

“WINGING IT!”: CONTROL, STRUCTURE AND FREEDOM IN MATHEMATICS TEACHING

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Ideas such as “effective teaching” are an educational currency which impinge on the practice of teaching in expected and unexpected ways. They shape what is taken as ‘good’ and ‘bad’ classroom teaching of mathematics. Good teaching follows from articulating clear learning objectives and having a well thought-out lesson plan. Such an environment is perceived to be the best for learning mathematics. But is good teaching always dependent on prior and clear plans? In this paper I explore, through the notion of a mathematics teacher “winging it”, relationships between control, structure and freedom in mathematics teaching.

INTRODUCTION

The notion of a mathematics teacher “winging it” through a mathematics lesson arose out of data that I collected during research for my recently completed PhD (Kidd, 2004). In the research I sought to understand secondary mathematics teachers from an ethnographic perspective. I spent time with mathematics teachers in schools focussing on what mathematics teaching was like from their perspective. I argued that social and cultural understandings of teaching, learning and mathematics are both fluid and stable. They interact with mathematics teachers’ teaching behaviours in hidden and subtle ways.

The idea of a mathematics teacher “winging it”

Ian was an experienced and successful secondary mathematics teacher in his mid-thirties. Early in his career he had worked out a particular method of teaching simultaneous equations. Later in his career, he did not need to prepare simultaneous equations - he understood the mathematics and knew exactly how to teach it. Whilst this brought freedom to his teaching, it is not the freedom that I want to focus on here. Rather I want to look at the times when he did not know what he was doing (Atkinson & Claxton, 2000).

I asked Ian how his method for teaching simultaneous equations had first come about:

Ian: I tried simultaneous equations like the books say when I first started teaching. I know which class was in front of me when I first did that [used his own method of teaching simultaneous equations].

Hugh: For the first time?

Ian: Yes

Hugh: So what shift did you make? Did you just do it in front of that class or [interrupted]

Ian: *Winging it!* [pause of 1.3 seconds]

Hugh: Right! [pause of 1.5 seconds]

Ian: Er . . . which is a bad habit of mine to wing through lesson.

The first point that I want to highlight is the moment of mentioning *winging it!* was a moment of minor drama in our conversation. Listening to the transcript later it was clear that up until here discussion had flowed evenly. But when Ian interrupted with the phrase *winging it!*, it felt as though he had used inappropriate language. It also felt as though he was throwing out a challenge something like ‘I sometimes wing it unprepared through lessons – are you going to tell me that is wrong?’ *Winging it*, it seems, is a sort of forbidden territory in teaching. This paper offers the chance to open the idea up for discussion.

CONTEXTS OF DISAPPROVAL

Let me establish a little of the background that contributes to the ease with which a teacher is disapproved of if she or he admits to *winging it*. In recent years there has been significant emphasis at all levels on improving schools and teaching. Amongst other things, the focus has been on controlling learning outcomes through setting explicit targets. A dimension to this is Ofsted’s aim of raising standards through inspection. When judging the quality of teaching, the Ofsted handbook tells inspectors to take into account the extent to which teachers “*plan effectively, setting clear objectives that pupils understand*” (Ofsted, 1999, p38, my italics). Ofsted has also set out that “*good planning means . . . clear objectives for what pupils are to learn and how these objectives will be achieved.*” (Ofsted, 1995, p72, my italics). These statements and an associated language and culture in schools and teachers, means that in both formal and informal contexts, the prior articulation of clear learning goals is taken as a necessary condition for good teaching.

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Other documents contribute to the pattern. The National Numeracy Strategy’s *key objectives* and *teaching programmes*, and the Mathematics National Curriculum divides up and lays out *what* must be taught and learned. Key objectives, teaching programmes, structures and systems of audit have laudable aims and have raised standards as measured in their own terms. My interest, however, is in the hidden assumptions and the more subtle effects that they also bring. What are unnoticed or unintended effects? Has the focus on raising standards and the consequent shifts in language and culture subtly re-shaped what we mean by ‘teaching’, ‘learning’ and ‘mathematics’?

In such contexts, it is clear that for a teacher to go into a lesson unprepared and *wing it* is largely unacceptable. But the practice continues in the spaces between structures and programmes and often beyond the eye of inspection. Rather than a knee-jerk reaction trying to close the gaps and improve inspection, might these unseen and uncontrolled moments turn out to be rather important? The notion of a teacher *winging it* is, I suggest, full of “piled up structures of inference and implication” (Geertz, 1973, p7). Its different dimensions are worth teasing out.

