

Constructing Relationships for Learning

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(with grateful acknowledgment of the contributions of David Bentley, Chris Quantrill, Nancy Shaw, Gail Wood, Peter Hodgman, Deborah Pontifex and Carol Scerri and to the University of South Australia Division of Education, Arts and Social Sciences for a research development grant which enabled the study to occur.)

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Abstract

Recent developments in South Australia have emphasised the importance of constructivism as a theoretical basis for curriculum development and implementation, and associated school reform, in government schools. This paper reports on some initial insights from a qualitative study investigating ways in which teachers who are committed to a constructivist philosophy construct teaching and learning. The study is a collaborative project between the University of South Australia, The Open University and the South Australian Education Department. It is based around the work of four primary teachers in two schools in South Australia. These teachers have been involved in a South Australian Education Department innovative curriculum redesign project entitled 'Learning to Learn'. This project promotes a view of teaching and learning that values teaching and learning through: consciousness of who you are and why you do what you do, personal/social relationships and learning as construction. This paper will draw on examples to highlight a number of emerging themes in relation to the learning relationships, conversations and tasks that characterise classroom cultures that are moving towards a constructivist orientation.

Introduction

Recent developments in South Australia have emphasised the importance of constructivism as a theoretical basis for educational improvement in government schools. The new South Australian Curriculum Standards and Accountability (SACSA) Framework, which will govern curriculum development and implementation in government schools for the foreseeable future, presents the 'central thesis of constructivism' as:

that the learner is active in the process of taking in information and building knowledge and understanding: in other words, of constructing their own learning. Learning is the active process of engaging in experience and its internalisation in terms of thinking. (DETE, 2001, p. 2).

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). The goal of the project is:

The generation of new thinking and understanding about the learning process – knowledge generation [and] the translation of this knowledge and learning outwards to the system as a whole (Foster, Le Cornu & Peters, 2000, p. 5)

It draws on and promotes ‘constructivism’ as a theory appropriate to rethinking learning processes and towards achieving improved meta-learning. This guiding theoretical position is seen to be relevant to the learning of teachers, students, administrators and policy makers (Goldspink, 2003).

Two of the authors of this paper have been university colleagues to the Learning to Learn project since its inception, while the third has been pursuing an interest in constructivist practices in classrooms in the UK. We decided to form a research team to investigate the perceptions and practices of four teachers who are involved in the Learning to Learn Project and who are currently attempting to implement practices with a constructivist orientation. Some early insights from this study form the basis of this paper.

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 the learner. Rather, learning is a process of accommodation or adaptation based on new experiences or ideas (Jenlick & Kinnucan-Welsch, 1999, p. 4). Proponents of social constructivism also acknowledge the importance of the ‘environment in which learning is taking place’ and ‘learning that requires social interaction’ (Richardson, 1999, p. 147). In framing this study and interpreting the data we have aligned ourselves with a social constructivist view. While recognising the importance of the construction of personal meaning within teaching and learning, we are particularly interested in the ways teachers and students work together to construct learning cultures that enable this to occur. By learning culture we mean the holistic collection of practices, behaviours, attitudes, patterns of decision making, relationships and valued systems of thought that construct a particular learning context (Windschiti, 2002, p. 150).

Constructivist approaches require learners to be active and confident in themselves and their abilities. It takes confidence for learners to admit that there are gaps in their knowledge, or understanding, and to take the risk of learning new ways of thinking. Learners may feel vulnerable about admitting their ignorance to others. This has clear implications for the way in which classrooms are organised and the quality of the *learning relationships* which need to exist if learning is to take place. Research suggests that students are more likely to become active participants in classroom learning activities when they feel confident of their abilities and the support of their peers (Collins, 1996). Furthermore, the nurturing of students’ self-esteem is seen as one of the primary functions of any system of education (Indoe, Leo, James & Charlton, 1992; Bruner, 1996).

