
Towards constructivist classrooms: the role of the reflective teacher

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Abstract

This paper draws on our experiences of working in a South Australian school reform project entitled 'Learning to Learn'. The paper focuses on the role of reflection in enabling students and teachers to participate in new ways in the teaching-learning process. The teachers involved in this project actively involved themselves in – and were supported in – a learning process that required them to rethink and reframe their ideas around learning and student participation, so that they could begin to reform their classrooms, based on a constructivist epistemology. The paper provides some insights into how a number of these teachers actively involved their students in a reflective learning process that 'let them into the secrets' of learning. Four strategies have been identified: developing reflective attitudes in their students, explicitly teaching metacognitive skills and processes, making space for reflection in their classrooms, and using and encouraging a responsive interaction style. We propose that the role of the reflective teacher in transforming classrooms is to engage in reflective processes for their own learning *and* to engage their students in reflective processes.

Introduction

Increasingly, 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) and 'productive pedagogies' (Lingard et al 1998). Regardless of label, there is no doubt, according to Windschitl (2002, p 131), that 'progressive pedagogies are likely to be based on the rhetoric of constructivism'.

Central to constructivism is the notion that learners play an active role in 'constructing' their own meaning. Knowledge is not seen as fixed and existing independently outside of the learner but rather learning is a process of accommodation or adaptation based on new experiences or ideas (Jenlick &

Kinnucan-Welsch 1999). 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 that are 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, according to Windschitl (2002, p 135), is being reframed as 'co-constructing knowledge with students, acting as conceptual change agent, mentoring apprentices through the zone of proximal development and supporting a community of learners'.

These new expectations for teachers' knowledge and practice have resulted in increased learning demands for teachers, and, in keeping with a social constructivist view of learning, *learning communities* for teacher development have been established. This term is used to describe a positive and enabling context for teachers' professional growth where the professional learning of teachers is shared and problematised (McLaughlin 1997). Learning communities are seen by many as an effective way to support teachers and bring about the changes that are deemed necessary for effective teaching and learning in the twenty-first century (McLaughlin 1997; Cochran-Smith & Lytle 1993, 1999; Darling-Hammond, Berry, Haselkorn & Fideler 1999; Lieberman 2000; Little 2002).

Lieberman (1995) emphasised that this new paradigm of professional development calls for ongoing study and problem solving among teachers in the service of a dual agenda: promoting more powerful student learning and transforming schools. The importance of recognising the interconnectedness of student learning and teacher learning was reiterated by Feiman-Nemser when she wrote:

After decades of school reform, a consensus is building that the quality of our nation's schools depends on the quality of our nation's teachers. Policy makers and educators are coming to see that what students learn is directly related to what and how teachers teach; and what and how teachers teach depends on the knowledge, skills and commitments they bring to their teaching and the opportunities they have to continue learning in and from their practice. (2001, p 1013)

In this paper, we describe an Australian initiative that targeted *teacher learning* and provided opportunities for teachers to continue to learn in and from their practice. We highlight the role that this initiative played in enabling the teachers to begin to reform their classrooms, based on a constructivist epistemology. It will be seen that the learning community to which the teachers belonged engaged them in new discourses around teaching and learning and supported them reflecting on their practice. In turn, the teachers did this for their students – engaged them in new discourses around teaching and learning and supported them to reflect on their learning. We argue that students' levels of participation in the learning process are

inextricably linked to their teachers' levels of participation in their own learning processes.

Background: the Learning to Learn project

Recent developments in South Australia have supported the trend towards the adoption of constructivist teaching and learning practices. The new curriculum frameworks and standards documents emphasise the importance of constructivism as a theoretical basis for educational improvement in government schools. And since 1999 departmental funding has supported teachers and project colleagues in the Learning to Learn project to contribute to curriculum policy for the future by developing 'pedagogy which elicits generative thought and creativity as the needed "knowledge" of the future' (Foster, Le Cornu, Peters & Shin 2002, p 3). 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 draws on the expertise of educational theorists from Australia and overseas. These experiences provide 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 and 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 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 taught two classes of Years 1/2 (ages 6–7) were involved.

