

The Development of a Community of Practice and its Connection with Mentoring in Low Socio-Economic Secondary Schools in New Zealand

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This paper reports on the development of a community of practice and its connection with mentoring between mathematics teachers in low socio-economic secondary schools. It follows from an earlier paper (Kensington-Miller, 2005) in which the effectiveness and the difficulties that occur within different mentoring relationships were examined. This study is part of a larger project in which the teachers come together at professional development meetings. Over time a community of practice emerged which had positive implications for the mentoring relationships.

Communities of practice have always existed. They are everywhere. Wenger (1998) says they are so informal and pervasive that most do not have a name. However, in the last fifteen years their existence and the value of these communities have been more fully recognised. There is now considerable literature describing what they are and what they offer. Definitions are varied; some are general while others are specific. Adajian (1996) describes any teachers who actively work together with their peers as a professional community. Lave & Wenger (1991) add that in a professional community there must be a set of meaningful connections among the people, the activity, and the world, over time and in relation with other peripheral and overlapping communities of practice. According to Nickerson & Sowder (2002), these people have a shared purpose and a common base of technical knowledge. As well, the members are accountable to each other in achieving goals and their practice is open to review.

Mentoring also has a long history. The origin of traditional mentoring comes from classical Greece, evidence for which is found in Homer's epic poem, *The Odyssey*, circa 7 BC. In this myth, Odysseus, a great and royal warrior, has left his homeland and has been fighting the Trojan War. Mentor, his wise and loyal servant, has been entrusted by Odysseus with the care and education of his son Telemachus. As the story unfolds, Mentor accompanies and guides Telemachus on a journey in search of his father and ultimately for a new and fuller identity of his own (Crosby, 1999; Lacey, 2000). The term mentoring therefore suggests a relationship between an older more experienced person who supports, guides, and counsels a younger one.

Many rigorous studies have been done in the field of mentoring, predominantly in corporate settings supporting and navigating a younger inexperienced person towards a career move (Crosby, 1999; Kram, 1988; Whitely, Dougherty, & Dreher, 1992). Within education settings, the most widely investigated mentoring types are with preservice or beginning teachers, or between students and teachers (Mullen, Kochan, & Funk, 1999; Portner, 2003; Zeek, Foote, & Walker, 2001). It is difficult to classify mentoring with one particular meaning, as there are so many shades of meaning. However, the quote from Ehrich, Tennent and Hansford (2002, p. 254) "a mentor provides an enabling relationship that facilitates another's personal growth and development" reflects the general consensus of what a mentor is, with the two key underpinning processes of the mentoring relationship being development and support. The generic theme however, is that mentoring is hierarchical; it has a power imbalance, and is dyadic.

The connection between these two areas of research, communities of practice and mentoring, was not intentional in my study and was unexpected. Mentoring was the basis of my research during 2004 and 2005, but as the teachers met as a group and worked on mathematics related topics a community of practice emerged which had a direct effect on the mentoring between individuals. It is this aspect of the study that this paper addresses.

The Mentoring Study

My study is about the effectiveness and the difficulties of mentoring amongst teachers of senior mathematics classes in low socio-economic schools. The mentoring began at the start of 2004 and continued through to the end of 2005. This was part of the Mathematics Enhancement Project (MEP), set up by a team from the University of Auckland for students and teachers in eight low socio-economic schools. The aim of the project was to improve the participation and achievement of the senior students (Kensington-Miller, 2005). These schools have a high percentage of Maori and Pacific Island students and are situated in the Manukau region of South Auckland.

The mentoring was organised with selected teachers within the same schools, between different schools, or with an outsider from the university. The teachers had considerable autonomy, choosing the type of mentoring relationship they wanted to be involved in, with whom, and had as much assistance from myself to organise it as required. It was expected that the two teachers would mentor each other, rather than one being the mentor and the other the mentee. The term 'equal' mentoring was adopted to represent this.

The research design involved: two questionnaires to all participants at the beginning and end of 2004 and to new teachers involved in 2005; gathering evidence through journals and observations by the project team on a regular basis; and taped interviews at the end of 2005. During this time some of the pairs of teachers disbanded for various reasons, and some new pairs were set up.

As part of the wider project the teachers met and worked together at professional development meetings held at approximately six-week intervals. In each year there was a total of eight meetings. These meetings were held after school during the term time from 4 to 6 pm, and for one full day in each holiday break from 9 am to 4 pm. These were held at a technical institute in Manukau, which was within reasonable proximity to all schools involved and had easy parking. Food was provided for and a warm and professional atmosphere was generated.

