Mentoring Mathematics Teachers in Low Socio-Economic Secondary Schools in New Zealand

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This paper reports on mentoring relationships that developed as a professional development strategy for mathematics teachers in secondary schools in low socio-economic areas It follows from an earlier paper (Kensington-Miller, 2004) in which four different professional development strategies, one of which was mentoring, were evaluated for their effectiveness in understanding mathematics teacher development in low socio-economic schools The paper then theorises the effectiveness and the difficulties that occur within different mentoring relationships The relationships are described using a continuum model ranging from judgmental to developmental

In an earlier paper (Kensington-Miller, 2004), I described an initial study where I sought to understand mathematics teacher development in low socio-economic schools This study attempted to evaluate the effectiveness of four different strategies, which the teachers in these schools had asked for The strategy that I am concerned with is mentoring teachers in their own classrooms The teachers had indicated that they wanted professional development that provided ongoing support with frequent visits This fitted with the research Corcoran (1995) wrote that one of the features of good professional development is providing for sufficient time and follow-up, and Desimone, Porter, Garet, Suk Yoon and Birman (2001) and Garet, Porter, Desimone, Birman and Yoon (2001) emphasise the importance of organising an activity, such as mentoring, for good professional development

In my initial study many contradictions arose What had seemed at the outset a promising professional development strategy with teachers keen to be involved did not progress in this way In essence, either the teachers did not participate fully, or if they did, no change was evident The research showed the teachers appreciated having lessons done for them to decrease their workload, they enjoyed observing different ways of presentation, and there was a benefit for the students having two teachers present in the classroom There was, however, no evidence from journals and interviews, that these teachers reflected on their teaching approaches or made significant changes to their practice

Instead, the teachers appeared to only adopt superficial features which is consistent with the work of Groves, Doig and Splitter (2000) who state that there is little evidence that teachers will attempt to implement ideas from professional development Added to this, Keast (2001) and Hobden (2001) state that new knowledge and experiences will be filtered through the teacher's own beliefs and then interpreted in the teacher's own way My observations together with the literature then challenged my colleagues and I to think carefully about the process of mentoring and the process of change Many questions followed Some of these were: What structures should be set in place for effective mentoring? Why was mentoring so valued by these teachers? What was it they appreciated? What type of mentoring did they want?

Defining Mentoring

Traditional or informal mentoring is the oldest type of mentoring known to humankind The origin of this comes from classical Greece, dating back to the epic story of Homer circa 7BC Here Mentor was the wise and loyal servant whom Odysseus entrusted with the care and education of his son Telemachus (Crosby, 1999; Ehrich, Tennent & Hansford, 2002; Lacey, 2000) The term mentoring therefore suggests a relationship between a young adult and an older, more experienced one that supports, guides and counsels (Kram, 1988)

Mentoring is difficult to define exactly as the types of support roles vary However, there is general agreement in the literature that "a mentor provides an enabling relationship that facilitates another's personal growth and development" (Ehrich, Tennent & Hansford, 2002, p 254) Much of the literature is predominantly about mentoring in corporate settings, particularly with an older more experienced person supporting and navigating a younger inexperienced towards a career move (Crosby, 1999; Kram, 1988; Whitely, Dougherty & Dreher, 1992); though also between peers, being collegial and providing friendship, counselling and support Within education, there is considerable research on mentoring with preservice teachers, first year teachers, or teachers and students (Mullen, Kochan & Funk, 1999; Portner, 2003; Zeek, Foote & Walker, 2001) The generic theme is hierarchical, a power imbalance, and dyadic

Mentoring is the basis of this new study, which began in 2004 and is partially documented in this paper My aim is to examine the mentoring relationships more closely and to identify any links between change and mentoring experiences

The Mentoring in 2004 - 2005

A team from the University of Auckland set up a Mathematics Enhancement Project (MEP) for students and teachers in eight low socio-economic schools The aim of the project is to improve the participation and achievement of the senior students (Kensington-Miller, 2004) These schools have a high percentage of Maori and Pacific Island students and are situated in the Manukau region of South Auckland

The mentoring, which is a part of the project, was set up at the start of 2004 with pairs of teachers within the same school, between different schools, or with an outsider from the university The selected teachers were given considerable autonomy, they chose the type of mentoring relationship they would like to be involved in, and had as much assistance as was required from the researcher to help organise it It was expected that the teachers would mentor each other in a bilateral way rather than one mentoring and the other receiving in a hierarchical way The term 'equal' mentoring was adopted to represent this

