

Using video for professional development: a case study of effective practice in one secondary mathematics department in the UK

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The use of video recordings of lessons for teacher professional development is under-researched (Hall and Wright 2007, 9). There have been conflicting recommendations related to viewing videos of similar or different contexts (e.g., Hall and Wright 2007, 11 and, Clarke and Hollingsworth 2000, 40). It has been reported that it can be hard or take time to establish norms for discussion of video (Van E's and Sherin 2008, Jaworski 1990). This paper reports on evidence from the use of video recordings in one secondary school, where teachers commented on finding video watching in a group more useful than lesson observation, with no evidence of this taking time to develop. I report on the practice of using video in this school, which drew on Jaworski (1990), finally offering speculations based on Rosch (1999) as to why it is effective.

Video use, teacher learning, continuing professional development

Research literature on using video for professional development

The National Council for Excellence in Teaching Mathematics (NCETM) commissioned a review of UK research into video use for professional development which found: '[u]sing video clips for the professional development of in-service teachers is under researched' (Hall and Wright 2007, 9). Nonetheless the report was able to draw some tentative conclusions, which are mirrored in a book on the issue:

If video clips are to be used effectively, it seems that they must take into account local contextual/situational factors i.e. videos produced by teachers themselves for use in their own schools seems to be more important than so called 'universal' or standardised video recordings for general consumption (2007, 11)

Ideal videos show teachers with whom viewers can identify implementing a curriculum similar to the one they use ... in a classroom similar to the classroom in which they teach (Brophy 2007, 289)

However a different and earlier study found: 'Video clips from classroom settings that are too familiar may be less effective in changing teachers' thinking' (Clarke and Hollingsworth 2000, 40). I take these conflicting findings to lend further support to the notion that more research is needed about using video for teacher development; but they also indicate that perhaps the choice of video is not as important as the use made of it.

In the conclusion of the edited book referred to above (Brophy 2007) the author also states an essential practice is: 'establishing norms to ensure discussion is reflective and constructively critical' (Brophy 2007, 298), something echoed in (Van E's and Sherin 2002). However, establishing such norms can be problematic. Van E's and Sherin (2008) report on the workings of a 'video club'¹ in which some teachers:

¹ Seven teachers joined this 'video club'; they met for ten meetings in 2001-2, at each meeting watching and discussing video clips, taken by the researchers on the project, of each other teaching.

would often evaluate or call into question the teachers' pedagogical approaches as viewed in the clip, offering advice on what the teachers should have done differently. This approach to video analysis is different from the interpretive stance that was promoted in the meetings. Similarly, rather than look closely at the specific events in the video, these teachers drew more from their own classroom experiences as a foundation for their comments (2008, 264)

For the two teachers in question it was not until a tenth and last meeting of the video club that there was an observable shift in the way they discussed the clips. Van E's and Sherin's description of the evaluative comments of some teachers to video bear a striking similarity to the same issue as reported by Jaworski (1990), twenty eight years earlier, drawing on her work at the Open University (OU). A very particular practice was developed at the OU in order to overcome this difficulty that was rooted in Mason (2002)'s distinction between 'accounts of' and 'accounts for' data. Accounts *of* phenomena aim to report on them as directly as possible, avoiding interpretations, judgements or evaluations. Accounts *for* phenomena aim to explain what is perceived or interpret it, for example by classifying. Jaworski (1990) reports on the practice of using video with teachers in a two-part process, in order to avoid judgemental and unhelpful comments from teachers, particularly at the start of discussion. In the first part the facilitator begins by asking for accounts *of* what was observed, before moving to accounting *for* what was seen. Jaworski also recommends using short sections of lessons for observation.

My own practice has been influenced considerably by the two-part model sketched above – my introduction to these ideas was through participation in the Association of Teachers of Mathematics (ATM)'s working group on 'The Science of Education'. It has not been until relatively recently that I have investigated the literature on the use of video, having engaged in the practice for a number of years with teachers in the school where I taught.

