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## **Salient moments: The potential for using multiple perspectives in mathematics teacher educator learning**

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What might be involved in making the change from teacher to teacher educator? While transcribing the reflective discussion of a group of secondary school mathematics teachers, I was struck by a number of occasions where, as I listened, something stirred in me. I use the Discipline of Noticing to frame the process of identifying particular salient moments from the teacher discussion. These initial noticings form one of a series of multiple perspectives that assist me in learning what it might mean to be a mathematics teacher educator and to bring to conviction future ways of being. One aim of this paper is to further develop thinking within the domain of mathematics teacher educator learning as well as to develop my own personal learning.

**Keywords: mathematics teacher educator learning; multiple perspectives; salient moments; noticing**

### **The context**

#### *A question of conviction?*

“There is no one model of good teaching” is something I find myself saying when talking to candidate pre-service teachers when they come to interview for the PGCE (Postgraduate Certificate in Education) course. I say it, and I hear Alf, my colleague, say it as well. It is one of the constants across every interview that we run. There is a philosophy behind this that I share and of which I am beginning to learn the real value.

Two years ago, I was still teaching mathematics in a secondary school. I had an image of what I wanted my classroom and the classrooms in my department to be like – the types of tasks and activities that I wanted to offer my students and the types of behaviours I wanted to see in them when they were engaging in mathematics. At school, I was much closer to the belief that one model of teaching may actually be superior and I worked with teachers in my department on what this model might be and why I felt (and they should feel too) that this model (or at least this set of values) was worth enacting. I had conviction. Then, just over one year ago, I moved away from teaching mathematics in secondary classrooms to work as a mathematics teacher educator, working primarily with pre-service teachers. In my new setting, I find myself searching to find my conviction from somewhere other than in my convictions about my own classroom.

### ***A reflective discussion***

I am currently involved in a project working alongside ten mathematics teachers from five different secondary schools – together we form a work group. The project focus is on developing the mathematical reasoning of students at Key Stage three (age 11-14 years) and the work group will meet four times over this academic year. One role I have been given is to facilitate a ‘deep reflection’ (a term that has come from the project designers) where each of the ten teachers talk about their recent experiences from their classrooms and wider departments, which are linked to the project. It is an extract from one of these reflective discussions that forms the basis of this research paper.

I believed it would be a meaningful and informative task to audio record each of these reflective discussions as a means to capture and then reflect upon any contributions I may have made. I intended to record and then transcribe the discussions and analyse what was happening before and after each of my contributions. This felt like a good place to begin, and a way to perhaps gain some insight into when a contribution might be effective or useful.

### **Learning from multiple perspectives**

#### ***Perspective 1 Self: Noticing - Marking - Recording***

What happened was quite different to what I had anticipated. I did indeed record the discussions but in the slow transcription, what I actually found myself attending to were the contributions that I was *not* making. While listening to each teacher speak, I was aware that something was happening to me at particular moments. In attending to these salient moments, I was ‘noticing’ (Mason, 2002, p.33), making a distinction by distinguishing some ‘thing’ from its surroundings. In the realisation that I had noticed something salient, I was ‘marking’ (ibid) that this was happening which allowed me then go back and ‘record’ (ibid) or highlight these moments and continue from there allowing myself to notice, mark and record but now in-the-moment of transcribing.

It strikes me as important that this process of noticing - marking - recording does not become mechanical. There was something significant about the way I was being open to notice but not considering in too much detail *why* I was noticing it. I wanted to learn about myself rather than spot patterns or notice more of what I had already noticed. I was working with what might be called *intuitive-noticing* as far as that was possible (appreciating that once something is recorded, it is likely to influence further noticings).

I chose to focus on a three-minute extract from the full transcript where I had recorded a relatively large number of salient moments. From these initial noticings (which I am distinguishing as my own perspective) I wanted to open up new possibilities by introducing multiple perspectives on the same piece of data with an aim to, as Davis (2004) terms ‘expand the space of the possible’ in order to educate my awarenesses so that I might act differently in the future:

Oriented by complexivist and ecological discourses, teaching and learning seem to be more about expanding the space of the possible and creating the conditions for the emergence of the as-yet unimagined, rather than about perpetuating entrenched habits of interpretation. (Davis, 2004, p.184)

### ***Perspective 2 Others: The BSRLM community***

At the Spring 2017 BSRLM day conference, I asked participants to record moments that felt significant to them, I played them the three-minute extract. It could be assumed that something salient might be due to ‘some hidden assumption or bias’ (Mason, 2002, p.248):

The only way to guard against prior commitment (including its extreme form, prejudice) is to practice ‘being in question’. But you cannot constantly question everything! That is why the discipline of Noticing advocates constantly seeking resonance with others in an ever-expanding community... (ibid)

For this reason, I wanted to share my salient moments only after the group had been given the opportunity to try and record anything salient for themselves. I then shared my moments with the group and asked them to consider and discuss any samenesses and/or differences. One point here is to ‘sensitise oneself (with the aid of colleagues) to notice situations in which alternative actions are possible’ (Mason, 2002, p.17), in this case an alternative to listening without prompt or intervention.