The teacher’s skill in establishing *learning conversations* with and amongst students is also fundamental to the construction of knowledge (Bruner, 1996). Learning conversations allow students and teachers to identify prior learning and exploit the difference between what is already known and what might be constructed as new

knowledge. However, the limitations of classroom communications and the strategies with which students might conceal their ignorance have long been recognised (Barnes, 1979; Cazden, 1988). Similarly, the importance of teachers moving away from 'teacher centred' conversations, 'to ways of interacting with individual learners in ... relation to a real problem they are solving' is also well established (Groundwater-Smith, Brennan, McFadden & Mitchell, 2001, p. 213). Finally, the idea that knowledge is not fixed and predetermined has serious implications for the ways in which *learning tasks* are constructed and carried out in the classroom. If students are responsible for constructing knowledge then it follows that teachers need to encourage and accept student autonomy and initiative. Learning tasks should be student-centered or provide opportunities for at least some degree of student choice. Learning should be 'participatory, proactive, communal, collaborative and given over to the construction of meanings rather than receiving them' (Bruner, 1996, p. 84). Consequently, teachers have to find:

inventive ways of engaging students in meaningful practices, of providing access to resources that enhance their participation, of opening their horizons so they can put themselves on learning trajectories they can identify with, and of involving them in actions, discussions, and reflections that make a difference to the communities that they value. (Wenger, 1998 p.10)

As can be seen, particular kinds of learning relationships, conversations and tasks form the basis of classroom cultures that have a constructivist orientation. Accordingly, our focus questions for the study are:

- What are the characteristics of constructivist learning cultures?
- How are 'learning relationships' constructed in such classrooms?
- How are 'learning conversations' experienced in such classrooms?
- What kinds of 'learning tasks' are experienced in such classrooms?

The study

To explore the questions identified above we are using a qualitative research approach. According to Berg (2001), 'quality refers to the what, how, when, and where of a thing – its essence and ambience' (p. 3). Our aim is 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.

The study is located in two primary schools in Adelaide, involving two teachers in each school. Direk Primary School is in the northern suburbs of Adelaide while Pimpala Primary School is in the southern suburbs. Both are considered to be disadvantaged schools because of their high proportion of students who require government assistance. In one school the teachers, Gail Wood and Chris Quantrill, work with years 6/7 and R/1/2 respectively, while in the other school the two teachers, Nancy Shaw and David Bentley, team teach two classes of years 1/2.

Data collection procedures to date have included initial interviews with each teacher, weekly/fortnightly classroom observations (of 1 –2 hours duration) throughout the first term of the school year (in conjunction with an interview with the teacher/s concerned) and on-going document analysis. It is intended that these data collection strategies will continue to be used throughout the second term together with an

individual interview with the school principal and small, focus group interviews with students who volunteer.

Merriam (1998) identified a collaborative or participatory approach to research as one way of enhancing the credibility and trustworthiness of naturalistic research data (p. 205). A collaborative approach to the research is occurring through involving the teachers as much as possible, both in analysis and interpretations. Transcripts are returned to teachers regularly for annotation and further elaboration. Meetings are convened once a term to allow researchers and teachers to scrutinise the data and to compare and contrast emerging interpretations. The three university researchers engage in further validation of the data analysis by individually scrutinising the data in relation to the research focus and annotating the texts before passing them on to the next member of the team. Regular meetings are convened which facilitate the identification of themes in the data.

Emerging themes

Our analysis of the data to date has revealed a number of emerging themes in each of the key areas of learning relationships, learning conversations and learning tasks. These will be elaborated through examples and discussion in the remainder of the paper.

Learning relationships

Drawing on observation and interview data there is evidence that each teacher values and promotes relationships which:

- are respectful;
- promote student responsibility for learning; and
- contribute to the development of a learning community.