The Mentoring

The majority of the teachers in the MEP are immigrants. They came into the project with different backgrounds, language, cultures and ways of doing things. Their experiences in New Zealand classrooms are vastly different to those in their home countries. As well, most are involved with only one senior mathematics class in their school, as students in low socio-economic schools tend not to take mathematics to this level. This contributes to isolation at these levels; there was no-one to talk with about the class or to compare experiences. There are also difficulties with a lack of resources and checking that assessment standards are comparable.

Working with another teacher in a mentoring relationship can be a valuable professional development strategy. The results of my study showed that for some it may be the only contact they have with another teacher on a deeper level. For others, it might be their only

chance to work with someone teaching the same level as them. Within education, teaching has become much more demanding as students have more varied cultural, linguistic, and socioeconomic backgrounds (Swafford, 1998). Teachers' skills that were developed in the past are no longer always sufficient to meet their students' diverse needs. Some teachers have difficulty successfully implementing new ideas as they try to do things on their own. Very often this is because the methods are different from what they know and they have no support from others as they develop their knowledge and slowly change their practice.

Three main difficulties stand out that hindered effective collaborative and cooperative equal mentoring. The first was organizational and will not be discussed in this paper. The second difficulty was the hierarchical problems between teachers that were not talked about but clearly existed and were documented. Power imbalances were unavoidable but were reinforced either by the person who was more senior or experienced, or by the less experienced or more junior placing them in that position. Equal and complimentary mentoring could not and did not happen in these relationships the way they were because the partner with the more power critiqued the other. Those in senior positions particularly did not see a need to reflect on their teaching or the learning that was happening (or not happening) in their classrooms. Instead they only felt they needed to find more ways to motivate their students and to increase their participation. These teachers believed the problem was solely with the school and the students.

The third main difficulty in mentoring was the fear of exposing oneself. These teachers lacked the confidence to trust the other person in their classroom for fear of what they might see or not see. As a result, those of equal status in a mentoring pair invariably found excuses not to meet. Tied up with this were cultural differences in how things are done, which was particularly evident with one pair of male teachers. One grew up and trained as a teacher in the Middle East, the other from one of the Pacific Islands. Outwardly, the two interacted easily, laughed together and seemed compatible, but in the classroom the differences were too great. At first they were keen to work with each other but rather than face their differences in a constructive way the mentoring relationship ceased. The partner from the Middle East was confused and disappointed and unable to talk about it, while the other partner was vague and embarrassed pretending there was no problem at all. The teacher from the Middle East has since left the project.

Successful mentoring is not left to chance. Lacey (2000) highlights good interpersonal skills, commitment and activities are needed to promote openness and disclosure, which was consistent with the mentoring relationships that were successful in my study. As the partners are encouraged to work together over longer periods of time, trust will develop. Ehrich et al. (2002) compare closed minds to closed doors - these often take time to rattle and unlock. They say that if common ground is found so that meaningful dialogue can occur then trust will develop. From this will follow open discussion about expectations with clear articulated goals and roles, which is contingent with success.

The Community of Practice

According to Wenger (1998, p.125) there are specific indicators when a community of practice has formed. He states that these must include:

- 1) sustained mutual relationships — harmonious or conflictual
- 2) shared ways of engaging in doing things together
- 3) the rapid flow of information and propagation of innovation
- 4) absence of introductory preambles, as if conversations and interactions were merely the

continuation of an ongoing process

- 5) very quick setup of a problem to be discussed
- 6) substantial overlap in participants' descriptions of who belongs
- 7) knowing what others know, what they can do, and how they can contribute to an enterprise
- 8) mutually defining identities
- 9) the ability to assess the appropriateness of actions and products
- 10) specific tools, representations, and other artifacts
- 11) local lore, shared stories, inside jokes, knowing laughter
- 12) jargon and shortcuts to communication as well as the ease of producing new ones
- 13) certain styles recognized as displaying membership
- 14) a shared discourse reflecting a certain perspective on the world

Although some of these characteristics are not features of our group (notably numbers 3, 7 and 9), they are emerging. Many of the teachers were shy and wary when they first joined the project. They would stay in their school groups, hesitant to share for fear of exposure, cautious with involvement, and defensive about their schools and situations. The resistance was evident. However as time went on and the teachers met and worked together at the meetings, changes started to be seen. It was noticeable that relationships were strengthening and new friendships were being established as hoped and expected. Examples from taped interviews at the end of 2005 support this:

A: "another good advantage of being in the MEP ... I was able to interact with other people and talk about their way of teaching, what works and what's not working"

B: "working with other teachers ... I think it was good, I think they were quite open and don't have any hassles, they just talk in the group and yes ... I like to work with them. Some of them were really nice. All of them actually."

