

Interns' Use of Video Cases to Problematize their Practice:

Crash, Burn and (maybe) Learn

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Abstract

In this study we investigated *whether video case construction is a more powerful tool for facilitating more complex analysis of teaching than making, watching and reflecting on videos*. We compared two secondary science interns' video-based reflections for a course assignment with their construction of video-cases of their teaching for self-identified audiences. Interns' stance toward video as a tool for analysis moved from closed to more open; insights became more specific and complex; and they focused more on instruction and what their students were saying and learning. There also were key areas interns did not notice, where growth did not occur.

Why don't they just let us go out there and crash and burn, then come back and use video to figure out what we could have done differently? This question captures a commonly held notion among aspiring teachers, that teacher educators have their priorities wrong when they ask novices to analyze and reflect on their teaching. Pre-service teachers often believe they will learn to teach by 'doing', not by sitting in university classrooms, and they should be able to make mistakes in the classroom first and then learn from their mistakes. A pre-service teacher who participated in the study discussed in this article expressed this view:

Because ideal reflection also is associated with improvement...I think, most of our writing should be going to [consider] "how can I make this different? How can I make it better?" Instead...we analyze things weirdly, at least in science...they want us to break things apart before we teach them...and they're wanting us to do all this preparation before. I think more of that could be useful to go out there, let us crash and burn, and come back and say, "Well, what could I have done different? How would...these tools they're trying to make us use [have] been useful." And then, in some cases they are and sometimes they're not, but let us do it around that way. (Bill, Final Interview, p. 10)

Increasingly, teacher educators are assigning analysis of videotaped classroom lessons to merge field and course work and thus strengthen experiential learning. Research is lacking, however, regarding what prospective teachers actually take away from such activities (Grossman, 2005). This paper discusses findings from a study that compared two pre-service secondary science interns' video-based reflections completed as a teacher education course assignment with voluntary video case construction completed for the study.

The study built upon earlier research conducted by the authors (Rosaen, Lundeberg, Cooper, Fritzen & Kauer, 2006), which compared the commonly used tool of memory-based reflection with video-based reflection. Findings suggested that video-supported reflection helped interns write comments about their teaching that were more specific (versus general), focused on instruction (versus classroom management), and focused on children (versus self). Since the video-based commentaries were based upon discrete and disparate moments of practice, we wondered what might be gained by asking interns to construct a video case featuring a particular aspect of their teaching.

Interns were asked to view videos of their teaching during one lesson, select important or significant facets of practice and organize them into a coherent “case”. A multi-media, digital software program enabled users to include video clips and associate them with supporting documents such as student work, lesson plans, and voiceover or written commentaries. The possibility that video analysis aimed at the construction of cases had the potential to prompt deeper thinking was intriguing and led us to investigate the following questions: *Is video case construction a more powerful tool for facilitating more complex analysis of teaching than making, watching and reflecting on videos? If so, how?*

Experience alone does not necessarily bring about teacher change; reflection is a necessary part of learning from experience. Novices need to engage in a planned series of activities where they learn to: perceive and assess classroom situations, make judgments, formulate goals, choose a course of action and reflect on consequences (Dewey, 1904/1964; Kennedy, 1987 and 1999; Kessels & Korthagen, 1996; Schon, 1983 and 1987). Theories and concepts are used to interpret experiences, and learning becomes especially meaningful when uncertainties and disruptions are valued as rich sites for learning (Britzman, 1991, Field & Latta

2001). Field and Latta argued, “the possibility of becoming more experienced arises only when something happens to us beyond what we anticipate” (p. 887). Pre-service teacher reflection has been encouraged (Schon, 1987) through the analysis of videotapes of classroom teaching (Romano & Schwartz, 2005) as well as multi-media case construction, where students view and analyze aspects of their own and/or colleagues' practice (Kennedy, 2005; Hewitt, Pedretti, Bencze, Vaillancourt & Yoon, 2003). In this study, we documented the actual cases the interns created and the design process they engaged in to understand what they thought about, why they made particular choices, and what they valued about the process.