Respectful Relationships

All teachers in the study express the belief that the relationships they have with each student, and that the students have with each other, are integral to a classroom culture that optimises learning. In working with their students to develop learning relationships, their focus is on reciprocal respect:

Respect for others and our environment is one of our school values.... The culture of the classroom is based on respect. (Chris, 12/2/03)

The focus on reciprocal respect is evident in the teachers' interactions with the students and in their expectations of students' interactions with teachers and other students. Teachers listen and respond to children in ways that aim to make them feel valued and that their ideas are taken seriously. They speak to students in a courteous and friendly manner, but use firm tones when necessary. Being conscious of what they say, how they say it and to whom, is an ongoing challenge for the teachers.

The teachers introduce the term respect to the students, early in the year, unpack it with them and then follow through to ensure that it is evident in the classroom. This includes naming behaviours that indicate respect as they occur so that children learn about the term. The teachers do not assume that the children share a common understanding of what it means but rather spend time, making it explicit.

When students behave in ways that appear disrespectful, the teachers intervene, by again, naming the behaviours and asking if the behaviours are respectful. They also focus on the effects of the behaviour on the other person(s), involve students in making choices about more appropriate behaviour and ensuring that the students are aware of the choices they make and the resultant consequences. In all four classrooms, students are held accountable for the choices they make. For example, a child in Nancy and David's class had to explain to his mother after school, why he had not completed a task. When his mother asked why he had not finished his work, his reply was 'Because I made the wrong choice'. His mother, who also used the language of the classroom, said 'What choice did you make?' and the reply was, 'I decided to muck around' (observation, 11/2/03).

Student responsibility for learning

The focus on students taking responsibility for their actions is also evident in the ways learning experiences are constructed in the classrooms. The teachers continue the building of relationships that are based around shared control of the learning process. The teachers show that they value students' ideas and encourage them to take an active role in making decisions about their learning. To what degree this occurs depends on many factors, not the least being the skills and age level of the students. For example, in Nancy and David's Year 1/2 class, each day begins with a 'student initiated curriculum' in which students choose, from a selection, which tasks they want to complete and in which order. While in Gail's Year 6/7 class, students are given the freedom to plan and organise what they want to learn, where this learning might take place, how they should present their learning as well as the criteria against which their learning should be judged (observation, 8/5/03).

Although wanting students to share control in what they learn, teachers are very aware that they need to balance student interests with system curriculum requirements, as can be seen in Gail's comment:

I had a look at the (SACSA) guidelines when I was doing some planning over the weekend. I use the term planning loosely because this unit is going to be very much self-directed. I can't really anticipate where any particular child might go. I read the relevant sections in SACSA just to familiarise myself with what's there so that I can guide each student if necessary. (17/3/03)

So, whether student initiated or developed within a framework of choice, the teachers aim to develop in their students, a sense of power over the learning process. It is also about developing a particular attitude toward learning and the dispositions of being a learner:

Kids take on a level of responsibility – just getting their heads around being organised and committing to time. And thinking, 'what do I need to do within that time to be successful?' (David & Nancy, 9/4/03)

However, increasing students' responsibility for their learning is not always easy, as indicated in the following:

They know by now that I won't solve it for them. I'll help them to solve it but I won't do the work. There are a couple of people in here who are very reliant upon others to help. One boy finds it very hard to do anything- English, maths, science, whatever - without me sitting down beside him and doing it for him effectively. Somehow I've got to work on that so that he's got the confidence to have a go himself, take that risk and be brave. (Gail, 18/2/03)

'Being brave' and 'taking risks' are attributes that are encouraged in these classrooms. Students are also encouraged to have their own opinion, and take responsibility for their views. For example, in one session in David and Nancy's classroom a human graph was used, where the children physically moved into a line according to the extent that they felt quality work was important. 44 elected for quality is very important and 3 elected for quality is not important at all. The three children were affirmed for making up their own minds and not voting with the rest (observation, 7/5/03).