Case study of practice

This case study draws on data collected over a five year period (2004-9) from one secondary mathematics department in the UK. I collected the data whilst working full time in the department. The school is a mixed 11-18 comprehensive on the edge of Bristol; the intake of students is below national averages in terms of attainment at Key Stage 2, and the catchment area includes wards with high levels of deprivation.

A practice I established in the department as the Head of Mathematics was the recording and viewing of videos of each other teaching. This practice was a continuation of the data collection methods for my Masters dissertation, in which I recorded lessons in two teacher's classrooms in the school, using a fixed camera placed at the back of the classroom, focused on the teacher at the board, but with as wide an angle as possible (typically capturing backs of a dozen students in the frame).

I became struck by the seeming power of the discussions we had, as a department, in terms of provoking reflections of practice, when watching clips from these videos. I decided to take audio recordings of some of these teacher discussions as I was interested in exploring in more detail what was happening within them.

I bring an enactivist theoretical framework (Reid 1996) to my PhD. The significant feature of enactivism for the purposes of this paper is that I am not interested in finding a recipe for effective video use, nor finding the 'best' method. Enactivist research aims for theories that are 'good enough for' their users. I engage in research to become more sensitive to the situations in which I find myself as a teacher, and hope others may be helped to see more or differently in their own work.

My work as Head of Department ended in July 2009, and in one of the last meetings I ran with Maths staff, I asked them to reflect on what had been most useful in terms their own development (across all meetings, of which watching video made up a small proportion). The following dialogue ensued, without prompting:

Teacher R: yeah I'd like to see more videos of people teaching (.) it's different to when you're sat in a classroom just observing someone by yourself I get more out of it when I watch a video with all of you

Teacher A: the other people and focusing on a small part /Teacher R: yeah/ rather than watching a whole lesson where you /Teacher R: you forget a lot of it/ don't get very much

Teacher R: then you get involved in the lesson because the kids have started working you start working and you forget about why you're there (.) you rarely sit and watch a lesson

There is evidence here for Jaworski's (1990) suggestion that small clips of video be used, in Teacher A's comment about watching 'a small part' being more useful than a whole lesson. These two teachers seem to be concurring that an observation of a small clip of a video recording, with others, is actually more useful to them than sitting in on a whole lesson observation of another teacher. These are striking comments, given the mixed findings of previous research on video use reported above.

There is not space to report on more evidence for the effectiveness of the practice (e.g., in the audio data itself, further interviews and lesson observations), as I turn now to describing the practice of using video in this department, drawing on transcripts of the audio recordings of meetings of staff looking at video excerpts. I have analysed five aspects of this practice – drawing on issues discussed in the literature and my own reflections on significant decision points, as facilitator.

1. Selecting a video clip

Teachers in the Department who had lessons recorded were always volunteers. The member of staff would select a class and a time before the lesson I would set the camera up on a tripod at the back of the room, set it to record and then leave – returning at the end of the lesson to retrieve the equipment. Students were told in advance of these recordings, and given the option to sit out of shot, or have any other concerns discussed. In practice we did not receive any comments of concern from a student or parent – I believe partly because it was clear the focus was on the teacher.

Having taken the video recording, I would transfer it to DVD and watch it, looking for any sections that might be suitable for discussion with other staff. I was looking for small sections of the recording where something 'interesting' (as I thought about it at the time) was occurring. The department had agreed on a shared focus for development around running class discussions. It was therefore only the times of whole class discussion that I was selecting from – and indeed the nature of the recordings, and the way the camera was set up, meant that little else from the lesson could be discerned than these periods. By an 'interesting' section of video, I meant a time when, for example, students were responding to each other in a whole class discussion, or when there was some ambiguity that was discussed as a class, or if there was a section where several different students were contributing ideas. I set myself a rule to choose one continuous section from the lesson that did not last more than five minutes, and in general, I aimed to make the clip around three minutes long.

This practice I read as being in line with another conclusion of the NCETM study:

Video recordings need to go through a screening process in order that their ‘fitness for purpose’ can be assessed. The context in which the video is ‘framed’ can also have implications for its value as a learning resource. (Hall and Wright 2007, 11)

The screening was provided by my sense of looking for something ‘interesting’ and the framing was given by the agreed department focus on ‘managing pupil talk’.