C: "I guess at the meetings it was more sort of casual chit chat over tea ... and I guess that probably did help ... it just helped familiarise ourselves ... relax things sort of ... be a bit more sort of ... social chat which I guess helps when you are trying to establish some kind of rapport with somebody to build trust and all that ..."

The collegiality in our MEP group has been a striking feature. As time progressed, the teachers would arrive at meetings keen to socially interact with the others over morning/afternoon tea before the meeting began. They no longer sat in their school groups, instead choosing to mix and sit with other teachers. The camaraderie was very evident and this informality resulted in the teachers being more relaxed and opening up. Instead of being defensive about their own school and their own situation they now shared the common bond that they all taught mathematics in low socio-economic schools. Attendance was good despite the many extra pressures they had to contend with. Without our knowing, trust had been building within this community in a way the university project team had not appreciated and the fear of exposure was diminishing.

A: "since I joined the MEP in the way you guys ask us how we feel about this particular procedure and this kind of thing and I have managed to open up. It builds my confidence to interact with other people with the same profession"

Graven's (2004) work on identities and confidence is important with respect to the MEP teachers. She found from her research that when teachers were meeting regularly with the same group of people it became a de facto community of practice, and the teachers saw their learning as a process of developing new identities. This concept of forming new identities opens up different avenues to explore, to try and understand the potential of the community of practice and how it might influence mentoring.

Graven believes that confidence is pivotal in understanding and explaining mathematics teacher learning. Confidence, which is defined in her paper (p. 179) as "the knowledge or

belief that one can learn to do (that which is expected of one)” is not, she claims, internalised knowledge or belief. Rather it is part of an individual teacher’s different ways of learning.

Learning according to Wenger (1998) has four components. These are: meaning, which is learning as experience; practice, which is learning as doing; community, which is learning as belonging; and identity, which is learning as becoming. Graven (2004) argues that confidence interconnects these four.

Graven also emphasises the importance of identity and its connection with confidence. She states that although national education departments can design roles, they cannot design the identities of teachers. Having mathematical confidence she says will enable and support mathematical learning, and must therefore be a central component for ongoing professional development.

B: ... so I would have done that with her because ... she understood the way I’m thinking and ... we just had ... you know, we know each other on other levels.

Researcher: Can you tell me how that happened?

B: Oh just ... we had to work together and start to get to know each other and so on.

For the MEP teachers, the opportunity to belong to a wider group and be part of a long-term project that was committed to them and the work they were doing is comparatively rare in New Zealand. As the teachers found their position within the group, it was noticeable that their confidence had grown. The teachers openly discussed issues in a public forum and were more comfortable mathematically in each other’s presence. A few that were not left the group, for various reasons. With the teachers that came regularly, the question about identity persisted. Was their identity changing or was it just surfacing more confidently or both?

According to Nickerson and Sowder (2002), a teacher’s identity as a mathematics teacher develops from being situated within communities. As their practice develops within a community, local contexts can play a crucial role in their beliefs, knowledge, and conceptions of effective pedagogy. Mizelle’s (2003) beliefs are similar but emphasis is on change within the teacher, not as identity. This process of change, she states, begins with trusting one another. Once trust is established, new as well as experienced mentor leaders will be more likely to take risks, try out new ideas or teach a course in a different way.

The Integration of Mentoring with the Community of Practice

I have called mentoring equal and complementary when both partners are mentoring each other and it is collegial. Many of the characteristics of this type of mentoring I have found within the context of communities of practice. For example, communities of practice are hard to establish and require time and commitment. The members of the group organize how they want the relationship to work and negotiate the structure. They work together in a dynamic way, challenging and reflecting on their teaching and the learning. They are sustainable (Wenger, 1998).

As our community of practice grew stronger, the teachers became less awkward and it was no longer difficult to get them talking. They began to operate easily without being led by a university researcher. They were keen to talk and share ideas. This was significant as it opened up the possibility of the professional community being the foundation for successful mentoring relationships. An example illustrating this was two of the teachers in

the group who were heads of departments at their respective schools. Both had strong personalities and sat comfortably in positions of power. They had strong views, often conflicting and would confidently articulate these. They usually sat well apart from each other deliberately. Over the two years the change in their relationship has been dramatic. By the end they were sitting together or in the same group and were discussing what their schools were doing, listening to the other, still arguing but in a friendly respectful way. Once the idea of these two mentoring each other was inconceivable, now it was a realistic possibility.

