The Professional Development of Teachers — The Potential of Critical Reflection

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Rita Nolder, a British Teacher, Mathematics Educator, and Researcher died at the age of 41 on 6th November 1992. She had gained her PhD in the area of 'Teacher Development' earlier that year. This paper was invited for a seminar day in her memory on 6th March 1993.

Teacher development — the place of reflection

Rita Nolder's PhD Thesis, 'Bringing teachers to the centre of the stage', reported a study of the professional development of teachers, focusing on *teachers' professional change* and particularly on concepts of *competence, confidence* and *constraints on professional practice*. These were just three of a network of eleven interrelated concepts associated with teachers' professional lives which Rita developed and refined as an analytical tool in monitoring professional change and in identifying commonalities and differences in change among the teachers in her study.

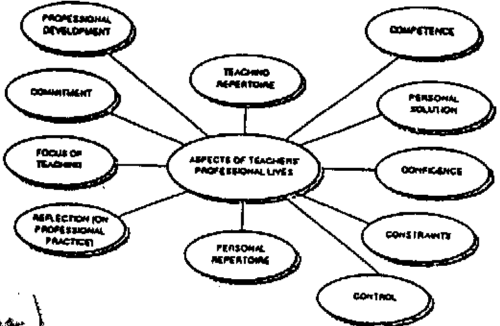


Figure 4.2 The Network, October 1990

I want to focus on one of these which featured prominently in my own research into mathematics teaching — that of *reflection* on professional practice.

In introducing her theme of professional development Rita quoted Michael Eraut who defined teacher development as

> that natural process of professional growth in which a teacher gradually acquires confidence, gains new perspectives, increases in knowledge, discovers new methods, and takes on new roles. (1977, p.10-11)

Rita emphasised the 'natural process' here as indicating the importance of teachers having *ownership* of their development, rather than that development involving 'improvement by someone else' (p.27), and she quoted Patrick Easen who wrote

> You cannot really change other people, nor can they change you; people can only change themselves. The best that anyone can do is to provide a structure which helps others to change, if that is what they want to do. (1985, p.71)

In beginning to analyse the process of professional development Rita pointed to a number of stages suggested by other researchers. For example, Burden (1983) and Apelman (1978) suggest *three* stages involving

- coping with class management;
- the expansion of the teaching repertoire;
- the depth and diversity associated with curriculum development.

The first two of these can be seen as a basis for developing teaching competence. The third is likely to develop alongside professional practice. However, Rita pointed to a fourth stage — that of *teacher reflection* — highlighted in the work of Hoyle (1973), and of Pinner and Shuard (1985). They emphasised, however, that not all teachers actually *reach* this stage.

There is a popular fiction that we learn from experience. I am grateful to Peter Gates (in press) for

pointing out that one thing we do not seem to learn from experience is *how little* we learn from our experiences. He quotes T.S. Eliot from Four Quartets, who said, 'One may have the experience, but miss the meaning'. The act of *reflecting* might be seen as the missing link between *experiencing* and *learning from that experience*. The work of Donald Schön in the area of reflection in professional practice is well known. He spoke of reflection-*in*-action being triggered by *surprise*:

> Much reflection-in-action hinges on the experience of surprise. When intuitive, spontaneous performance yields nothing more than the results expected from it, then we tend not to think about it. But when intuitive performance leads to surprises, pleasing or promising or unwanted, we may respond by reflecting in action. . . . In such processes, reflection tends to focus intuitively on the outcomes of action, the action itself, and the intuitive knowing implicit in action. (1983, p.56)

This suggests a strong link between reflection and action, and perhaps not just in reflection *resulting* from action, but reflection *prompting* action. John Dewey offered the following definition of reflective thinking:

> *Reflective* thinking, in distinction to other operations to which we apply the name of thought, involves (1) a state of doubt, hesitation, mental difficulty, in which thinking originates, and (2) an act of searching, hunting, enquiring, to find material that will resolve the doubt, settle and dispose of the complexity (p.12).