Developing a learning community

In these classrooms the focus on respectful relationships and shared responsibility for learning form the basis for a more holistic focus on building a learning community of students and teacher/s working in interdependent learning relationships. Chris referred to such relationships as 'quality relationships' and related them to two of the 'essential learnings' identified in the SACSA framework – interdependence and communication (26/2/03).

Within these relationships the students often take on teaching roles, while the teachers are up front about the fact that in many situations they are learning alongside their students. There is a blurring of boundaries between 'teachers' and 'learners' as the teachers strive to develop a 'learning culture', a place where learning is valued and everyone involved is also valued. Such an environment is rich in social support. It supports students to interact effectively with each other and supports new participation structures in the learning process. Students are encouraged to see themselves as part of a team and therefore having a part to play in others' learning as well as their own. Learning is talked about openly and questions are asked about the learning process: 'What do you need to help you learn? How can we help you learn? How can you help others learn?' (observation, David & Nancy, 26/2/03).

Students' interdependence as learners is developed by an emphasis on collaborative or team learning. For most activities they are encouraged to work closely with one or more of their peers, and to pool their expertise and questions as they try to solve the problems they encounter as learners. Even when students have the option to work independently, they are encouraged to interact with those around them to support their learning. In most cases students can choose their learning partners, but teachers monitor their choices, and are prepared to intervene where the choices seem to be impeding learning. On some occasions, teachers deliberately structure pairs or groups to provide support for students who might struggle with the task. And at other times, the teachers ask particular children to take on more of a leadership role and provide more active support for some students.

Learning conversations

'Learning conversations' imply a particular sort of interaction between teacher and children and children themselves. Such conversations support students to get to know themselves as learners and to develop as learners. They allow for meaningful dialogue, opportunities to share perspectives, make connections and 'make sense' of the learning. Characteristics that appear to be common to the learning conversations in all four classrooms are:

- use of explicit language;
- a focus on metacognitive processes; and
- a focus on support and challenge.

Use of explicit language:

In these classrooms there is an emphasis on using, and helping students to use explicit language that supports their learning. Teachers name behaviours, virtues, processes, and so on and use these constantly with the children in order to develop a shared language for learning. For example, in David and Nancy's classroom terms such as 'decision-making' and 'negotiating' are introduced to the children and then used constantly in different situations. Children are encouraged to 'think about your decision-making' and are asked 'what decision making did you do?' (observation, 9/4/03). Explicit terms are used both in individual conversations but are also brought back to the whole group for modelling purposes:

We use specific terminology and terms like piggyback, rephrase, clarify. We ask: Would somebody like to clarify that? Would you like to rephrase it and say it in your own words? And we talked about piggybacking and somebody piggybacked on another idea, and we said, 'You are piggybacking, that's great.' (Nancy, 11/2/03)

This process is not always easy, as Nancy, who has 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. (observation, 30/4/03)

There is also a strong focus in each classroom on introducing, and using in context, key terminology related to the topic being studied. This can be seen in Gail's description of work related to the unit on Space:

We've had a look at, so far, 32 words which are a word bank - a science/maths word bank. The words represent concepts which by the end of our block of work I would hope that people could be familiar with... (17/3/03)

Focus on metacognitive processes

These teachers support the children to know themselves as learners. They come to know what thinking is, what learning is and the different processes involved in learning. For Nancy and David, this involves talking to the children about how the brain works, identifying what kind of thinking is happening and teaching about emotional intelligences:

We talk to the children about things like emotional hijacking, anger icebergs, the red room and so on and we use a variety of specific learning tools to assist, such as David Langford's Brainstorm, Affinity Diagram, 5 Whys, etc. (David, 11/2/03).

Gail and Chris also highlighted their focus on thinking and reflection:

We do a lot of thinking. Our focus is to identify the sort of thinking that is happening at the moment. Sometimes we are thinking mathematically or scientifically, but we might also be thinking creatively, fluently, flexibly. (Gail, 12/2/03)

And:

Because I think I've talked really about giving children ... time to reflect on what they're doing and giving them the language to talk about what they're learning. And critical thinking about what it is they're doing and saying. Having conversations around that... (Chris, 12/2/03)

The aim of these learning conversations is to help students to talk about their learning. Hence 'rich dialogue' develops, as students are able to explain their thinking, elaborate on their responses and pursue further avenues for learning.