### ***Perspective 3 Others: A conversation***

A conversation with my PhD supervisors, Laurinda Brown and Alf Coles, soon after the BSRLM session provoked a further process of self-reflection and analysis. Laurinda took each of the salient moments and asked me to talk about them. This felt like an opportunity to try and locate in me what was behind my recordings, something I had deliberately not undertaken during my initial analysis.

At some points in the conversation, Laurinda would offer an image of why some of these moments may have triggered an intervention from her and in some cases, what this intervention might be. This offered me alternative future possibilities, but I know that my conviction will not come simply from trust in my colleagues and mentors but from trying things out for myself (Mason, 2002, p.30).

### ***Perspective 4 Theory***

In this section I am referring to the process of using theory from pre-existing literature as a way of further articulating the salience of particular moments through this piece of writing. In considering theories from the domain of teacher learning, I aim to explain and understand phenomena and to challenge and extend existing conceptions within the domain of mathematics teacher educator learning. It is by making connections with these theories that I am able to distance myself and develop part of me ‘which remains separate from the emotions of the moment’ (Mason, 2002, p. 19) in what has been called an ‘inner witness’ (ibid).

### **The salient moments**

In this section I firstly present layers of perspective, namely *self* and *others*, around just two of the salient moments from the three-minute extract. In actuality, it was difficult to separate the detail from *self* and *others* (i.e., colleagues, mentors) so I report these as voices, some of which may constitute a possible action in-the-moment. By doing this, I am emphasising what each layer of perspective brings to the complex process of educating my awarenesses, the results of which support the development of possible future actions. In making connections between these voices and theory, I am

aiming to develop not only conviction but the possibility of acting differently in the future when working with both in-service and pre-service teachers.

### **Salient moment 1: “It completely split my class massively”**

Perspective	Voices
Self	This does not help me to understand what is going on in this classroom. Also, a statement like this does not feel to me to be too far away from ‘there are those that can and those that cannot in my class’ which I would want to challenge due to what it is saying about the expectations of the students
Others	Spilt? <Split?> What do you mean by split? I want to see their images from the classroom.

Table 1. Voices from self and others concerning “It completely split my class massively”

It feels like there are a number of implications from this set of voices which are worth pursuing. In an account from Mason (2002, p.42), where he uses an example from a teacher’s research diary of a student who did not finish their work, he suggests that the teacher’s notion of ‘finishing’ might be problematic in that what constitutes ‘finished’ might be different for different people. The notion of ‘split’ that the teacher describes is problematic in the same way. Mason (2002, p.40) makes the distinction between accounts-of (where descriptions are as objective as possible, minimising emotive terms, evaluations and judgements) and accounts-for (which introduces explanation, theorising and perhaps judgement and evaluation). Working on an account-of the notion of ‘split’, can allow others to recognise something similar in their own experiences which might then lead to the collection of experiences under the label of ‘split’.

Working at honing accounts-of rather than accounting-for them focuses on particulars, on details and so helps in avoiding generality and labels... can block access to alternative paths, alternative interpretations, and so ultimately to alternative acts. (Mason, 2002, p.51)

One possible danger in labelling a class as ‘split’ or in labelling a group of students as those who ‘cannot’ is that there is a strong possibility that they will grow to meet that expectation. However, it is quite probable that my voice in this instance may well say more about me as an observer. My emotional reaction to hearing ‘split’ needs some attention in that it may hinder me from providing ‘refuge against turmoil in others’ (Mason, 2002, p.19) and what might be called for in this instance is the development of part of me that can remain separate to the emotions of the moment – an *inner witness*. The act of noticing is about awakening this inner witness so that the acting self can choose to act differently in-the-moment. Acting differently in this context may mean attending to the term ‘split’ without judgement, bringing into question what might constitute ‘split’ through the encouragement of accounts-of rather than accounts-for.

So, some work needs to be done in order to sensitise myself to notice when a *slide* might be occurring from account-of to accounting-for. Mason (2002, p.19) suggests that one mechanism might be to ‘ask yourself whether what is being described is behaviour, whether it is negotiably visible or audible to others who share a similar culture to your own’. One alternative response therefore might be as simple as “so what do you mean by split?”

