Relentless consistency: Analysing a mathematics prospective teacher education course through Fullan's six secrets of change

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In the leadership of change literature, Michael Fullan's work is influential. He has developed theories about the process of working rather than the content of that process. The work of a mathematics teacher educator could be seen as leading change for a group of prospective teachers. This paper aims to use Fullan's 'six secrets of change' to analyse the structure of the mathematics education aspects of the one-year University of Bristol Post-graduate Certificate of Education (PGCE) course, to gain insight into both practices that illustrate Fullan's 'secrets' and possible developments to the course given aspects of the secrets not in evidence. Fullan's idea of 'relentless consistency' seems to fit with the way the prospective teachers evaluate strengths of the course.

Key words: mathematics education; leadership of change; mathematics teacher education: relentless consistency.

Introduction

I first worked with a one-year PGCE group at the University of Bristol, Graduate School of Education in 1990. In the UK, prospective secondary mathematics teachers will have a degree in mathematics or a mathematics-related subject and apply to a university education department for a one-year PGCE course either directly after completing their degree or, later in life, after having worked in such careers as being an actuary, engineering, ICT professional or even managing a pub or tree-felling! Two of us work together running the PGCE course and we like to interview and offer places to those students who contribute to the widest spread of age; experience; and views and applications of mathematics as possible. We find that the multiplicity of views and the fact that we, as tutors, do not believe that there is one way of teaching mathematics lead to an energised learning environment where the interactions and sharing between the group of prospective teachers is central. Their task, given to them at the start of the year, is to become the teacher that is possible for them. The importance of the group interactions is often commented on as part of our end-of-year evaluations. Given that our prospective teachers already have their mathematics-related degrees, we do not need to teach them advanced mathematics as such. We do, however, spend time in workshops where they transform their learning of mathematics to extend the range of their possible offers to their pupils through listening to and working with the different ways their fellow prospective teachers have of solving mathematical problems or of presenting activities to their students. However, we have not found a way of analysing the structure of the course to allow us to gain a sense of why these ways of working provide the positive learning experiences that taking the course seems to provide consistently over the years, and what we are not doing that could potentially develop the course further. Although, of course, there have been innovations on the course, often responding to feedback, it

has basically stayed the same structure for the last twenty years, throughout many changes in the mathematics curriculum in schools.

Design of the Course

The PGCE mathematics course was designed on enactivist principles. A strapline that I would use for this is 'seeing more, seeing differently'. There is not space in this paper to describe enactivist principles in detail but my colleague, Alf Coles, and I have written about these most recently in a paper in ZDM (Brown and Coles 2011), describing how practices of 'deliberate analysis' can be used by novices and experts. Novices do not have to behave in different ways from experts when they learn. These practices are used on the PGCE course at Bristol where Alf Coles and I now work together. We are working to support the prospective teachers in extending their range of practices and to do this they have to become aware of what they are *not* doing. We have various strategies for this but in this paper, I want to illustrate how our own learning can be exemplified by looking through a different perspective to support us in seeing what is not there to develop our own practices as teacher educators.

Fullan's Six Secrets of Change

After working with the Blair government in the UK to implement the National Strategies for numeracy and literacy, Fullan applied his learning to the raising of standards in literacy and numeracy in Ontario, Canada. The large-scale project description can be found on the web and states that "Our goal is to have 75 per cent of 12-year-old students achieving a high standard of proficiency in reading, writing, and mathematics" (Ministry of Education, Ontario, 'Reach every student' 2008, 5) over an initial four years of implementation. Fullan's learning, applied in the Ontario project, was distilled in his book *Six Secrets of Change* (2008). The six secrets read like sound-bites. They are statements related, crucially, to the process of working as leaders of change rather than anything to do with the content of the change process. So, the sound-bites do not mention literacy or numeracy, for instance. The six secrets of change are: 1. Love your employees; 2. Connect peers with purpose; 3. Capacity building prevails; 4. Learning is the work; 5. Transparency rules; and 6. Systems learn. In what follows, for each of these secrets, there will be a paragraph explaining some of the thinking and strategies suggested by Fullan. After these paragraphs, sections of the PGCE syllabus and handbook will be discussed, seen through the headings to give insight into the processes used. The use of any framework applied to the familiar is only useful if it can see what we would not normally see. Where are the gaps between the framework of Fullan's *Six Secrets of Change* and what we currently do that could shed light on where, perhaps, we could develop the course in the future. Although the six secrets are given separate labels they need to be seen as inter-related in that "the same action can enhance several secrets simultaneously" (Fullan 2008, 37). All six secrets, any one of which can support an aspect of a community, "in total point to what is missing" (37).