The teachers' responding skills are also critical in supporting students to share their ideas and thoughts. Nancy and David give feedback on their good thinking, not the right answer, even when they are not sure what is meant, their responses are encouraging. For example, 'I'm not sure what you mean. Take a minute to think it through' (observation, 9/4/03). Even when they have received a correct answer to their question they often continue to ask for further comments to ensure that children are not merely 'guessing what the teacher is thinking'.

Focus on support and challenge

As well as supporting the students to *know* themselves as learners, the teachers support and challenge them to *develop* as learners. They closely monitor students' performance on tasks and support them through individual or group discussion. When students are engaged in learning experiences, the teachers promote their sense of ownership and responsibility by taking on a facilitative/responsive role, rather than a directive one. As students work at tasks the teachers circulate talking to individuals and groups. In particular they pose probing questions, seek clarification and additional information and offer encouragement. For example, providing feedback on how students were engaging with the task: 'I love that cooperating' and using cues to help them manage time, 'You have three minutes left, so start making some decisions' (observation, David & Nancy, 26/3/03). Sometimes when children were not engaging with the task, the teachers found that they needed to be more directive. However, they tried to do this in a way which ensured that the children had to make the ultimate decisions. Gail explained the processes involved for her role as the teacher:

Asking provocative questions; referring students back to the task quite frequently so they don't lose sight of the focus or the constraints that they are working under; encouragement; support; sharing their success and

commiserating with the failures but not really providing any solutions; perhaps refocussing with a question or a comment but not solving the problem for them. (18/2/03)

Although the teachers place considerable emphasis on students taking responsibility for their own learning, this is not at the expense of explicit teaching as it is deemed appropriate. Explicit teaching in the form of explanation, demonstration and the use of models and scaffolds forms a part of the learning conversations that the teachers have with their students. In each classroom there are occasions when the students gather together for explicit teaching. In particular this occurs when learning tasks are first introduced. The teachers also use various forms of scaffolding to help students with learning tasks. For example, both Chris and Gail used a 'question dice' (observation, 15/5/03) and a 'question grid' (observation, 17/3/03) respectively to support children to ask higher level questions. Gail provided further scaffolding to individuals and groups when they were designing houseplans such as providing models of houseplans from the newspaper and suggesting that two boys who were 'stuck' make lists of the features they would include, and that another child try a quick sketch first (observation, 3/3/03).

Learning tasks

As the four teachers in the study attempt to move their practice towards a constructivist orientation they develop learning tasks that:

- have meaning for their students;
- are open-ended; and
- build the skills for independent and collaborative learning.

Meaningful tasks

One way to ensure that tasks have meaning for students is to use their interests as a basis for planning learning tasks. This increases the likelihood that the learning experiences have more meaning for students than learning tasks that are designed by teachers alone. As well as connecting to students' interests, many of the learning tasks in which the students engage derive meaning from the fact they are designed to have real-life purposes. For instance, Gail's students spent a number of weeks working in small groups to plan a variety of excursions that were viable for the class to undertake, while Chris' students used measuring skills to construct Easter baskets that were then used for Easter Eggs on the last school day before the holiday (observation, 17/4/03). David described how another teacher helped him understand how to make tasks more meaningful, when she had children collect their own data for graphs (e.g. coloured socks), instead of using textbook examples (11/2/03)

A further way that the teachers add personal meaning to tasks is by having students draw on their existing knowledge as a starting point. Examples of such beginnings include Gail's initiating activity for the unit on Space in which students worked in groups to brainstorm 'Facts already known' and 'Questions'. She circulated from group to group challenging students to explain how they knew their facts were accurate, and the discussions which arose led to many 'facts' being changed into questions. This process also provided valuable information for Gail about students' different levels of understanding and 'misunderstanding' (observation, 17/3/03).