For several reasons, we focused on interns' thinking about how they conduct classroom discussions in science. Most teachers view conducting productive classrooms discussions as a challenge. Since discussions are a particularly complex aspect of teachers' lived experience, they provide a rich site for studying teachers' learning from experience (Feiman-Nemser & Buchmann, 1985; Munby & Russell, 1994). In addition, many educators claim that highly interactive discussions are an important literacy skill, and engaging students in the production of knowledge through interactive discussions can broaden and deepen students' conceptual understandings in all disciplines (e.g., Almassi, 1996; Applebee, Langer, Nystrand & Gamoran, 2003; Au, 1993; Barnes, Britton & Torbe, 1990; Gambrell & Almasi, 1996; Johnston, 1999; Nystrand, Wu, Gamoran, Zeiser & Long, 2001; Palincsar, M., Anderson, C., & David, Y., 1993; Sawyer, 2004). However, because the types of knowledge and ways of knowing vary by discipline, how productive interactive discussions are carried out in different subject matters may vary (Wells & Arauz, 2006). For instance, learning to engage in scientific inquiry through discussion entails examining alternative points of view, and frequently the goal for collaborative talk is to reach a consensus supported by solid argument and evidence (Bazerman, 1988;

National Research Council, 1996 and 2000; Osborne, Eduran, & Simon, 2004; Wells & Arauz, 2006). From their own apprenticeship of observation in classrooms (Lortie, 1975), novice teachers are all too familiar with a format many researchers refer to as an IRE discourse structure—a three-part sequence where the teacher *initiates* a question, students *respond* to the question, and the teacher *evaluates* the response (Cazden, 1988). Although shifting from the IRE discourse structure to scientific inquiry through discussion is a challenging skill to develop, it is a high priority skill for becoming an effective teacher, and an essential target area for teacher education.

Because it is difficult to capture classroom interactions for further analysis and reflection, studying video records for the purpose of making a case may shift interns' attention from the exploration of vague perceptions about events to a more critical and evidence-based analysis (Ball & Cohen, 1999; Kennedy, 2002; Sherin & van Es, 2005). This could become a useful tool for interns to investigate whether and how discussions promote student learning.

Our study investigated this claim, following the argument that explicit noticing is critical to change since if you do not notice, you cannot choose to act differently (Borko, 2004; Davis, Sumara & Luce-Kappler, 2000; Mason, 2002; Ollerton, 2000; Schultz, 2003; Sherin & van Es, 2005; and van Es & Sherin, 2002). Case construction has the potential to help teachers examine how they facilitate discussions because it slows their performances down. Interns' video reflections provide windows through which researchers may view and understand teacher change.

Research Methods

Participants and Setting

The study included two secondary science student teacher interns who were completing a year-long teaching internship to earn teacher certification. Interns were placed in a classroom with a mentor teacher, and were supervised by field instructors from the university.

Concurrently, they took two Master's courses per semester designed to support them in their teaching and overall professional growth. For their fall semester coursework, interns were required to videotape a lesson, isolate a section to analyze in relation to professional literature on teaching, and present a video clip from their lesson to their peers during class. At the time of the study, the interns were engaged in the second half of their internship where they taught four to five days per week.

Bill,¹ a confident Caucasian male in his twenties, taught a seventh grade physical science course in a suburban school in the Midwestern United States. His discussion-based lesson on the laws of motion was a departure from his mentor teacher's typical routine of discussing the "question of the day". He joined the study to use interactive, digital media software in order to associate PowerPoint slides used in the lesson with clips from his videotape.

Nate, likewise a confident young adult Caucasian male, was a high school physics teacher intern in an affluent midwestern suburb in the U.S. For his videotaped lesson on projectile motion, he selected and edited a sequence of clips that captured the essence of the entire lesson in a three-minute movie. The lesson included a physical demonstration of projectile motion. It was Nate's first attempt at enacting hands-on and student-centered instruction.

¹ Pseudonyms are used for all research participants.