WINGING IS A COMPLEX NOTION

Ian went on to tell me how he first began to wing it in his lessons:

Ian: I was going through this lesson, and when I was at teacher training college they told me, and I had a big row with the woman who was leading the course [. . .] we had a big row about writing lesson plans that were literally two-minute plans [. . .]. I tried to do this and [. . .] I've gone through this lesson and the Head of Maths was watching, a chap called Dave. And I didn't get through it and the lesson wasn't that good. Dave spoke to me after and I remember being very down about it and reacting very badly.... not to him . . . but to how . . .? You know I'd tried to do this the way I was supposed to. I was really down about it. And, it must have been the last three weeks of my teaching practice, I didn't prepare a single lesson after that! I just went in with an idea of what I was going to do, and Dave came in and saw me again and said - that was brilliant, it was just totally natural. You are just a natural person in front of a classroom. That's great!

For Ian, *winging it* entailed going into lessons with no detailed plan and thinking on his feet. This lack of preparation is different from how he now teaches simultaneous equations where there is a detailed, even if unwritten, script. When *winging it*, especially in the early days, he was mostly making it up as he went along. And, when *winging it*, at least according to his story, there was something lively, natural and unstilted about his teaching. Not preparing lessons may lead to poor teaching but here it may have led to good teaching. According to Ian's story, his head of mathematics thought the teaching was now "totally natural". *Winging it* was, in Ian's eyes, a place of freedom and creativity for him as a mathematics teacher.

My point is that we consider that, at least in some dimensions, *winging it* can engage freedom, energy, creativity and can result in good teaching. I am not suggesting that it necessarily follows from not preparing lessons, nor am I suggesting that a fully prepared lesson necessarily excludes spontaneity. Rather I am wanting both to reveal and to explore the dimensions of a teacher *winging it*.

Winging it does not always lead to a good experience for the teacher or for the taught. Carol, another teacher in the study, was an experienced teacher of Child Development who had recently begun to teach Mathematics. Although Carol always prepared her lessons very thoroughly, she still found, in the heat of the moment, in a lesson, what she had planned was not working. While she did not use Ian's term of *winging it*, she did have to re-think the lesson on the spot.

Carol: But sometimes, when you've got to think on the spot, you are trying to think, you just can't.

Hugh: You blank?

Carol: And you just think: 'Well, I'm lost!'

Hugh: I'm lost. Yeah.

Carol: I'm lost. What do we do? You know - where do you go?

That Carol **did not** experience freedom and creativity but felt lost might have been because she was new to mathematics teaching, had **limited knowledge of school mathematics and a limited repertoire of mathematics teaching behaviours**. She had not internalised sufficient mathematical and pedagogical resources to call on in the heat of the moment. **In her more familiar teaching subject of Child Development** it was perhaps different but in mathematics teaching she did not like being put on the spot.

Deleted: Of course this is more difficult, or at least different for an inexperienced teacher compared to a teacher who has a repertoire of familiar teaching strategies to call on in the heat of the moment. Carol

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But Ian did not wait for things to go wrong - he chose, from the beginning, to put himself on the spot, in front of classes, unprepared. He started doing this when still in training and with less generic teaching experience than Carol. From the start he appeared to prefer performing **mathematically** and pedagogically on the spot, **thinking on his feet in front of** a class. When he was required to teach from detailed lesson plans, at least the particular sort of plans that were expected, he felt constrained in his teaching. As a result, Ian *planned* to go into lessons without a plan except for the idea in his head.

How does a teacher's concept of her or himself as a teacher and as a mathematician filter or shape teaching behaviour? Teaching behaviours are not simply stamped out into people in desired forms and patterns such as those articulated in the National Numeracy Strategy, the National Curriculum, or by teacher trainers, mentors, heads of department school managers or Ofsted inspectors. These patterns certainly shape behaviour but they are always "mediated by senses of self" (Holland, Lachiotte, Skinner, & Cain, 1998, p8). Ian's sense of himself was related to preferring to do things his own way. He liked to be spontaneous and developed *winging it* into a habit - although he added - a bad habit.

In order to improve teaching, a simple model is often assumed: research identifies and isolates effective teaching behaviours which are then passed on both to teachers in training and to teachers already practising. However, this model does not allow for the role played by a teacher's concept of her or himself. Dorothy Holland argues that "people tell others who they are, but even more important, they tell themselves and try to act as though they are who they say they are" (Holland et al., 1998, p3). A teacher's concept of her or himself as a mathematician and as a mathematics teacher shapes how she or he behave as teachers. Concepts of self, or identities as Holland calls them, might be seen as getting in the way of initiatives, programmes and structures aimed at making teachers more effective. I raise as a question whether teachers might, within certain constraints, be more 'effective' not by taking on generically effective teaching behaviours but by teaching in ways that fit their conception of themselves. Ian saw himself as performing best unscripted; Carol saw herself teaching from a fully prepared script.