Data collection procedures included initial interviews with each teacher, weekly or 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 ongoing 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.

Initial interpretations of our data highlighted a number of aspects of the teachers' classrooms which demonstrated that there was a commitment to student engagement and participation. These aspects were classroom organisation, the nature of the learning relationships and learning conversations and the construction of learning tasks (see Peters, Le Cornu & Collins 2003). Each classroom was developed as a learning community, in which teachers and students learnt together with a blurring of boundaries around the roles of teacher and learner. The teachers emphasised the importance of shared interaction, collaboration and negotiated meanings and also regarded the development of language as playing a crucial role in learning.

It was clear that the teachers in this study implemented particular processes and structures in their classrooms, consciously and thoughtfully. Upon further analysis we found that reflection emerged as a key theme, both as it occurred outside of the classroom, enabled by participation by the teachers in school and project learning communities, and inside of the classroom, as teachers engaged in reflective processes with their students. In the remainder of the paper we present some of the insights focusing on the role of reflection followed by a discussion of the role of the reflective teacher.

The role of reflection: outside the classroom

One of the first things that the school leaders did to develop a learning culture for their staff was to make space for reflection. Time was made available for teachers to talk with each other about the new thinking they had been exposed to at the Core Learning Program, to share meanings and help them make their understandings explicit. 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' (2001, p 1043). The school leaders confirmed the important role of the Learning to Learn project in enabling this to occur. As one said, 'It's been a resource that's given us time to actually have space to have conversations.'

In describing the nature of the conversations, the school leaders emphasised the role of reflection. One leader described them as 'opportunities to spend time reflecting with other teachers around practice and why you do certain things'. The school leaders commented on the growth they had seen take place in their teachers' practice, but also in 'their reflection and their questioning of what they are doing'. Theorists such as Zeichner and Liston (1985), Van Manen (1977) and Handal and Lauvas (1987) have attempted to define reflective practice by describing different levels of reflection. In particular, they have distinguished between reflection about actions (technical reflection), reflection about the reasons for actions

(practical/theoretical reflection) and reflection about assumptions, values and the compatibility of actions with notions of social justice and fairness. This ethical level of reflection is referred to as critical reflection.

The teachers engaged in various levels of reflection as they spent time reflecting on their teaching practices and also on the new learning to which they were exposed. This required them to challenge previously taken for granted assumptions around teaching and learning. As one teacher said, 'It's a really good opportunity to clarify and confirm and challenge philosophies'. The teachers, in learning to involve students more in the learning process, were often asking questions of themselves and each other. This was most evident in the conversations around choice and boundaries and roles and involved letting go of some often long-held beliefs. The teachers engaged in a level of critical reflection that involved them not only confronting old assumptions around teaching and learning generally, but also confronting new assumptions around participation. They continually reflected on the levels of participation and the implicit structures, assumptions and relations operating in the classrooms that might be interfering with the learning process. They then made changes to their practices (see Peters et al 2003).

As well as reflecting on their teaching, the conversations appeared to promote a high degree of personal/professional learning. Hence they were often referred to as 'learning conversations'. The teachers came to appreciate that they needed to understand themselves, their patterns and how they respond and they needed to be clear about what they value and what assumptions they make. They also got to know themselves as learners – challenged by input from the Core Learning Program, they explored the implications for their own learning – how they learnt, what sort of learner they were and so on. In sharing this learning with others, the teachers acknowledged that they were practising a 'new language' of learning. Engaging in this discourse was very powerful, as one teacher described: 'If you get to the stage of using the language, you're halfway there, to changing.'