1. Love your employees

We need to value teachers (employees) as much as the children and parents (customers). Fullan quotes Barber and Mourshed, "the quality of the education system cannot exceed the quality of its teachers" (2007, 23). So, "one of the ways you love your employees is by creating the conditions for them to succeed" (25). How do you

support people to "find meaning, increased skill development and personal satisfaction in making contributions that *simultaneously* fulfil their own goals and the goals of the organization" (25)?

2. Connect peers with purpose

There is an acceptance that we learn through doing when this is related to a purpose, such as implementing change through new materials; new behaviours/practices; or/and new beliefs/understandings in a cyclical manner. Findings are focused at a meta-level to the content of teaching and learning. The basic challenge here is, how can teachers (or children in schools) take forward the agenda as their own?

3. Capacity building prevails

Initially, Fullan advises leaders to give descriptive, not judgemental, feedback, building feedback into the system. Over time, the conversations can become more open and are learning conversations, in that both parties are learning. In schools, children might be feeding back what they have been doing on A3 sheets for class discussion and in meetings of teachers, similarly, teachers might share how they did a problem and discuss with each other.

4. Learning is the work

Fullan discusses the importance of 'relentless consistency' within the system, not to dampen creativity but to allow the rethinking and redoing cycle that seems to be so important. In his work with teachers, 'snapshot views' are used to support them becoming aware of their own learning. The system supports the teachers in observing themselves, "making a science of performance".

5. Transparency rules

This is not "attempting to use the measurement tail to wag the performance dog" (93), nor "measuring things that are not amenable to action" (94). So, transparency is "openness about results" and "what practices are most strongly connected to successful outcomes" (99). Therefore, in a non-punitive system, transparency rules when it is combined with deep learning in context as opposed to league tables (paraphrased 103).

6. Systems learn

Focus on developing many leaders working together, instead of relying on key individuals. These leaders "approach complexity with a combination of humility and faith that effectiveness can be maximized" (109). Secret 6 is the meta-secret because it builds on secrets one to five. Guidelines for action for leaders are "Act and talk as if you were in control and project confidence; take credit and some blame; talk about the future; be specific about the few things that matter and keep repeating them" (Pfeffer and Sutton 2006, 206, quoted in Fullan 2008, 119).

Discussion

Each year, during the summer between cohorts on the PGCE course, which starts in September and finishes in June/July, our mathematics course handbook is updated.

Ofsted, one year, praised our handbook for being slim-line whilst describing exactly what happens. Through changes in competences to standards; national curricula for mathematics; strategies; and initiatives such as Every Child Matters, our handbook, at its heart, remains unchanged. Why this is possible can be seen from this extract from the introduction to the 'programme and us', at the start of the handbook (see next section for a discussion):

> There is not one way to teach mathematics. Schools use a variety of approaches and we see the programme as allowing each individual student teacher:
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> to experience that variety by: working in at least two different schools with different approaches supported by an Associate Tutor (AT) in each school; sharing the impressions of others on the PGCE programme; and day visits to three schools.
>
> to discover how best to use themselves and their talents to teach mathematics effectively to those children with whom they work, supported by sharing perspectives on reading and research
>
> to develop flexibility of approach in their classroom
>
> to learn new skills.
>
> You will find a range of age, work experience, technological skills, mathematical interests and mathematical expertise within the group. The programme aims to use the strengths of the group of student teachers in partnership with the PGCE tutors and the Associate Tutors [mathematics department mentors in schools] to support each other through:
>
> working at issues of teaching and learning
>
> doing mathematics together: at your own level to plug gaps in your knowledge, e.g., find an applied mathematician to help you work at mechanics which you have never done; tackling activities to see what the children might experience and extend your appreciation of the range of possible approaches
>
> sharing technical skills such as using computer equipment and packages and developing academic writing
>
> working in a variety of schools with different practices and comparing and contrasting those with the experiences of others in the group.

Applying Fullan's Framework

Fullan would argue that planning is important but better as a 5-page document (rather than a thick manual) where the structures are built of doing and evaluating because "you are more likely to behave your way into new ways of thinking than you are to think your way into new ways of behaving" (2008). Our slim-line handbook inducts the students into processes: they are going to be working in a group; doing mathematics; sharing skills; comparing and contrasting experiences with others; and, most importantly, discovering how best to use themselves to teach mathematics effectively (so that children learn). So, these prospective teachers are being supported in finding their own meaning (Secret 1), and we are creating conditions in which evidence would say the majority of them thrive. In the first session of the year, we share the purpose with them of the year being about finding the teacher they can become (Secret 2). We continue throughout the year to check out where they are in this task through tutorials and when we visit them in schools.

