to high school, will they cope at high school?' They seem to think that that is paramount in year 7 is this ability to cope in year 8 .

Interestingly, the teachers also felt that, at times, others' perceptions that they were 'constructivist' teachers, could make them feel uncomfortable on those occasions when they were engaging in a highly structured activity. For example, if they were teaching an explicit lesson and a colleague walked past.

How do I sustain 'reform-minded' practice?
Finally, it would be misleading to depict these teachers as having achieved certainty that the changes in their practice were uniformly beneficial and should be sustained, as can be seen in David's comment, 'So the dilemma is … what is right, what is the best way? It's trial and error.' Chris reflected on the constant tension that existed between her past perceptions and practices, and her efforts to transform her approach to one more in line with constructivism;

> And it's all the stuff that you bring with you from your previous teaching and your previous training that sometimes you don't know that you're doing it, that there is a mix and match. And unless somebody points it out to you, (or) you can see yourself in action or you read something that makes you think more about it, you just go on being oblivious.

On a daily basis the teachers found themselves questioning their approaches and analysing the costs and benefits for their students. For Nancy and David, working as a team with two classes enabled them to critique their practice at will;

> The advantage that David and I would have… (is) we talk all day. We just chat and (say) 'No I don't think that worked. Well how can we do this?' Or we see something where we just go with it.

For Chris, working in an open unit with other teachers provided the chance to debrief through discussions about teaching and learning at the end of each day.

All teachers reported that sustaining student centred approaches was far more emotionally demanding and tiring than when they had used more teacher directed approaches. There were times when they needed to revert to old ways simply to survive the day as occurred for Gail when she returned after an illness;

> I said to my class how my health was and that today there would be a few things done differently because otherwise I couldn't be here at all so they were able to work around that. It wasn't quite 'shush and colour', but they could understand that I didn't have the energy for the usual style of classroom life. So self preservation is important too.

All in all, for these teachers, attempting to reform practice was a political process in that they had to manage resistance arising not only from stakeholders' discomfort with practice that did not conform to expectations, but also from within, as they struggled with self-doubt and the temptation to revert to the less demanding ways of the past.

Discussion

The analysis of the perceptions of the four teachers in our study confirmed and elaborated the classroom realities of Windschitl's (2002) four frames of dilemmas. The notion of dilemmas in education is not new. Berlak & Berlak (1981), for example represented the dilemmas which teachers face into three sets; control set, curriculum set and societal set. This work was seminal in establishing teaching as a highly problematic endeavour, where teachers are constantly engaged in questioning the social, educational, moral, ethical and political implications of their work. Thus, as we know, all teachers are challenged by dilemmas. However, what this study illustrates is that for teachers trying to reform their classrooms around constructivist principles, some of these dilemmas are exacerbated. For, as Windschitl (2002) explained, 'The very features that make constructivist classrooms so effective also create tensions that complicate the lives of teachers, students, administrators and parents' (p. 164). He also made the point that constructivist teachers are 'subject to an intensification of accountability' because their practice is conspicuously different to what occurs in typical classrooms (p. 160).

There is no doubt that the teachers in this study confronted many challenges and dilemmas as they attempted to transform their classrooms. There is no doubt also that they will continue to confront dilemmas! So the question becomes 'How do they manage this?' We would suggest that what supported these teachers to manage the tensions and contradictions associated with reform-minded teaching, was their strong sense of professional identity and the support they received for professional learning, both of which were derived to a large extent from the strong professional learning communities within which they worked.

The term 'learning communities' is used in the teacher development literature to describe a positive and enabling context for teachers' professional growth where the professional learning of teachers is shared and problematised (McLaughlin, 1997; Groundwater-Smith & Mockler, 2003). The school reform literature is rich in examples of schools working towards becoming 'learning communities' by making changes to the ways they are organised and structured as well as changes to develop more collaborative school cultures (see for example Authors, 1996). There is much in the literature about the benefits of 'learning communities' for teachers, such as providing opportunities for teacher learning and enriching the possibilities for student learning, retaining talented teachers and enabling teachers to work together toward a common goal (Grossman, Wineburg, & Woolworth, 2001). As Seymour Sarason (1990, cited in Grossman et al, 2001) recognised years ago, 'we cannot expect teachers to create a vigorous community of learners among students if they have no parallel community to nourish themselves' (p.993).