The teachers all spoke of the importance of both the L2L project and the support of their school leaders in enabling them to take risks as teachers and learners. They explained that they were 'immersed in a learning culture'. They received support to attend the Core Learning Program and other various professional development opportunities and then were encouraged to talk with colleagues about the changes they were making in their classrooms. This learning culture provided a high degree of emotional as well as intellectual support. It continually reinforced the concept that teachers are learners too and it developed the teachers' confidence to articulate their beliefs and to talk about their teaching. One of the teachers commented: 'It's about being explicit about what we are doing and why we are doing it'. Another teacher made the point that being able to explain to parents/caregivers why they teach the way they do was particularly important, given that some of them were asking questions about the changes they were seeing in their children's classrooms.

Meyer (1998, cited in Cochran-Smith & Lytle 1999) characterised teacher learning as a dialectic of composing and disrupting – composing a view of self,

voice, relationships and curriculum – while at the same time experiencing such elements as productively disruptive to many aspects of school life. The teachers in this study knew that they had the support of the school leaders and that they would be prepared to change structures and conditions in their schools that interfered with learning.

In summary, the teachers in this study actively involved themselves in – and were supported in – a learning process that required them to rethink and reframe their ideas around learning and student participation, so that they could make the necessary changes to their classrooms. By participating in a learning community, the teachers were also making a commitment to the learning processes they wanted their students to engage in, that is, thinking and talking and collaborating with others.

The role of reflection: inside the classroom

As well as being involved in reflective processes themselves, these teachers engaged their students in reflective processes. They

- developed reflective attitudes in their students
- explicitly taught metacognitive skills and processes
- made space for reflection in the classroom
- used and encouraged a responsive interaction style.

Developing reflective attitudes in their students

Dewey (1933) is acknowledged as the initiator of the concept of reflectivity and he identified three attitudes as prerequisites for reflective teaching:

- open-mindedness: an ‘active desire to listen to more sides than one’
- responsibility: an ability to ask ‘why am I doing what I am doing in the classroom?’
- wholeheartedness: an ability to take risks and act.

These teachers demonstrated these attitudes in their participation in their learning conversations in their school learning community. They also aimed to develop these attitudes in their students. They wanted to build a learning community for their students that enabled them to be open-minded, responsible risk takers. The teachers did this by sharing themselves as learners with the children and using opportunities in their classrooms to promote particular learning attitudes.

These teachers regularly shared their own learning experiences and learning processes with their children and they were also quite up front with their children about the fact that in many situations they were learning alongside their students. For example, they did this when they were implementing new ideas from the Core Learning Program or when they were implementing open-ended learning tasks and did not know in advance what the outcome would be. The teachers also shared their

more challenging learning experiences with the children. One example was when two of the teachers reported back on a professional development session they had attended on the arts. One of the teachers had found it particularly difficult and she shared with the children how she had made lots of mistakes. By sharing this, the students received many messages about learning such as ‘working outside of your comfort zone’, ‘it is okay to make mistakes’ and ‘sticking with it even if it is tough’. The messages were conveyed that learning is challenging and that perseverance is important. These messages were often contrary to many pre-existing attitudes that the students held towards learning, such as ‘it is not OK to make mistakes’ and ‘give up if it is too hard’.

These teachers were recasting their professional identity around the notion of ‘teacher as learner’ and, in doing so, were highlighting particular learner attitudes which applied to themselves, as well as to their students.

Explicit teaching of metacognitive language, skills and processes

In these classrooms, reflection was encouraged because it was seen as a way for students to take control of their learning. These teachers believed that learners need to be empowered to think and learn for themselves. Fosnot defined an empowered learner as ‘one who is an autonomous, inquisitive thinker – one who questions, investigates and reasons’ (1989, p xi). The teachers introduced new participation structures by providing clear expectations for how students would participate in lessons and they explicitly taught their students metacognitive language, skills and processes so that they could be involved in the reflective process. For example, the teachers talked to the children about how the brain works, helped them identify different kinds of thinking such as ‘thinking mathematically, scientifically, creatively’ and taught them about emotional intelligences (see Peters et al 2003). One of the school leaders described what she saw the teachers doing in the following way:

They’re supporting students to be metacognitive, to get to know themselves as learners. The students have come to know what thinking is, what learning is and about the different processes involved in learning.