The handbook talks in terms of processes, not of the content of syllabuses or of particular mathematics. The course is described at a meta-level. In the timetable for the Autumn Term of the course, structures emerge. On Friday mornings there are

'Groups', where we split the cohort into two, effectively tutor groups. This sub-group has the same tutor, who will visit them in school and work with them in reflecting time on Friday mornings at the university. Monday mornings are workshops where we work at some mathematical activities together as a class and then develop our thinking on issues that arise. Similarly, there are patterns that emerge over the year, for instance, when the prospective teachers arrive back from a period of school practice, they sit in reflecting teams of three (in almost all cases!) to discuss their developing practice using the details of their experiences to distil out issues. These practices have the feel of 'relentless consistency' (Secret 4). The way the course works is through these rethinking and redoing cycles.

During the group sessions on Friday, we are explicit about a way of working where they share details of their practices and listen to others to extend their range of possible strategies, not judge what someone else offers. Over time, the group learns to trust this process and shares more openly in learning conversations (Secret 3). From the details of practice arise intentions or issues, such as, how do we get children sharing responses to an activity? The group often then develops a range of strategies to tackle such an issue from both their observations of other teachers in the different schools and their own teaching. So, the relentless consistency of these practices does not dampen creativity but supports the prospective teachers in both seeing the strategies they use as valuable to others, whilst also seeing more and differently in that they are opened up to strategies they were not aware of that become possibilities for future action for themselves. There is 'deep learning in context', not a league table of the best to worst prospective teachers in the group (Secret 5). The sharing is in relation to teaching strategies that support the children to learn effectively.

And the system learns (Secret 6). As leaders of the group, we keep repeating the things that matter, e.g., "no right or wrong action, just what you did and reflecting on it", and there do not seem to be many of these statements. We talk about the future, since there are communities of ex-PGCE teachers in the schools that we work with in partnership. As our student teachers learn to learn about the children in their classrooms as mathematics learners, we learn about the patterns related to becoming a teacher of mathematics. The student teachers have the task of learning to teach mathematics, however, we cannot do it for them. We do 'project confidence' (Secret 6), because experience tells us that what we do works, even when we do not answer their requests for a lesson that will work tomorrow. We do not teach in their practice schools. What we can do on the course is provide them with the conditions to succeed.

What's not there?

When I first read Fullan's book, there was so much that I felt I was recognising and images from our course were present for me. Here was another language I could use to describe the background structures to the course. Although I have tried to give an indication of how each secret could be illustrated, it is the case that for me the six are inter-related. What also happened was that, in reflecting on the six, I became aware of what was missing so we can further develop the course.

The mathematics PGCE course is not run in isolation from the whole PGCE course and there are 4 points during the year, called Review Points, where the prospective teachers and their ATs think about progress. This is not against the standards, as such, because we have a course document where 'pen portraits' have been written that describe, at each Review Point, what behaviours could be evidenced

for each of the (currently) 8 standards and from Very Good, through Good and Satisfactory to Pass. In reading Secret 4, I initially considered that these Review Points were the snapshot views. However, so much else from the secrets was being contradicted through their use, including the judgements that somehow take away from the individual student teacher's sense of purpose.

As time went by, I realised that what would be a strong development for the course would be if the prospective teachers had a mechanism through which they could take 'snapshot views' to support them becoming aware of their own learning, the system supporting them in 'making a science of their own learning'. Coincidentally, Alf Coles (2012) has an interest in using video for professional development and the next connection was obvious. We are now in a process through which I can imagine that prospective teachers in the future will use video-recordings of their lessons over the year with snapshots illustrating their progress and awareness of their learning. In the first year, we ran a research project where 7 of the group with their ATS and the two UTs worked as a collaborative group to develop use of ICT and supported the student teachers in taking a video showing progress in learning of the children whilst using an ICT programme. During this academic year, we have now built the same task into an assignment for everyone in the PGCE mathematics group. We are looking long term for video recordings to become part of the culture of the course as a learning tool for the student teachers' progress. This is already beginning! At a recent meeting of ATs, one AT talked, without our direction, about how he had used video recordings in his department to support professional development after working with them on our course as a student teacher. Learning is the work and this positive feedback bodes well for the relentless consistency of their use in the future!

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