2. Setting up the discussion norms

The audio recordings of meetings where the department looked at the video clips I had selected all begin with a similar form of words from me (Teacher C).

Teacher C: ... we had a focus at the beginning of the year ... the issue people felt they wanted to work on was managing pupil talk and so our focus in looking at these clips is on teaching strategies (.) but I would invite us as we have done in the past (.) having seen this three or so minutes clip ... the first task I will invite people do to is try to work on re-creating what happened (.) so rather than move straight into discussion of what strategies to try and work on what’s actually (.) what’s taken place (Meeting, 24-1-05)

Teacher C was explicit during the first phase of working on the video that teachers should not offer ‘interpretations’, and in early meetings there is evidence of contributions being cut short if they begin to stray from the task of description of what has taken place. The intention in reconstruction is to avoid the problems identified by Van E’s (2008, 264) and Jaworski (1990, 63) of contributions slipping in to evaluations or negative reactions, leading to discussions with little value.

In these meetings after this initial phase of work, there were often comments articulating surprise at the difficulty of working out what students had said – problematising our instant interpretations of students’, which is the basis on which we make so many decisions so fast in the course of a lesson.

Teacher C: and isn’t it amazing, the subtlety (.) that took us *how* many times to pick up what she was talking about (Meeting, 4-4-08)

3. Re-watching the video

In running a session looking at video, I am aware of crucial decisions about when, and how often, to replay any clips. In discussing the same issue in relation to working on silent mathematical animations with Post-16 students, Eric Love (quoted in Pimm 1995, 47) commented: ‘If I keep showing them the film, they’ll think it is about remembering. I ask them to reconstruct the film communally’. There are different purposes at play here, in that Love is wanting his students, in their minds, to begin moving images from the film; whereas for me it is more about the problems identified above by Jaworski. There is a subtle mixture of intentions here; while, like Love, I do not want the task to be about memory, I equally do not want to get bogged down in the detail of every moment of the three minutes. I am aware of being alert to any disagreements about the reconstruction. I know I am looking for an excuse to slow down the reconstruction; and disagreements about what is said can provide that, often prolonging discussion – the issue finally to be resolved by re-watching(s).

4. Moving to interpretation

In line with the practice described in Jaworski (1990) having had a period of time ‘accounts of’ what was watched it is possible to move to ‘accounts for’ whilst

avoiding judgemental comments. In setting up this second section of working on video, Teacher C uses a similar form of words each time to signal the move:

Teacher C: this is where Teacher B doesn't say very much now (.) what were the teaching strategies that she was employing there (.) there was a lot going on (.) and we've said one about the classroom organisation (.) what else was Teacher B doing to (.) as you say (.) well (.) do whatever was happening there (.) generate a discussion where they were listening to each other (14-9-07)

There are still norms involved in this stage of discussion that Teacher C would implement, for example encouraging teachers to base interpretations on evidence.

5. Metacommenting

I have reported previously on the practice in 'metacommenting' in lessons and teacher meetings (Coles and Brown 1999). The word is taken from Bateson's concept of 'metacommunication' (2000, 518) and I use it to denote any comment that signals a shift in the discourse to consider something *about* that discourse. For example, at the end of one session, discussion had focused on a part of a clip where Teacher B helped students out of a dilemma by telling them that their task, as mathematicians, was to be aware of what choice they make to escape the dilemma, be consistent about that choice, and make sure they have written it down (this itself being a meta-comment). The discussion in viewing this clip had been around whether Teacher B had sorted out the students' difficulties or not. Teacher E described how he thought the dilemma had been sorted out by Teacher B, not by telling the students what to decide, but by telling them how to resolve it for themselves. Teacher C then comments:

Teacher C: that's lovely (.) and it's a much more enabling sorting out (.) because if we just sort it out by answering the issue then the next time pupils come up with this issue ... they're in no better position to decide (.) the only resource they've got is to ask Teacher B (.) but if you sort it out by making them aware this is an issue and making them aware there are consequences ... that is offering them a tool for next time they get in to that situation (Meeting, 14-9-07)

This is a meta-comment because it is a comment about the discussion the teachers have been having – contrasting what the group had got to in terms of an analysis of (account for) what Teacher B had done, with what might be taken to be a more normal description of 'sorting out' a student's difficulties.