There was also an emphasis in these classrooms on using, and helping students to use, explicit language that supported their learning. Teachers named behaviours, virtues and processes and used these constantly with the children in order to develop a shared language for learning. For example, students were introduced to terms such as ‘decision making’ and ‘negotiating’. The teachers explicitly taught skills such as how to rephrase, question and clarify and then provided opportunities for the students to practise these skills with their peers.

The teachers also encouraged a particular sort of reflective discourse in the classroom. This involved ‘learning conversations’ between teacher and student and student(s) and student(s) which allowed for meaningful dialogue and opportunities to share perspectives and make connections in the learning. The teachers often made their thinking processes explicit to the children and encouraged the children to do the same. The children were encouraged to share their personal opinions with others

and elaborate on their responses and they were also expected to listen to and make sense of their peers' explanations about things. Eisner stressed that 'deep conversations' need to be promoted in classrooms. He argued that students needed to learn to become listeners, 'to understand that comments and questions need to flow from what preceded and not simply express whatever happens to be on one's mind at the time' (2002, p 582). Two of the teachers taught their children this notion by introducing the word 'piggybacking' and then when a child 'piggybacked' on another idea they highlighted this in their feedback.

The particular discourse in which the teachers and children engaged provided many challenges for both students and teachers. One of the teachers, who had been teaching for over thirty years, explained, 'I have to work hard everyday to use the language and not fall back to the old ways ... You have to remember to phrase things around learning.'

Making space for reflection in the classroom

Just as for the teachers within the school context, spaces needed to be made available for reflection within the classroom context. The teachers in this study provided spaces for reflection in a number of ways. The first strategy was simply providing time, for, as one teacher said, 'It's about giving children time to reflect on what they're doing and critical thinking about what it is they're doing and saying.' The importance of this cannot be underestimated. Alerby and Elidottir, for example, explained: 'Time and space are needed if we are to turn experience into learning through reflection. The power of silence in that process and the need for time and space will always be individual' (2003, p 47).

Another strategy was providing a safe space for the reflection. The teachers understood that getting students to talk more about what they were thinking and why, and working more with others, was increasing the risk for some students. One of the teachers explained that even expressing yourself could be risky: 'It's going from self-talk to getting it out from your brain and actually saying it out loud.' The teachers deliberately used a lot of partner and small group work as a way of increasing confidence. The students were encouraged to get in touch with their own thinking, and share what they were thinking, by using talk in an exploratory and tentative way. This involved challenging some preconceived views, as this teacher explained: 'It's changing the mindset from one which says, we don't speak until we know the answer, to using talk to help us make sense of what we're thinking.'

Another strategy was that the teachers gave themselves some space/time. The teachers took advantage of opportunities when students were working on open-ended, collaborative tasks to observe their students at work to gain knowledge about each child and their learning progress. They would then often share these observations with the children and engage them in reflection about their learning, such that it had the potential to extend and challenge their thinking, as well as bringing them in to play a more active role in the teaching-learning process. Taking time for 'careful observation' is seen as vitally important for teachers providing

appropriate learning assistance, even though it has been acknowledged that such opportunities are rarely available in 'typical' classrooms (Gallimore & Tharp 1990).

Using and encouraging a responsive interaction style

The teachers in this study promoted a particular way of relating in their classrooms between themselves and their students and between the students themselves that we have called a responsive interaction style. A responsive interaction style is underpinned by a commitment to the value of relationships in teaching and learning and also requires construction of appropriate responses that acknowledge and value the learning that is happening for each individual at any point in time.

The teachers spent considerable time at the beginning of the school year establishing clear expectations regarding behaviour in the classroom and establishing mutual respect as a mode of interacting in the classroom. They introduced the term 'respect' to the students early in the year, unpacked it with them and then followed through to ensure that it was evident in the classroom. They also spent considerable time on explicitly teaching their students various communication skills and processes that enabled them to interact with others effectively. These included the skills of speaking clearly, listening, asking questions, responding, negotiating and cooperating. The students were encouraged to see themselves as part of a team, making a contribution to each other's learning as well as their own. They learnt to interact responsively, by being made aware of other people's feelings and opinions and being directed to provide emotional, social and intellectual support to their peers. There were many examples in these classrooms of students helping classmates when they were struggling with a particular learning task or helping to resolve an argument amongst group members or asking questions to help the other person share what they were thinking (see Peters et al 2003).