I now raise a different although related issue. There were indications amongst several teachers of this study that they had become bored as teachers because of what

they saw as an over-prescription of what and how they should teach. The surrounding discourses of effectiveness had brought an increased prescription to teaching. Whilst for some this may have, it also has reduced teachers' autonomy and, so for others, it has reduced their interest, enthusiasm and energy. Some teachers, it seemed, resolved this problem of boredom by purposely going into lessons unprepared. By *winging it* they maintained their interest and energy in their teaching.

I turn now to another dimension to spontaneity – that of teacher development. For Ian, *winging it* played a part in his own development as a teacher. And this happened in two different directions. Firstly, it was while *winging it* that Ian began to work out a good method to teach simultaneous equations. The method materialised in a lesson that he had not planned. Then over time, with further *winging it*, he gradually honed the method into such a successful technique that he still uses today fifteen years on. He now does not need to *wing it* to teach simultaneous equations because he now knows *exactly* what he is doing.

My point is that a method of teaching a topic owed its origin and its development to unplanned experimentation in the classroom. I wonder how often good teaching ideas arise in the heat of the moment. I wonder further how many teaching methods mature into better methods during spontaneous experimentation in the classroom where unplanned changes are made in the heat of the moment. I am here focussing on and celebrating the spontaneous but again should emphasise that I am not suggesting that lesson planning is abandoned. Rather I am arguing, firstly that spontaneity is more important than current emphasis on control and targets might allow it to be and, secondly, that spontaneity is more complex as a notion than it seems at first sight, not easily mapped onto either 'good' or 'bad' practice.

There is another possible dimension to this that might need exploration. Going into lessons unprepared and *winging it* not only brought an environment in which Ian could both produce and develop good teaching techniques, it also brought the context where he really *learned* teaching techniques. Methods for teaching simultaneous equations were obviously already in existence and Ian may have *learned* or adapted one in advance of the lesson. But these two sorts of *learning* are subtly different. The distinction has parallels with debates over how pupils learn mathematics - either learning standard techniques or learning by more free, spur-of-the-moment exploration. The context of the particular moment in which learning takes place, we have realised afresh in recent years, plays a significant role. In what ways and to what extent does *winging it* offer a unique learning context?

The second direction in which not preparing for lessons added to Ian's teaching repertoire was by developing skill with *winging it* - whether or not this is a good skill is what I am exploring here. Whichever *winging it* did become a "habit" for Ian or, putting it in more positive terms, it became a teaching resource that he could draw on over his career. Carol, by contrast Carol was lost when she had to think on the spot. Is some ability to *wing it* unprepared an important skill that all teachers need to acquire at least in some measure – a skill whose importance is hidden in a climate

that attempts to control teaching making it more 'effective'. Another teacher from this study, Steven admitted that the only way to survive as a teacher is to find short cuts. One such short cut is not preparing lessons but going in and *winging it*.

There is one more question that I have already mentioned which I would like to make more explicit. Does the current environment of teaching mathematics through closely planned lessons shape the sort of mathematics that is present and consequently the sort of mathematics that is learned by pupils? Does planning what is to be learned in advance and in detail tend to exclude mathematics that is difficult to so encapsulate such as the unexpected. When the curriculum and a teacher has identified *what* is to be taught and *what* pupils should learn then that sets up a particular dynamic, a particular *sort of teaching*, a particular *sort of learning* and a particular *sort of mathematics*. It sets up particular roles or identities for the teacher and for the pupil. If teaching and learning mathematics is to be seen be effective then it has to be visible. The requirement for visibility and prior visibility shapes the 'mathematics', the 'teaching' and the 'learning' present. It brings particular opportunities and particular constraints. Others bring different emphases.

CONCLUSION

The aim of this paper has been to raise questions around the practice of *winging it* that remain hidden because of the surrounding climate of 'effectiveness'. The panoptic style of school inspection and school self-evaluation encourages outward displays of effective teaching behaviours. These, whilst improving teaching, might, at the same time, hide other practices which are differently effective, such as those associated with spontaneity, playfulness and fortuitousness. Although hidden these practices still occur in the hugely important spaces between the structures and systems of control.

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