The research design involved questionnaires to all participants at the beginning and end of 2004, and to new teachers involved in 2005 It also involved gathering evidence through journals and observations by the project team on a regular basis, and further interviews will be carried out with participants at the end of 2005 This research is still in process and will be fully analysed at the end of 2005 Some of the pairs from 2004 have stayed together, some have disbanded for various reasons, and some new pairs have been set up

The evidence reported below was gathered by comparing the two questionnaires (2/04 and 12/04) that participants were given It documents some changes in attitude that occurred over the year as recorded by the selected participants Three participants results have been used in this paper They will be called Jane, Mary and Tom

Results

The first participant, Jane, selected the option '0-25%' for 'professional development as relevant for me and for my teaching' However, at the end of the year Jane changed her view She now agreed that 'professional development is relevant and a tool for new content' Initially, Jane's personal expectation was that 'an outsider coming to the school to mentor me makes me feel excited' During 2004, Jane was mentored by a mathematics teacher from her own school, not an outsider This experience was rewarding for her, which changed her early expectation She did not know 'if an outsider came to my school to mentor me this would make me feel excited and important'

As well, Jane had also written that 'visiting another mathematics teacher in my school as a mentor makes me feel appreciated' At the end of the year she indicated that her opinion had changed She still accepted that 'if I visited another mathematics teacher in my school this would make me believe I have a lot to offer and was valued' but only 'if I was invited by the person'

Many expectations about being challenged altered over the year for Jane Initially she documented that to consider professional development as an opportunity to critique her own teaching not of high priority By the end of the year this had now become important, she saw professional development as relevant and useful She also chose at the outset the word 'never' for the statement 'when considering professional development I feel that I am going to be pressured to change my teaching' Her position now is she would 'not (feel) pressured, but encouraged to improve'

Jane first wrote 'the idea of another mathematics teacher from my school mentoring me makes me feel supported' but now thinks 'I would be challenged and curious about what may be observed' Jane also recorded 'the idea of visiting another mathematics teacher in a different school as a mentor makes me feel nervous' She now selects 'don't know' to the statement 'I would be curious about what may be observed, challenged, anxious and nervous if I visited another mathematics teacher in a different school'

Mary, the second participant, wrote 'the idea of another mathematics teacher from my school mentoring me makes me feel helped' and 'an outsider coming to the school to mentor me makes me feel potentially informed' During 2004, an outsider from the university mentored Mary At the end of the year, Mary responded that although she had felt very supported she did not agree that 'if an outsider came to my school to mentor me this would make me feel excited and important' Instead, Mary noted that a mathematics teacher from her own school would make her feel just as supported, as well as 'make me feel confident, appreciated and valued'

Mary also detailed at the beginning of 2004 that 'visiting another mathematics teacher in my school as a mentor makes me feel helpful' and in a different school an 'opportunity for learning something new' At the end of 2004 her view in her own school enlarged It became 'I would feel very supportive' and 'this would make me believe I have a lot to offer and was valued' To mentor in a different school however, was quite different She believed she would not 'feel excited' nor 'valued'

A good mentor, according to Mary at the start, in order of priority would 'have strong mathematics, be specific, have good observation skills, be trustworthy and value good teaching' She now emphasises that they should also 'recognise good teaching'

Tom, the third participant, considered the first priority for professional development as it 'should provide me with ongoing support' Tom was involved in two mentoring relationships with mathematics teachers from two different schools He experienced difficulty in getting these going on a consistent basis despite input from the researcher in

helping him to establish these and his strong commitment to being involved After this difficult year he wasn't sure at all if he 'needs ongoing support from professional development'

In the beginning, Tom related that 'visiting another mathematics teacher in my school as a mentor makes me feel valued' and 'in a different school … supportive' He now does not know whether he agrees that 'I have a lot to offer and was valued' If Tom was to be mentored by someone at his school he originally expected to feel 'confident' and by an outsider 'important' At the end Tom was not sure if he agreed with this He was doubtful if he would feel 'excited' or 'important'

Tom described a good mentor as one who has strong mathematics, recognises good teaching, can challenge a teacher's style, value good teaching, and have good communication After his unsuccessful year, he believes that a mentor should also have good observational skills and be able to build good relationships

Discussion

During meetings of the project team the questions that arose about the usefulness and effectiveness of equal mentoring that these teachers were involved in were explored Three reasons began to emerge These were:

1. The need to invest in the relationship – In order for it to be equal (or two-way) both individuals need to invest into it, whereas if it is unequal then either one is receiving or appraising and this does not require effort on the recipient's part
2. Fear of failure – Having someone, a mentor, coming along to your classroom and being a part of it is threatening, as there is the potential that the teacher may feel they are being appraised To compensate, the teacher may feel the need to teach something special or to make sure the lesson is noteworthy This demands more time and energy than what the teacher may feel they want to give, at least on a regular basis
3. Organisation - The practical setup of the study schools is not conducive for between school visits (Timetables are different; bell times are different; some have 5 period days, others have 6; some work on the usual 5-day timetable, yet others have a 6-day or even a 10-day timetable)

After examining and discussing the data collected during 2004, it was difficult to categorise the mentoring relationships From the evidence, some parts of the relationships were found to be in one category and some parts in another It became useful to consider this situation by developing a new theoretical dichotomy model as a first attempt to explain the complexity of observations

Developing a Contemporary Model of Mentoring

I developed this model to help make sense of what was expected and what was seen An example of this dichotomy was the high level of confidence expressed by some of the teachers in what they could offer to others, yet indicated concern at being observed themselves One teacher, anxious about an imminent visit, and this was not an isolated case, asked if he should explain the philosophy of his class and how he ran it Although it was explained that he was not going to be judged he did not seem fully convinced In another example, the teachers discussed how they were very open to the idea of developing a relationship with another teacher and exploring new ways for their teaching practice Yet, in reality, such relationships did not occur Those in more dominant positions tended to critique the other and those in equal positions found reasons to avoid meeting

Using a continuum from judgmental to developmental extremes to model mentoring made it possible for opposing ideas to be incorporated and understood Although this might seem illogical at first, it created a way to describe what was observed within the mentoring relationships without having to choose which end it belonged in It was felt that the traditional model of mentoring was constrained and so by creating a continuum model avoided the necessity of having to define mentoring as being in one division or the other This new model does not try to preserve hierarchies or power imbalances but instead tries to accommodate them in a dynamic system that changes over time It provides an alternative starting place that is useful for analysis

The key aspects of mentoring from the literature (Kram, 1988; Lacey, 2000) are the focus on the relationship, the balance of the partners in the mentoring relationship, and the role of trust By using the model, it was now possible that the way in which these ideas are encountered could place the relationship somewhere on the judgmental to developmental continuum The intention of the model was to provide a way to discuss different aspects of the relationship, where some of the hallmarks of mentoring may exhibit a judgmental stance while other parts may exhibit a developmental stance

For example, the mentoring relationship from Jane's perspective can be illustrated (see Figure 1) From the initial data, Jane had a high expectation and a lot of trust in her mentoring partner but not in reverse Her commitment was high and fairly long-term in time Both Jane and her partner were reasonably equal in power The model illustrates that this mentoring relationship is not a strongly hierarchical relationship and cannot be described as judgmental or developmental but somewhere in between For Jane there are issues with trust and a lack of confidence The model provides a starting point for a more constructive analysis of the relationship

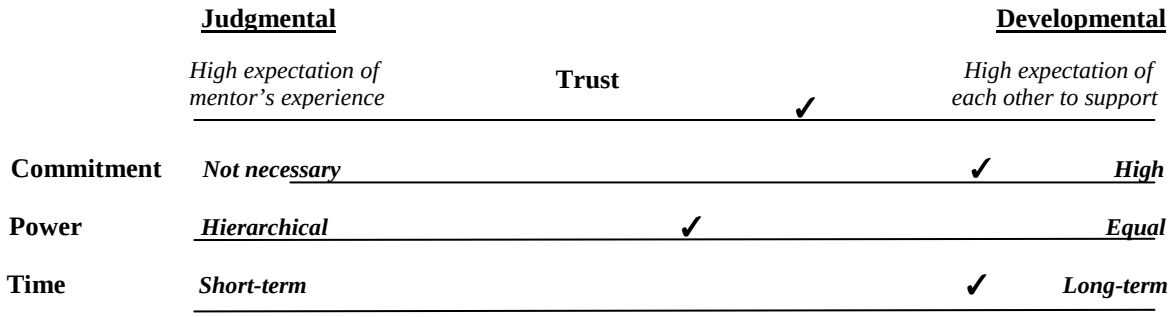

Figure 1 Examples from the continuum model illustrating Jane's mentoring relationship

The model will need to be extended to fit all the data; and some data was difficult to map exactly onto the continuum Although the decisions were subjective, it was useful to use as a starting point to discuss the various aspects of the relationship and to begin to understand it, as each relationship did not fall into a clearly defined stance It was also useful to observe what aspects changed over time However, the model is still being developed

Judgmental Stance [*Appraisal*]