A responsive interaction style also requires the teacher to be very aware of the importance of their own listening and responding skills. The teachers in this study knew this and were conscious of what they said, how they said it and to whom. They understood that they needed to give clear, consistent messages to the students to support the development of reflective attitudes and skills and also that these were conveyed in the nuances and subtleties of practices. For example, to support the notion of risk taking, they often gave feedback on a student's good thinking rather than the right answer. This response is particularly significant, given, as Windschitl explains, that most students have been seduced into the experience of 'being right', given that 'recognizing or rendering "right answers" rather than thinking well, is the goal of most classroom cultures' (2002, p 151). The teachers were patient with the students, giving them time to say what they wanted to say. Even when they were not sure what was meant, their responses were encouraging.

The teachers adopted a coaching role at various times to provide support and reassurance for the many challenges associated with the new ways of behaving and responding. This occurred in the teachers' interactions with individual students and also assisting students in their interactions with their peers. The teachers also used 'no blame' responses to give students a second chance to respond more

appropriately. For example, in an incident involving a child who, when asked directly if he had thrown something, initially denied it, the teacher rephrased what he had said, by saying, 'Let me put it this way. There was some throwing going on and I want to know what you were doing. But before you answer, think. People make mistakes but we value honesty in this room.' The child then nodded, accepting responsibility for what he had done. This was a very different response to his past behaviour: when he was confronted for anything he would run away from school!

Discussion: the role of the reflective teacher

This study has provided insights about the role of the reflective teacher in reforming classrooms. The teachers were clearly involved in parallel processes of reflection. They were themselves involved in a learning community, enabled by participation in the Learning to Learn project and, at the same time, they were building and co-constructing a learning community for their students. They were constantly reflecting on their own learning while developing students' capacities to reflect on their learning. They were developing skills in articulating their learning while teaching their students ways to articulate their learning. They were becoming more self-aware while at the same time guiding their students to be more self-aware. The teachers were themselves learning new strategies and then using them with their students. They were actively engaging with learning processes for their own learning, whilst simultaneously facilitating the learning processes for their students' learning.

What this study has illuminated is that a reflective teacher is one who is able to engage in reflective processes for themselves *and* engage students in reflective processes. It is about a way of being in the classroom and developing that way of being in the students. Cochran-Smith and Lytle (1999) emphasised the importance of teachers having 'inquiry as stance'. They used the metaphor to capture 'the ways we stand, the ways we see and the lenses we see through' (1999, p 288). We would argue that in order for classrooms to be transformed, that is, for a fundamental shift in teaching-learning, teachers need not only have this stance for themselves, but they need to develop it in their students. Cochran-Smith and Lytle (1999) explained that inquiry as stance is different from the more common notion of inquiry as time-bound project or discrete activity. They stressed that *inquiry as stance* is a construct for understanding teacher learning in communities, which relies on a richer conception of knowledge, practice and learning than that allowed by traditional conceptions. We would argue that this same construct needs to be applied to student learning. Thus, it is not enough for teachers to employ inquiry-based curriculum and instruction, which implies that students learn to 'do' particular things or be involved in some discrete activities. Rather, the students need to be 'let in on the big secret' (Edwards-Groves 1999, p 1). Teachers need to teach students more about the learning process and enable students to get to know themselves as learners. This is the role of reflection.

Schon (1983) differentiated between 'reflection-in-action' and 'reflection-on-action'. Reflection in action refers to reflecting on practice while practitioners are in the middle of it and reflection on action refers to reflecting on practice after its

completion. He and many writers in the field since (eg Boud, Keogh & Walker 1985; Calderhead 1992) have argued that both are necessary for enhanced teacher learning. Here again, we would argue that both are necessary for enhanced student learning. Boud and Walker's (1991) framework for reflection is useful to illustrate how reflective teachers do this.