Procedures

Baseline interview. During a 35-40 minute baseline interview interns explained their views of discussion, and their perception of the video task they completed for their teacher education course. We probed interns' beliefs about the role of discussion-based teaching in science, for example, its value in promoting conceptual understanding. We also asked what they learned about themselves and their students from the assignment. Participants were given the option of using the same lesson for their case construction or videotaping a new one. Then interns were shown a sample video case that demonstrated the potential for incorporating written commentary, lesson plans, and student work to enhance the video case. This case was not presented as a model they were expected to emulate.

Design session. A design session enabled us to watch the design process unfold and provide assistance as needed while interns created their video cases. The protocol was written as a flowchart to facilitate flexibility in the interactions, and questions were open-ended to encourage interns to take ownership of the task and develop their own sense making. Interns explained what was significant to them about the content they chose to include, the intended audience, and their decision-making process. If interns did not have ideas about how to design the case or were unclear about how to proceed, we offered to help and posed questions designed to assist them in getting started. We also offered technical support in using the software.² Interns then worked independently to select video clips and develop their case.

Final interview. After completing their video cases, participants were interviewed while we viewed the cases with them. They reflected upon their thinking about the lesson itself and their decision making process while creating the case. The interview was guided by a formal

² Due to technical difficulties, voiceover technology, which Nate had counted on to enhance his case, was unavailable.

protocol, but we also encouraged open-ended conversation. We asked them about the value of the case construction process, and if they would recommend that we ask future interns to construct cases for their course work. The final interview lasted approximately 1 hour and, like the others, was recorded and transcribed.

Data Analysis

Initially, the data were coded according to what interns noticed. We began with codes from our prior study (Rosaen et al., 2006): (a) the nature of the observations interns made (general or specific); and (b) topics discussed (management vs. instruction; focus on self vs. students; listening to students; student achievement). After working with the data, we developed two additional categories: stance towards video (open or closed), and attention to audience. For instance, during the design session interview, while explaining his choice of a specific clip to use in his case, Bill said:

There is a cycle of on-task discussion followed by related questions that lead to off-topic conversation. I like these questions because I feel that it shows the students trying to connect the material to their experiences. It also broadens the scope of science to more than just the material. (Design Session)

This quote was labeled with three codes: as a specific insight, a focus on students related to instruction, and listening to the students.

We also viewed the video cases to understand the context of the interns' statements about their cases. In Bill's situation, a transcript of the lesson was also available; the discourse, however, was too hard to hear to make a transcript of Nate's lesson. We kept records of what we noticed about their pedagogy and their reflective processes, and which aspects the interns did not notice.

Draft narratives were composed to characterize changes in how the interns reflected on their practice, what they learned from experience, and what they came to value about the case construction process. We tested the accuracy of the narratives and the validity of our claims by looking for discrepant evidence. For example, at first we thought Nate did not learn very much from his condensed case construction process since he came to the study with an edited three-minute movie and talked primarily about putting finishing touches on it. However, in reviewing his final interview, we realized that in his attempt to showcase for potential employers a “typical” lesson, he shared his thinking about his practice and details about his educational philosophy that he had not noticed before. Narratives of the interns’ learning and stance toward use of video were revised in light of new insights gained through further analysis.

Results

Interns showed professional growth in three areas: Their stance towards video as a tool to facilitate change, the complexity of their insights, and what they noticed about their lessons. There also were key aspects of their practice that each intern did not notice, showing that there were areas where growth apparently did not occur.

Bill: Learning to Problematize Practice

Bill’s video case. Bill’s case featured a classroom discussion in seventh grade physics where he problematized one aspect: good or bad interactions and how he responded to questions that led the discussion off task. The clips showed what he valued about classroom discussion: “[students are] asking a question, talking, having the students talk about it” (Final Interview, p. 6).