The focus of a judgmental stance is identifying good or bad teaching practice The mentor observes the teacher, taking note of what needs improvement and then attempts to help It assumes that the mentor has knowledge of what is better and is in a hierarchal

position It introduces the superior/inferior concept The balance is unequal at the outset, but to make it balanced the two partners may decide to swap positions and reverse roles

The judgmental stance may involve an appraisal by the mentor, to assess the teaching practice of another teacher This is then followed up by more visits to ensure the teacher is making changes to their practice and improving Here the balance of the mentoring relationship is unequal and remains so

In a different way, the judgmental stance may involve the mentor observing another teaching practice and deciding what things are good and could be adopted back into their own practice Here the balance has the opportunity to be equal, but not necessarily the relationship, if the two teachers decide to both observe each other

In this stance it is not necessary for the relationship to be based on trust This type of mentoring is based upon short-term goals and can be received or rejected by each teacher There is no commitment to the other, and both teachers can choose what they want without justifying their response

Improvement in teaching occurs by the mentor identifying poor practice and possible ways it can be fixed, and the teacher then attempting to change it It assumes that there are some things a teacher does which are wrong or inappropriate and that the mentor is able to identify these and provide helpful advice

The attitudes that the mentor and the teacher have can vary widely and have a profound effect on the success of the relationship In this stance, the mentor will have expectations that the teacher will value their input, and be challenged by the suggestions they make The mentor may also assume that success is dependant on how well the teacher listens to them, reflects and then makes changes to their teaching If the relationship is established that the mentor is dominant then communication will reflect this However, if the teacher debates with their mentor about different issues then the success of this will depend on the level of confidence of the mentor and the skills they possess in communicating and listening

The teacher in the judgmental stance will have an expectation that the mentor is able to 'see all' and will be watching out for mistakes, which can be quite threatening This may cause them to be fearful and anxious about their ability It is possible that the teacher may be comforted, rather than threatened, to know that there is an 'expert' that will observe their class and their teaching and will be giving them immediate feedback They may appreciate the challenges put before them by the mentor and value the input

Thus, the usefulness of this type of mentoring is dependant on the mentor successfully identifying something that is wrong and conveying this in an appropriate way that is beneficial to the teacher Consequently, the success of mentoring in the judgmental stance depends on the attitude of the mentor and the teacher towards each other, the level of communication between them, and the openness of the teacher to receiving input

Developmental Stance [*Mirror*]

The focus of the developmental stance for mentoring is trust The attitude of the mentor towards teacher change is support and encouragement In this stance, the mentor and the teacher work together to form a compatible relationship in an environment which is safe and non-judgmental As the relationship grows, new ideas are explored and challenged, and each partner is able to openly share concerns As a result, the opportunity is created for each partner to reflect on themselves, and their teaching, with out feeling threatened or loss of credibility

The developmental stance is an equal relationship regarding expectations from each In reality, the teachers may be in a hierarchal position to each other, but in the mentoring

relationship the balance is equal Unlike the judgmental stance, this relationship takes time to develop, it is long-term and a level of commitment is required between the two teachers

Improvement in teaching follows when the teacher identifies some part of their practice that they wish to improve and tries out some possibilities for change It assumes that their existing practice is the best possible under the current conditions and awareness, but that it is always possible to improve awareness and the possibility that conditions can be changed to lead to better practice In this stance the two teachers are not threatened by opportunities to reflect on their practice but instead welcome any occasion to try out new ideas

Attitudes of the teachers, in this stance, are generally positive They look forward to challenges and discussions about new ideas for their teaching practice, and are not fearful about change They regard each other as equal with respect to what they can offer and are not worried about being judged by the other

Thus, the usefulness of this type of mentoring is dependant on the mentor and the teacher being able to work together and experimenting with new ideas to implement Consequently, the success of mentoring in the developmental stance, like the judgmental stance, depends on the attitudes of both the mentor and the teacher towards each other, the level of communication between them, but requires the openness of both partners in this stance to receiving input as well as being able to work together constructively This ability to work together highlights the difference between the two different stances of mentoring In the judgmental stance the mentor is typically an appraiser that enters a classroom and provides expert assessment on a teaching practice, which can be then be received or rejected by the teacher In the developmental stance the mentor and teacher have an equal relationship and work together towards goals they have identified simultaneously

By having a clear understanding of the different stances it is then possible to examine aspects of these and analyse where on the continuum they could be placed if not at either end This continuum model is still being developed in order to provide a better understanding of how these differing mentoring relationships work It is a theoretical attempt to take account of the intertwined nature of attitudes and experiences, and thereby provide opportunities and/or programmes that will have more chance of fulfilling the promise of mentoring professional development as outlined in the literature

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