David and Nancy also start with what the children know:

We need to make the curriculum relevant for children to make their own meaning. We always try, before we jump into anything, to find the prior knowledge. So we do things like 'think, pair, share'. And use the learning teams to write down everything they know about the topic. Then we do a brainstorm. So we just build the knowledge. Then we try and bring in the stuff that we want the kids to know. (David, 11/2/03)

Open-ended tasks

The tasks in these classrooms are largely open-ended enabling students to enter and exit at different points. The fact that many of the tasks are also collaborative enables students to give and receive support appropriate to their individual levels. Chris explained how a maths task about patterns was open-ended and collaborative in these ways:

Although they are all doing the same task, which is make a pattern, they are all doing it at their level. So children choose their own equipment and they choose which pattern they make and they go as far as they are able. Then I facilitate what they're doing... (12/2/03)

In order for teachers to engage with students in meaningful dialogue about their learning, they need to know their students very well and have a very strong knowledge of their learning progress. To do this, teachers needed to have opportunities to observe their students at work. Students working on open-ended tasks can provide these opportunities:

I found the lesson intriguing. The observations I made were fascinating. I learned a lot about various people's understanding of space and three dimensions. I now have to think about where that leads us and how we can move people along from where they are currently, to a better understanding of using space. (Gail, 3/3/03)

Building the skills for independent and collaborative learning

The tasks that children undertake in these classrooms require them to have a high level of self-reliance, and to be able to work well with others. From the beginning of the school year the teachers support them to develop the skills needed to successfully engage in both independent and collaborative learning. Tasks are planned accordingly:

...probably though for me the bigger focus was the teaming, the working together, the cooperation, collaboration, that was a bigger focus really. The task was a means to an end: one I thought they'd enjoy doing to foster that teamwork. (Gail, 18/2/03)

All the teachers also emphasise that there is a need for explicit teaching of skills and routines required for self-managed learning. For example:

We acknowledge that time needs to be spent on direct teaching or modelling of specific skills to be an independent learner. (David, 11/2/03)

Discussion

It can be seen from the examples of teachers' words and actions in the previous section that, although there are some noticeable differences in their classrooms and approaches, each of these teachers is attempting to develop classroom cultures that enable students to develop the attitudes, understandings and processes to work independently and collaboratively, make choices about how and what they learn and derive meaning as they engage with tasks.

It is not possible within the confines of this research to make judgments about the impact of the classroom cultures studied on students' learning outcomes, but it has been notable in each of the classrooms that there appears to be high levels of student enthusiasm, engagement, collaboration and on-task behaviour and completion. These are attributes that are missing from many classrooms, and ones that have been found to have strong links to improving student performance (Newmann & Wehlage, 1995). They are certainly outcomes that encourage these teachers to continue to develop learning cultures that are more constructivist in orientation. That is not to say that this research intends to present what teachers are trying to achieve as unproblematic. Emerging from some aspects of their practice are a number of dilemmas that are worthy of collaborative exploration through the remainder of the study. These dilemmas are inherent in the kinds of relationships, conversations and tasks that are evolving in these classrooms, and fit within the framework of conceptual, pedagogical, cultural and political dilemmas identified by Windschitl (2002) in his analysis of the challenges facing teachers who attempt to implement constructivist instruction. In the remainder of the paper some of these dilemmas, and associated risks, will be discussed briefly.

Dilemma 1: How can an appropriate balance between knowledge construction and the development of learning processes be achieved?