When he viewed his video for his teacher education class, he focused on surface features such as what he was wearing, facial expressions and body language and he concluded that his

video "...didn't have anything profound on it, as far as the whole lesson" (Baseline Interview, p. 7). Bill's focus for his case emerged as he reviewed the video of the lesson several times. He explained,

I didn't know what I was looking for, when I watched it, and—as for a case—and it kind of just came out to be, 'Well, maybe that'll work.' And I started seeing good interactions, I just wanted to see good interactions and then poor interactions, and then I saw that I deflected [students' responses]. Or say it was good students, then show them [going] in the right direction kind of thing...(Final Interview, p. 7)

Beyond that, Bill wished to demonstrate his use of PowerPoint as an effective tool to facilitate interactive discussion "if applied properly" (Design Interview, p. 1). The case features Bill leading a discussion about the three laws of motion in which students volunteer answers and respond to examples from students' lives (i.e. baseball) that illustrate the science concepts. He highlighted an interaction between himself and two boys to show that he valued students' personal interests (the boys were talking about guns and cars) while also "reining them in very quickly" to refocus their attention on the science content. He also chose clips that pointed to errors he made such as incorrectly referring to one of the laws and another instance in which he felt he talked too much.

Stance towards video analysis. Bill moved from a closed to a more open stance toward using video to examine his practice. He saw little value in the fall semester course video assignment. He admitted, "the only reason I used the videotape is because the assignment said I had to" and "manipulated whatever I had on my tape for what I was doing for the assignment," and thus, in his words, "fabricated" what he showed to his peers (p. Baseline Interview, p. 8). He

justified his stance by suggesting that real learning happened for him in the classroom and not at the university. In his words, "I'm all interested in learning about teaching . . . from a hands on approach" (baseline, p. 8).

The time and effort he put into the construction of his case stood in marked contrast to the casual approach to his course video assignment. About the class assignment, he said, "I took it home and watched it. Did I watch the whole thing? No. I watched enough to get enough for the [university] requirement" (Baseline Interview, p. 7). In contrast, Bill offered an unsolicited suggestion that, "if we could have the [software] program somehow at home . . . take it home to work on it, so you could do it at your own pace, feel like it wasn't scheduled . . . I would have probably explored more of my film" (Final Interview, p. 19). He said he would need this time to experiment with inserting documents to make the most salient case. This suggests his interest was piqued in exploring his practice via video.

When asked if the experience of case construction was useful to him, he reported it helped him "...reflect on what it is that I really was trying to do, and those are the questions you don't ask yourself" (Final Interview, p. 14). In hindsight, he realized that his course instructor asked the interns to be very specific and Bill speculated that in doing so, the instructor was focusing their attention on particular aspects of their teaching (Final Interview, p. 14).

General to specific. Through the case construction process, Bill's insights became more specific and contextualized. For instance, when asked initially what was challenging in his teaching, he responded with a general statement, "keeping them all focused" (Baseline Interview, p. 5). When extracting clips for his case, he explained why he made particular teaching decisions: "I do this [having the students read] to involve particular students who are mentally wandering off" (Design Session, p.3). In a similar fashion, he made a general observation early

on, "I move a lot during discussion. . . I want to be part of their student body so that it's not a teacher telling the students, but a facilitator of discussion about the topic..." (Design Session, p. 2). It's significant that when he looked for evidence to support this statement as he constructed his case, he could not find any. Instead, he discovered an opposite pattern in his behavior, that he did most of the talking: "I then proceed to talk and do much of the explaining in this clip" (Design Session, p. 3). Here the video evidence seemed to push him to problematize his own practice.

Bill eventually paid more attention to individual students. Prior to making his video case, Bill talked about his students in general terms and he didn't refer to students by name. During Bill's case construction he analyzed a segment in his lesson where the students were discussing force and motion, honed in on student comments, and called the students by name: "He . . . might have raised his hand, but it was a related question to what Josh said. Josh was talking about hitting someone – equal and opposite reaction . . ." (Final Interview, p. 15). Bill then went on to assess the teaching and learning taking place in this moment: "So now we've gone from science to talking about punching and shooting things, and I'm like, 'Okay, I can see where this is going'" (Final Interview, p. 15). Here he also talked about his own response as the teacher.