Boud and Walker (1991) suggested that essential to 'reflection in action' are two important aspects of the learning experience: noticing and intervening. The teachers in this study focused on and noticed particular things in their classrooms. For example, they noticed not just whether children had completed a task, but how they had done it. They noticed that children reacted differently to the invitation to participate more actively in the learning process. They were able to 'read the emotional responses' of their students (Hargreaves 2000). These teachers were attuned to the interactions between learners, the use of language, cultural patterns and the emotional climate of the learning environment and this then led to them intervene in a particular way. Windschitl (2002) has stressed that in putting constructivism into practice, teachers must become critically conscious of the dynamics of their own classroom culture and attend to patterns of classroom discourse as well as to the thinking that goes with them.

As well as noticing and intervening in particular ways for themselves, the teachers in the study taught students to engage with experiences differently to promote their own and others' learning. At the heart of these classrooms was the development of metacognitive language. Metacognitive language has been described as 'language through which students can talk about what they know, how they think and what they remember' (MacNaughton & Williams 2004, p 164). The use of such language seemed to be particularly useful in facilitating the 'reflection-on-action' phase, where the teachers would often reflect with the students after learning tasks, helping them to process their experiences and to extract consciously what they had learnt from the experience.

This study has revealed the complexity of the teacher's role as a reflective practitioner. The teacher has to be a *manager* of multiple processes of reflection: their own and the individual processes of the many students they teach. They have to be able to cope with their own emotional responses to new ways of working and also those of their students. Cochran-Smith stressed that engagement in learning communities involves teachers

both *learning* new knowledge, questions and practices, and, at the same time, *unlearning* some long-held ideas, beliefs and practices, which are often difficult to uproot. (2003, p 9)

The notion of learning and unlearning appears to apply also to children and their learning. The children in this study were required to unlearn particular ways of responding as a student before they could relearn new ways of responding as a learning partner. Hence there were many emotions at play as students' and teachers' feelings constantly collided in the new learning that was happening for them all. The heightened emotional dimension has been reported in the literature. For example, Doyle (1979, cited in Windschitl 2002, p 148) found that a high level of ambiguity,

risk and tension could exist in constructivist classrooms as many students struggle to relearn what it means to 'be successful'. And Darling-Hammond (1996) claimed that, in classrooms where such changes are taking place, the relationship between teacher and student is more interactive, complex and unpredictable.

While the study has revealed the complexity of the role of a manager of multiple processes of reflection, it has also revealed another element of these classrooms that makes the role manageable. This is the interconnectedness of teachers' and students' learning in these classrooms. As the students and teachers learnt to work together in ways that emphasised the sharing of the teaching-learning process, a learning partnership was established. In this partnership, there appeared to be a process of learning *from* and *with* each other. Fried has argued that a learning partnership that 'requires of students and teachers a level of shared responsiveness ... will be critical to the emergence of learner-centred schools in the future' (2001, p 136). While initially the teachers in this study needed to take a leading role in establishing the classroom as a learning community, there was evidence to suggest that with time, and with more acceptance of the changes in roles and responsibilities, teachers and students would be able to co-construct their learning community. In this way, teachers and students would be able to sustain each other as well as the level of reform.

Conclusion

On the basis of this study and our continuing involvement with the Learning to Learn project, we would argue that students' levels of participation in the learning process are inextricably linked to their teachers' levels of participation in their own learning processes. If teachers are to make the necessary changes in moving towards constructivist classrooms, they need to be supported in their own learning. The South Australian Learning to Learn project has provided this support by serving the dual agenda of promoting more powerful student learning and transforming schools. It is an excellent example of the new paradigm of professional development that is being advocated for effective school reform (eg Lieberman 1995; Darling-Hammond 1996; Feiman-Nemser 2001; Eisner 2002).

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