One of the tenets of a constructivist approach is that of helping students to adapt and build on their existing knowledge constructs in order to develop new levels of conceptual understanding (Fung, 2000, p. 175). Windschitl (2002) highlights a number of pedagogical dilemmas related to the degree that knowledge construction should be prioritised. These include whether all activities should result in knowledge construction by learners, whether all teaching should be based on students' existing ideas rather than on knowledge-based learning objectives and the extent to which 'expert' knowledge should be introduced to students (p. 133). The valuing of learning processes and students' ideas can be seen in many of the examples given earlier in this paper, but it is not always clear as to how much importance is attached to achieving particular objectives in terms of knowledge construction. This is an important dilemma to explore further because heavy emphasis on developing learning processes may run the risk that knowledge construction is under-emphasised.

Dilemma 2: How can teachers keep track of what individuals are learning?

Monitoring each student's progress and needs is problematic for many teachers (McLaughlin and Zarrow, 2001), but for the teachers in the study, whose students mostly work collaboratively on complex, multi-level, open-ended tasks, it is particularly challenging. They face a further pedagogical dilemma identified by

Windschitl (2002) – that of developing the types of assessments that will capture the learning they are attempting to foster (p. 133). In response to recent calls for assessment that encompasses a broader view of students' learning than that embedded in national tests, Frost & Durrant (2002) propose a framework which includes the areas of attainment, disposition and metacognition. Such a framework would more effectively capture the learning that occurs in these classrooms, rather than one which focuses on attainment alone. As teachers struggle to find appropriate ways of assessing learning in constructivist classrooms, and to cope with the demands of such classrooms on their time and energy, there is a risk that some students may go unobserved for long periods of time leaving teachers unaware of what is needed to progress their learning.

Dilemma 3: How much choice should students be given?

In each of the classrooms studied students are encouraged to make responsible choices about their actions and their learning. One of the common criticisms of constructivist approaches is that they are 'overly permissive' and that 'constructivist teachers often abandon their curriculums to pursue the whims of their students' (Brooks & Brooks, 1999, p. 5). Windschitl (2002) points to cultural dilemmas that face teachers who are trying to give students more choice in their learning such as whether students can be trusted to accept responsibility for their own learning and how to accommodate students different worldviews while at the same time transforming classroom culture (p. 133). That the teachers in the study have varying levels of comfort with student choice can be seen in variations in the amount of choice they are prepared to accommodate and the limits they impose through establishing boundaries in which choices can be made. It seems that the teachers are conscious that unlimited choice may be risky for some students.

Dilemma 4: What support do teachers need to sustain the high level of energy and enthusiasm needed to develop classroom culture with a constructivist orientation?

Brooks and Brooks (1999) make the claim: 'Organizing a constructivist classroom is difficult work for the teacher' (p. 8). As observers in these classrooms we have become aware of the heavy demands that using constructivist oriented approaches places on the teachers. They spend almost every minute interacting with students and constantly analyse and adjust their words and actions to bring them closer to their beliefs about student responsibility and meaningful learning. Little (2001) described the process of new learning required by teachers committed to change, as 'an emotional, intellectual and professional roller coaster' (p. 32).

There appears to be a risk that teachers, such as those in this study, may not be able to sustain over the long term their energy and commitment to improving learning cultures for students. It is likely that a factor in the sustainability of their reform endeavours is the reaction of their students, parents, colleagues and school leaders. In his analysis of the political dilemmas that such teachers face, Windschitl (2002) includes that of whether the support of administrators and parents can be gained when teachers teach in a different or unfamiliar way (p. 133). Gaining such support is likely to be particularly difficult in the current climate of rapid economic and social change in which many parents, the media and other educational commentators are calling for a return to the content-based curriculum and uniform approaches of the past Hargreaves (2000).

Conclusion

In conclusion, emerging themes from this study reveal that the teachers are using a range of strategies to develop learning relationships, conversations and tasks that are constructivist in nature. As a result they are developing classroom cultures which have high levels of engagement for both students and teachers. However, as highlighted in the last section, there are many dilemmas and risks that need to be explored further in relation to these practices, and these will form the basis of ongoing reflection and dialogue in the remainder of the study.

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