Simple to complex noticing. In addition to becoming more specific in his observations, Bill's comments took on a more evaluative tenor as he constructed a video case. Initially, Bill seemed to take a rather unreflective stance when he commented, "Wow, those kids are asking dumb questions!" (Baseline Interview, p. 7) in response to their procedural questions. Here Bill did not consider possible explanations for why the students were asking questions, nor did he consider the teacher's role. Later, Bill began to interrogate his behavior further:

I start this clip having a student read off the screen the slide. I do this to involve particular students who are mentally wandering off. I then proceed to talk and do much of the explaining in this clip. After reflecting on this clip I can see that I am uncomfortable with the material and I was having myself a hard time explaining it. I can conclude that material I feel threatened with I do not leave much room for classroom discussion (Design Session, Part 1, p. 3)

Whereas earlier Bill simply acknowledged that the way he communicated could have been more effective, here Bill considered an explanation with far-reaching potential: when he felt unsure of the material, he tended to shut down discussion. This was a new and important insight for a beginning teacher.

In considering the potential of video to stimulate analysis, Bill stated that video helped him discern details about students and ask questions such as, “. . . [what] are your students really doing. Do they seem to be paying attention or are they spacing out?” (Final Interview, p. 10). By looking more closely at the students he was able to “see a totally different angle . . . normally, you only get to see [from] the front [of the room]” (Final Interview, p. 11). Here we see a more complex view of his lesson with multiple possible interpretations being considered.

Learning to listen to students. Making a case seemed to push Bill to learn to talk about his practice, to name and explain what was happening, and to apply the discourse of education to his own experience. Initially, Bill talked about what makes a good discussion and teased out differences between discussions that quickly reviewed the “question of the day” versus those that helped him focus on student thinking and allowed him to ask students to explain, “What do you mean by that?” He was clear that what makes a poor discussion is “where it feels like I’m the only one talking” (p. 3). He valued students who want to wonder “. . . what about this? What

about that?" Interestingly, he believed that it was "the kids who are lower skills . . . who want to wonder" in these ways (Baseline Interview, p. 3).

In practice, however, when following the "question of the day" procedure introduced by his mentor teacher, Bill enacted a discussion contrary to his stated ideal. He called on several individual students, and he would accept an answer – any answer: "What I'm trying to emphasize is doing the question of the day, you need to have something down, whether it's right, wrong, or ridiculous, okay?" (Lesson Transcript, p. 5). One possible explanation for this paradoxical behavior is that as novice teacher, he may feel duty-bound to follow his mentor teacher's routines. It may also indicate that he had not yet internalized beliefs about discussion featured in his teacher education program.

Developing a case seemed to help Bill work through this dilemma. For example, in his final interview Bill reiterated his theory that discussions help students consider questions of meaning and explained, "discussion is defining what we are talking about" (Final Interview, p. 18). He then pulled a clip that showed him probing a student's answer and pushing the student to explain what he meant. He saw the value of discussion for monitoring student understanding.

Audience matters. Bill's nonchalant attitude toward the video assignment suggests that he didn't place much importance on it, nor did he think his fellow students would be particularly interested. However, when Bill began to create a case, his focus moved from manipulating his video material to fulfill an assignment to a goal of showing "someone [a potential employer] how I actually teach" (final, p. 7). Having a "real world" audience (outside the university) seemed to bolster Bill's investment in the value of video analysis. When asked if he had saved any materials related to his course video assignment, he didn't even remember if he still had

these artifacts. When Bill was making his own case using the same video, when asked what artifacts he would like to include to strengthen his case, he said he would include samples of student work because,

. . . I think it would be good for . . . administrators to know that, 'yeah, I had a good PowerPoint – so what? How did it affect the students?' Students had to be responsible during it, they weren't just out to lunch, you know.' (Design Session, p. 8)

Now the audience mattered to Bill.

Not noticing. Bill was unaware of inequity toward females in his instruction. For example, he was unaware that his male-focused teaching did not take into account the interests of girls in his class. He used cars as an exemplar for the lesson on the laws of motion. He noted that this was “a comfortable thing for me to talk about,” and commented that it “would appeal to guys” whom he believed were “less academic than the girls naturally in seventh grade...so I'm not concerned with whether the girls are getting it” (Final Interview, p. 16). Here he revealed that he was also not conversant with the research base that documents the disengagement of female students with scientific knowledge and investigations.