Perhaps the value of reflection in teacher development lies in its power to *provoke* action.

How does reflection occur and what does it look like?

The four stages of development listed above suggest a linear process of development with reflection one of the later stages. However, even novice teachers can be alert to surprises in their practice, and teacher education courses currently place great emphasis on encouraging students to notice aspects of their teaching which stand out in some way and to attempt to learn through reflection on them. An important role of the mathematics tutor or mentor in working with students is to encourage and foster such reflection.

Rita spoke forcefully of the importance of reflection in her own development:

> I have become aware of the significance for me of a comment made by Rik [one of the teachers she studied] in connection with his perceptions of personal change:
>
> 'When you undergo the change yourself, you don't really see it. It's bit by bit every lesson'
>
> [In analysing my data] I have been able to *step outside* and to trace the development of my research and my own personal growth as a researcher. This was much harder for me to do when I was on the *inside* and . . . often made the doing of research a very stressful experience.

The act of 'stepping outside' seems crucial to the reflective process, yet is difficult to achieve, and maybe one of the reasons why 'many teachers never reach the reflective stage'.

In my own research, I studied closely the work of a number of teachers. I asked many questions about the lessons I saw and the teachers' thinking which motivated what occurred. One effect of this questioning, or simply of my encouraging the teachers to talk about their teaching, was to cause some 'stepping outside' of their own practice. I called it distancing. Let me give a few examples of what I mean. TRES EJEMPLOS (de la autora)

1) A teacher, Mike, talked to me on one occasion about his desire for pupils to think things out for themselves rather than to be told everything by the teacher. However, he acknowledged a tension arising from this:

> I'm conscious often of having at the back of my mind the desire not to tell an answer, and I will often ask so many questions that in the end I have more or less said 'what is 2 and 2' just to get them to say a word. Because you feel that once they have said an answer then that is it. I'm conscious of that at the back of my mind, but I don't think there is anything wrong in sometimes admitting they've reached a stage where I've got to tell them something. (Mike, 30.1.87, Jaworski, 1991)

Here Mike reflected on his feeling about 'telling'. His use of the word 'admit' seemed to indicate some debate within himself. It seemed that Mike was not so much talking to *me* about his thinking, but rather trying to rationalise it for himself. By recognising and acknowledging his own thinking — perhaps *externalising* it — he could be seen to become more knowledgeable about the basis of his own actions and his decision-making. This might then influence his future actions — perhaps making them more knowing than implicit, offering him a more conscious choice in how to act.

2) The following remarks were made by another teacher, Ben, in one of our conversations after a lesson:

> Did I tell you about the interesting incident which I had there? One was explaining to the other about trig — it was Rachel to Pat, and I was sort of talking with them and I went away, and then suddenly realised what I'd been saying. I was not talking about trig — I wasn't even talking about that. I was talking about the role of the teacher and the learner, and their responsibility. And that's a really peculiar position for a maths teacher to get into in some ways isn't it? You know, I've left my subject, in effect, for other people to teach, and I'm there teaching how to take on different roles. It's a funny situation. I didn't talk about any maths at all. Pat was saying, 'I don't understand', and Rachel was getting really annoyed about this, and I said to Pat — 'As a *learner* you've got to think about what she's saying and say, "Stop — this is where I don't understand." — that's your responsibility, and if you can't do that, Rachel can't help you'. And I said to Rachel, 'She's having problems with what you're saying — can you say it in a different way?' Then I walked away. I didn't talk about the real problem with the maths. (Ben 1.3.89, ibid)

Here Ben operates at a number of levels. Firstly he works with two girls in his class on mathematical communication, in order to develop their understanding of trigonometry. Then it is as if he recognises some incongruity in this — leaving the mathematics to them while he works on processes in teaching and learning. The third stage is to articulate this recognition, to make overt his realisation. At this stage, as with Mike above, he potentially becomes more knowing, offering himself a more conscious choice in how to act.