The teachers in this study were nourished by the learning communities that had developed within their schools, and beyond, through their involvement in the Learning to Learn project. They were challenged by the new thinking they were able to access through the Core Learning Program provided by the Project and supported to

translate and implement it at the school and classroom level by their school leaders, who were intent on developing the learning culture of their schools. This learning culture provided a high degree of both intellectual and emotional support. Both were necessary as the teachers spent time talking with colleagues about the changes they were making to their classrooms and reflecting on their teaching practices and the new learning to which they were exposed. The teachers asked many questions of themselves and each other. These conversations often challenged previously taken for granted assumptions around teaching and learning, giving rise to some of the tensions and dilemmas with which teachers engaged, but they also provided a source of support for managing the dilemmas through ongoing dialogue. In participating in such dialogue, they developed their confidence to articulate their beliefs and to talk about their teaching. This was particularly valuable when talking with parents/caregivers, who were also challenged by the changes they were seeing in their children's classrooms. The importance of dialogue has been recognised in the literature as a vital first step for renewal. Newmann & Associates (1996), for example, recommended that teachers locate 'like minded collaborators' as a critical step in advancing their constructivist-oriented practices. And Feiman-Nemser (2001) emphasised that 'regular opportunities for substantive talk with like-minded colleagues help teachers overcome their isolation and build communities of practice' (p. 1043).

The learning cultures in which the teachers were immersed reinforced the 'teacher as learner' concept continually. This was helpful for two reasons. Firstly, it enabled the teachers to take risks as teachers and learners and secondly, it helped the teachers accept and manage the uncertainty associated with change and to cope with their own levels of discomfort. The teachers were supported to take manageable risks in changing their teaching behaviours. That is, they did not throw away all of their previous teaching practices and start again. Rather, as a result of inquiring into their practice, they came to appreciate which practices were congruent with their constructivist beliefs and which were not. They then tried new practices, whilst at the same time keeping some of what they were doing before and discarding some other practices and strategies.

Finally, this study has affirmed that transforming classrooms is emotional work. This is the case at a number of levels. At one level there is the emotional dimension of educational change, which is being increasingly acknowledged in the literature (Cochran-Smith & Lytle, 1999; Stokes, 2001). The teachers in this study certainly experienced varying levels of discomfort and the corresponding self-doubts that come with 'doing things differently'. There is also another emotional level, which this study has illuminated. This is that re-culturing classrooms in ways that focus on learning relationships and conversations highlights the social-emotional dimensions of learning. These teachers were attuned to the interactions between learners, the use of language, cultural patterns and the emotional climate of the learning environment. Yet they were able to manage the emotional dimensions of their work because they understood and accepted that emotions are central to the learning process. This understanding arose, at least in part, from their involvement in Learning to Learn and their school learning community, both of which acknowledged the emotional aspects of learning and educational reform.

Conclusion

In this paper we have illuminated the kinds of dilemmas and challenges that confronted four 'reform minded' teachers who are developing constructivist oriented practices in their classrooms. We would argue that these teachers are managing the tensions and dilemmas associated with 'constructivism in practice' because they are themselves immersed in a learning culture. This learning culture promotes their professional identity and supports their professional learning. A teacher's sense of self or professional identity is crucial not only because it determines their abilities to develop positive learning relationships with their students, but because it determines their abilities to participate as a constructivist teacher. It takes confidence, as well as competence, to co-construct a classroom culture which enables students to feel a sense of ownership and responsibility. It also takes confidence to confront inequities and to challenge the implicit classroom conditions which act as barriers to some students' participation. Involvement in the Learning to Learn Project, and the support they receive from their learning communities, has contributed to these teachers' ability to confidently manage the dilemmas that appear to be intrinsic to developing constructivist instruction.

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