**Salient moment 2: “I had to put some emergency repairs in place”**

Perspective	Voices
Self	This sounds dramatic, tied to emotions and a need to resolve a situation.
Others	The use of ‘had to’ implies there was no choice. Just flagging up that this is negative. What is it that forces the teacher to take the initiative? What are the expectations here around resilience? ‘Emergency repairs’ does not mean wrong, but just by questioning this it may lead to “I don’t like my students getting stuck” so you could ask the rest of the group – what happens when your students get stuck? There are no ‘had tos’

Table 4. Voices from self and others concerning “I had to put some emergency repairs in place”

Some participants at BSRLM were struck by the number of times terms such as “should” or “had to” were used in the particular extract. Pimm (1993, p.28), maintains that one of his intentions when working with teachers is for them to leave his course having moved away from asking “What *should* I be doing in my classroom?” to “What *could* I be doing?” This subtle but significant difference calls me to return to the ideas from Davis (2004, p.184) of ‘expanding the space of the possible’ but from a different perspective. Not only is it of importance that I, a teacher educator, open myself up to new possibilities and ways of acting, but that I support the teachers that I work with to do the same.

Teaching and learning is not about convergence onto a pre-existent truth, but about divergence – about broadening what is knowable, doable and beable. The emphasis is not on what *is* but on what might be brought forth. Thus learning comes to be understood as a recursively elaborative process of opening up new spaces of possibility by exploring current spaces. (Davis, 2004, p.184)

Through questioning “emergency repairs” one imaginable possibility is that this leads to what happens when students in the classroom get stuck. At this point, work can be done through asking the rest of the group for stories and strategies around students being stuck. Hearing these possibilities from individuals who share a similar culture (i.e., secondary school teacher of mathematics) can be one way of alerting a teacher to other possibilities. The use of “had to” might imply that there is no choice. In Mason’s (2002, pp.87-88) summary of the Discipline of Noticing as four interconnected actions he includes *recognising choices* by ‘accumulating alternative actions and by working at bringing the moment of noticing into the present’ (ibid). The teacher had brought into the present her noticing of the need to take some initiative in the moment, but the action of “putting emergency repairs in place” was proposed as the only possibility. In the absence of ‘accumulating alternative actions’, the shift from the retrospective “I had to...” to the presently spective “I could...” could be supported by means of ‘descriptive but non-judgemental postspective review’ (ibid). One implication here for me as a teacher educator is to consider how to facilitate the shift from “had to” to “could” through questioning and opening up to the wider group.

**Concluding remarks**

The process of looking in such detail at a small amount of data has been significant in the way that I have started to make sense of what it means to be a teacher educator with the uncovering of possible ways of acting differently in the future. The problem

with my initial question about when a contribution is *effective* is comparable to the problem of asking what makes an *effective* teacher, as both imply there might be some simple answers. As Pimm (1993) puts it, ‘mathematics education is a discipline prone to the lure of single solutions’ (p.30) and by imposing models of, for example, the perfect lesson or in my case the perfect reflective discussion, the danger is that a ‘layer of complexity’ is confounded by an ‘externally imposed layer of control’ (ibid). I do feel conviction in saying “there is no one model of good teaching” and a sense that it is the searching for this conviction that is far more meaningful than finding one model of good mathematics teacher education.

There is a motto of noticing which Mason (2002, p.248) alerts us to that is ‘I cannot change others, I can work at changing myself’. As a teacher, my conviction came from having an image of what learning ‘should’ look like (and the teaching that ‘best’ promotes this) and I worked hard to *change* the teachers in my department so that they shared this image with me. Pimm (1993) describes powerfully what he calls ‘teacher-educator-lusts’:

I think we should examine equally critically our *need* (lust?) for the teachers we work with to change. Their change is not our business; how, when and if they change is surely their concern alone... If I as a teacher educator can only feel successful if the teachers I work with change (and in ways I want them to), I am setting up both myself and the teachers I am working with quite dramatically. I believe it is dangerous to lose sight of how difficult personal change can be - and we should not talk lightly or glibly about it, let alone expect or demand it. (Pimm, 1993, p. 31)

Operating as a head of mathematics, I am aware that I was working to change the people I worked with (in ways that I wanted them to). What I now realise is my focus must shift onto my change and how change in me might bring about a means for teachers to change for themselves if so desired. In my new role, I can bring to mind moments from working with pre-service teachers in their classrooms where I have felt the need to bring about a change in their teaching. Through sensitising myself to this lust to change, I am enabling myself to notice situations in which alternative actions are possible, for example, when a teacher says “it completely split my class”.

If an aim is to operate in a way close to how I could operate in the classroom (in terms of my conviction) then one mechanism in supporting this is through continuing to work within the Discipline of Noticing:

All it takes to start work on one’s expertise is to try to notice, to try to catch oneself caught in a reactive habit which might fruitfully be turned into a creative response every so often. The Discipline of Noticing is designed to support the awakening of the inner monitor-witness, which is what makes an expert be expert. (Mason, 2002, pp.178-9)

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