Conclusion

The practice I have described offers evidence for the importance of the two-part approach to running discussions of video clips described in Jaworski (1990) in avoiding some of the problems highlighted in the literature. By way of conclusion, I offer some tentative comments about *why* I think this practice may be effective.

The first point is that re-construction of the events in a video clip is something every teacher can engage in and have something to say, in way that beginning with interpretations of events may not. One aspect of reconstruction therefore may be the avoidance of the negativity Jaworski (1990, 63) identifies. However I believe there may be more fundamental forces at play that I make sense of via the work by Rosch on categories and concepts (e.g., see Rosch 1999). Eleanor Rosch was a co-author of a key text for enactivism (Varela, Thomson & Rosch, 1991) and her thinking fits well with my theoretical position, in linking types of concepts and category to action.

Rosch (1999) identifies three separate layers in our use of categories which range from the most detailed to the most abstract.

Layer of abstraction	Example	Example in context
Detail/behaviour layer	my pet 'Otto'	Teacher B's actual responses
Basic level category	dog	'an enabling sorting out'
Superordinate category	animal	e.g., autonomy

Table: Summary of Rosch's (1999) three layers of categories

Words at the basic level are always linked to action – indeed one way Rosch identifies basic level categories is that these are words which define similar sets of actions in relation to them ('chair' is something that provokes in me similar actions).

What I believe Jaworski (1990, 63) and Van E's and Sherin (2008, 264) may be reporting, in the difficulties of working with teachers on video, is that by default as humans we will pitch our discourse at this basic-level category layer. These are the easiest words to use; but the point being, if we begin at this layer the words we use are strongly linked to ways of seeing and actions we already perform in the classroom.

The discipline of beginning with 'accounts of' forces discourse into the detail layer. From there if generalisations, or meta-comments, identify new labels (such as 'an enabling sorting out') there is the possibility that these labels (which will be at the basic-level) can become associated with new actions in the classroom. I believe it may be this arising of possibilities for new ways of acting that led teachers in the department to speak of finding the co-watching of video so useful.

References

- Bateson, G. 2000. *Steps to an ecology of mind*. University of Chicago Press: Chicago.
- Brophy, J. 2007. Discussion. In *Using video in teacher education*, edited by J. Brophy. Bingley, UK: Emerald Group Publishing Limited.
- Clarke, D. and H. Hollingsworth. 2000. Seeing is understanding. *Journal of Staff Development* 21(4):40-43.
- Coles, A. and L. Brown. 1999. Metacommenting: developing algebraic activity in a 'community of inquirers'. *Proceedings of the British Society for Research into Learning Mathematics* 19(1):11-17.
- Hall, I. and D. Wright. 2007. *Literature review of the use of video as a resource for professional development of mathematics teachers*. Newcastle University: The Research Centre for Learning and Teaching (RCfLaT). <http://www.ecls.ncl.ac.uk/publications/> (accessed 5th Sept 2009)
- Jaworski, B. 1990. Video as a tool for teachers' professional development. *Professional Development in Education* 16(1):60-65.
- Mason, J. 2002. *Researching your own practice: The discipline of noticing*. London: Routledge Falmer.
- Reid, D. 1996. Enactivism as a methodology. *Proceedings of the Twentieth Annual Conference of the International Group for the Psychology of Mathematics Education* 4:203-209.
- Rosch, E. 1999. Principles of categorization. In *Concepts: Core readings*, edited by E. Margolis and S. Laurence. Massachusetts: The MIT Press.
- Van E's, E., and M. Sherin. 2002. Learning to notice: Scaffolding new teachers' interpretations of classroom interactions. *Journal of Technology and Teacher Education* 10(4):571-596.
- Van E's, E., and M. Sherin. 2008. Mathematics teachers' "learning to notice" in the context of a video club. *Teaching and Teacher Education* 24:244-276.
- Varela, F., E. Thompson., E. Rosch. 1991. *The embodied mind: Cognitive science and human experience*. Massachusetts: The MIT Press.