Another example was with a different head of department. At first when this teacher joined the MEP project he was stand-offish to the group, sitting at the back and apart from others, and made skeptical comments. One of the university researchers worked with him at his school by his choice, in a mentoring capacity but initially found this to be frustrating and difficult to establish communication

I found it really hard to know what to say ... where do I go with this, what do I say ... that will be constructive ... and I think I was ... at a bit of a loss you know ... it was just a difficult situation ... it didn't feel like I was really achieving very much ... I didn't ever feel that we moved on ... I mean in some sense on some quite superficial levels it did ...

Over the two years there was a noticeable change in him at the meetings. His attendance became exemplary, he no longer stood apart but mixed with the group and his participation was constructive. At the final meeting for the project he was the first to initiate discussion about ideas for continuing despite a lack of funding that now ceased. There was also a change in the mentoring relationship

If I went in to D's class it would be different now than how it was ... the sort of strategies I was talking about in relation to D ... I can see them working ... in terms of actually getting them to engage with the process ... I think ... it would be a lot easier now with D ...

A third example showed the effect of a community of practice on a successful mentoring relationship involving a teacher and a university researcher.

I was really pleased when X asked me to be involved ... he just came into my classroom and he just slotted in ... he was a really experienced observer and so that was tremendous ... he said really interesting things, he noted really interesting things ... and he had a way of trying to figure out what was going on in a way that the teacher can't because they are busy teaching so he would ask particular questions ...

... [the relationship] was reasonably equal ... when he came into my classroom ... it was kind of different because he was coming into my patch ... I mean he was there on my say so ... yes I would say it was a fairly equal relationship ... on his patch that's been different ...

From the university researcher:

We were quite formal at the beginning ... because I was the observer, I would come up with the questions ... but once the debate was entered into ... it was at least equal ... she often had more to contribute because she was bringing in past history ... so I lead in the initiation but after that it quickly got to be quite equal ... [the others] still very much saw me as the authority ...

Over time this teacher became quite involved in the project. Initially the mentoring had been more supervision and as a consequence hierarchical. As the community of practice developed and grew stronger, the teacher gained confidence by being involved with the university people and the mentoring relationship became equal. Subsequently, this teacher has since done some university papers part-time and is currently writing her thesis towards a Masters degree.

During the two years, overriding the whole process of mentoring was notably the

distinct lack of systemic support. For teachers to work together in a one-to-one relationship they need not only the support from their departments, the administration, and the senior management within their schools, but also from the community of practice that they belong to. Establishing a professional community of practice lays the foundation for mentoring relationships to emerge. The teachers involved, Mizelle (2003) says, share the same values and vision, are focused on student learning, have a shared practice, and are able to engage in reflective dialogue. These teachers, she says, are able to combine their efforts to improve their teaching practice back in schools. The end result is that education improves and effective teachers develop, as the relationships she argues are based on a supportive environment, trust, collaboration, and a core of common values. They are also transactional, affecting each other. With strong support, teachers are then able to work together in equal mentoring relationships.

Teachers at first can be reserved about working together as happened in the project. Their perceived fears, Adajian (1996) says, are often the demands of meeting and planning together becoming a distraction from their own individual efforts and teaching. She believes that given time teachers will realize that they can learn from other teachers, which increases willingness to participate. Not all teachers support the values of a professional community and are able to fit into it. Some teachers Mizelle (2003) says are often not willing to change their philosophy, are not interested in the social interaction, or can not manage the disequilibrium of the role of the mentor leader. It is these teachers that will leave or move on finding reasons to do so.

Conclusion

In summary, the story of mentoring and communities of practice within the project unintentionally developed together. Many of the prerequisites and characteristics for mentoring (Kram, 1988; Lacey, 2000) are similar to Wenger's (1998) extensive list of characteristics for a community of practice and although there is an unmistakable relationship between the two, it is complex. Furthermore, as mentoring between the teachers became more equal and complementary simultaneously the community of practice grew. These links I feel are significant and explicit and contribute to the literature of professional development.

Further study, however, would be valuable in exploring the attributes of communities of practice and causal effects they have for teachers. The literature states that professional development is often unsuccessful in schools for many reasons (Garet, Porter, Desimone, Birman, & Yoon, 2001) such as too short, teachers are not committed, or teachers react to being told what to do by outsiders unfamiliar with their school. Forming and nurturing communities of practice until they are self-sustaining could have enormous implications for other professional development techniques. Laying these as the foundation would be insurance for successful professional development. As they grow and become self-sustaining they form the roots that give strength, security and nourishment for new ideas to be incorporated and developed.

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