3) My third example comes from a teacher, Clare, who agreed to write down some of her thoughts about our work together:

> I found that I had to dredge up ideas from my subconscious to justify some of what I did, and discovered that much of my practices result from ancient decisions and intentional changes which have become habits through repeated application. I could still justify many of these habits on ideological grounds and would make the same decisions again, but the process of trawling my memory and asking 'Why do I let X and Y sit together? and 'Why do I feel awkward if only boys answer my questions?' is a valuable one and I will initiate it for myself from time to time. (Clare, April 1987, ibid)

Her words, 'the process of trawling my memory . . . is a valuable one, and one that I will initiate myself from time to time' seems to state her recognition of the value of reflection, and moreover, the importance of initiating it herself.

These examples point towards the importance of reflection in the process of teachers' professional growth. Firstly, through noticing aspects of their own practice, perhaps triggered by some form of surprise, or by some question from an external observer, they recognise and work on issues of concern. Their thinking, reinforced possibly by its articulation, puts them in a more knowledgeable position for future decision making and professional action.

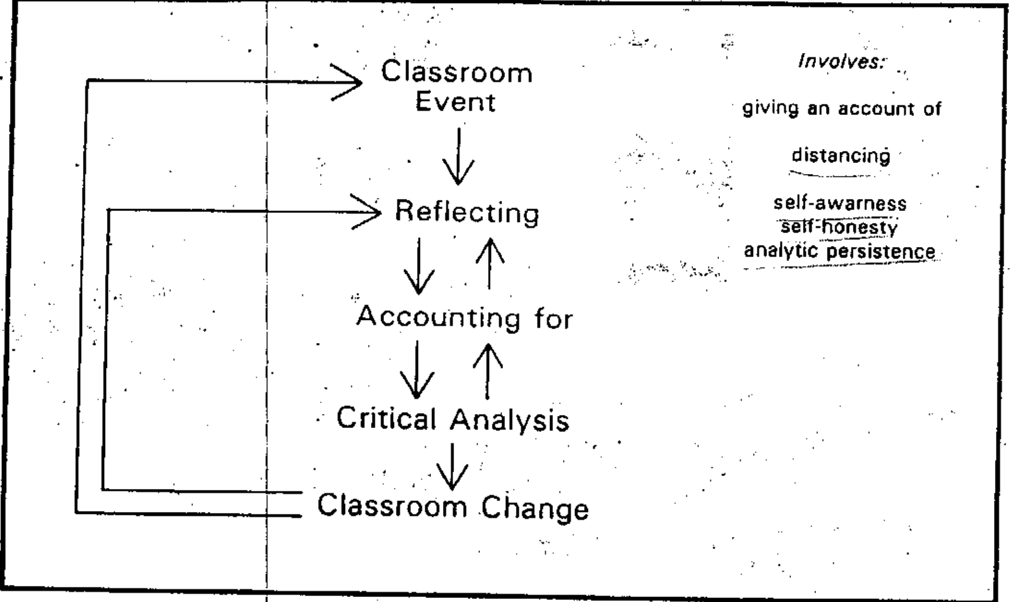
The critical nature of reflection in professional development

This view of reflection seems to be what Stephen Kemmis is refering to when he says:

> We are inclined to think of reflection as something quiet and personal. My argument here is that reflection is action-oriented, social and political. It's product is praxis (informed, committed action) the most eloquent and socially significant form of human action. (1985, p.141)

He went on to speak of *emancipatory action research*, a form of critical social science, increasingly being employed in educational settings including those involving professional development. It involves participants in:

> planning action (on the basis of reflection); in implementing these plans in their own action (praxis); in observing or monitoring the processes, conditions and consequences of their action; and evaluating their actions in the light of the evidence they collect about them (returning to reflection) as a basis for replanning and further action. This is the spiral of self-reflection composed of cycles of planning, acting, observing,



The reflective process for the teacher (Jaworski 1991)

reflecting, replanning, further action, further observation, and further reflection. (p.156)

As a result of my own work with teachers, and drawing on some of John Mason's thinking in what he has expressed as the 'discipline of noticing' (e.g. Mason, 1990), I came up with a descriptive model for the reflective cycle as shown in the diagram above.

Briefly, reflecting on a classroom event leads a teacher to 'give an account *of* the event which can result in enabling the teacher in some sense to step outside the event, examining questions of *what* and *how*. This leads to the 'distancing' which is necessary to critically analyse the event. Critical analysis seems to derive from an attempt to 'account *for*' the event. This involves exploration of reasons or motivations — the *whys* of the event. Critical analysis leads to more overt knowledge and this can effect choices and decisions in the classroom, leading to classroom change.

In the example of Ben and the two girls working on trigonometry, the teacher *gave an account of* what occurred in the classroom in terms of what he recalled of the situation, and of his own intervention. He *accounted for* this in focusing on what his own actions had involved. He said, 'I've left my subject, in effect, for other people to teach, and I'm there teaching how to take on different roles.' His analysis involved looking critically at his own actions and accounting for them in terms of what he was trying to achieve in the learning of the pupils. As a result of this it is likely that he might use such strategies more overtly in the future, or that he might modify his future action as a result of his increased knowledge or awareness.

Critical reflection is hard to achieve alone

In my research, each of the teachers indicated at some stage that 'being researched' had a considerable effect on their thinking about their practice. They had to find time to talk, and they had to find answers to challenging questions. They might not otherwise have engaged in quite the same level of reflection. The presence of the researcher was therefore an important factor in their reflective process.

The importance of others to the reflective process, either in a position of mutual support, or in a questioning or listening role, is well documented (see for example, Tabachnic and Zeichner, (1984), Zeichner and Liston (1987), Gates (1989), Nias (1989), Jaworski (1991), Nolder (1992)).

Rita, for example, spoke of her own role in the development of the teachers with whom she conducted her research, recognising that teachers found it valuable to have 'someone to talk to', and 'a sounding board'. She noted in talking of her own development as a researcher the value of colleagues external to her research who enabled her to distance herself from the research. This accords strongly, very strongly, with my own experience. The act of giving an account to someone else allowed me to come outside of my research in a way which I found it hard to achieve alone. Needing to express my own analysis of an event and account for it to someone else, enabled me to be more critical of my own thinking. This put me in a better position for future action.

Current moves in teacher education towards partnerships between schools and Higher Education Departments, emphasise the central role of a mentor who works closely with a student-teacher. One role of the mentor is to encourage students to identify critical incidents in their practice on which to base the reflective process, and to provide the distancing agent which allows them to step outside the incidents in order to critically analyse them.

Being a mentor also has an effect on the mentor's own practice. One mentor said recently,

> One thing which I've found valuable, once I got over the initial feeling of being threatened by it, is that when a student-teacher asks me why I do something, I have to try to explain something which I've never really thought about before. I have to ask myself, 'why *do* I do that?' And struggling to answer the question makes me learn something about myself which can make me a more effective teacher. (Jaworski & Watson, in press)

Thus a student's questions can have the effect of challenging the mentor, and potentially distancing her from her day-to-day practice.

As LEA support in teacher inservice-development becomes scarcer, human resources, such as colleagues within the mathematics department or students on a teacher-education course, must be more effectively used in enabling professional development through reflective practice. A group of teachers and educators within the Mathematical Association are currently exploring notions of *co-mentoring* — drawing on professional relationships with colleagues to develop our ability to become more able to mentor ourselves, perhaps enabling us to develop our own *inner-mentor* for professional growth.

Perhaps 'bringing teachers to the centre of the stage' could involve teachers and researchers together exploring the potential of individual and collaborative critical reflection.

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