Nor did Bill recognize that classroom interaction focused almost exclusively on males. The lesson transcript included 89 comments by males and only 3 comments by females (Final Interview, p. 16). However, these numbers alone do not tell the whole story. Bill explained that his use of cars was targeted towards “one kid - he's not very academic, but he's into cars and that type of thing” (Final Interview, p. 1). This is consistent with his valuing of “kids with lower skills who want to wonder about scientific ideas.” It happens that these students who were

mentioned by Bill are male -- however, there could have been other "lower skill" female students to whom Bill did not refer.

Nate: Showcasing Important Aspects of Teaching

Nate's video case. Nate's case featured a physics lesson on projectile motion. He wanted to help prospective employers get a view of his philosophy and preferred teaching style. In his three-minute movie, he showed a brief clip of himself explaining how to do a math calculation determining how far away a hoop should be placed so that a marble dropped from a particular height would go through the hoop. The bulk of the movie included clips of students working on the problem and "sweeping views of the class where everyone is working on stuff and a few close-ups to see exactly what they're doing with their time" (Final Interview, p. 6). The movie ended with the marble going through the hoop and the students asking to repeat the experiment -- only this time the marble failed to make it through the hoop. Nick titled his movie, "Through the Flaming Hoop" and added sound effects and music throughout. In commenting on the focus of the case Nate explained, "...I guess what I was kind of using it for was just as for more of a showcase, not to necessarily prove some specific thing or investigate it more, just to, um, show an example of what goes on on a daily basis of class" (Design Session, p. 2).

Stance toward video analysis. Nate completed a video reflection assignment for his teacher preparation course that required a five-minute clip of his teaching. In order not to bore fellow students, he compressed what he considered to be the "high points" of the physics lesson into a movie just over three minutes long "to impress the other interns" (Final Interview, p. 8). In contrast to Bill, Nate believed that TE course work had something to offer to him. He commented that he had come to an important insight through the course assignment that influenced his reason for joining our study. As he

compressed his video, he started out to isolate parts that would show how well he presented material and eventually realized that showing students working with the material would demonstrate what “the most important thing” was for an administrator audience—student understanding (Baseline Interview, p. 5). Moreover, he was interested in the affordances of the interactive digital media – especially the use of voiceover – as a means of representing his thinking about his teaching.

Since Nate had already edited his original video of the full class lesson, it was not possible to use unedited video to construct a brand new case. Nevertheless, it seemed useful to explore what he would do to construct his case. By the end of the process, he focused less on “show and tell” and began to view video analysis as a way to provide evidence about his practice and target areas for improvement. He commented that when he was “re-editing [his movie to make his case] I . . . wanted to make the sections geared more towards what I was trying to achieve with the video, as far as . . . who was the focus of the lesson – me or the students?” (Final Interview, p. 8). Instead of simply amusing his peers, Nate wanted to show future employers what he hoped would represent what is typical about his practice, “the sort of thing that . . . would go on in my classroom on a daily basis” (Final Interview, p. 8).

General to Specific. Nate came to the case construction task with a pre-conceived notion of what he wanted to do and explained, “I’m almost pretty happy with the way it’s set up already” (Design Session, p. 2). Nonetheless, through the case construction process, instead of expressing generalized reflections based on his memory of how the lesson had gone, his insights became more specific and grounded in evidence. For example, Nate realized that he said the word “so” frequently in the video, a habit he sought to change (Final Interview, p. 10).

Nate's memory-based reflections on his lesson convinced him that students were working productively and he explained that this allowed him to assess "on the spot in real time" (Final Interview, p. 2). In response to the question as to whether the video affirmed these on the spot assessments, first he claimed, "the video was pretty much along the same line" as his memory reflections. However, he went on to clarify,

I did notice that some of the students that weren't necessarily getting through the problem at the same speed had really nice looking diagrams on the video that I didn't notice in class. So they had spent their time, you know, drawing everything out really precisely, whereas the kids who were um, more adept at it jumped right into calculations." (Final Interview, p. 5)

Looking at what his students were doing during work time helped Nate realize that not all students completed the task in the same way. Initially he had expressed his philosophy that discussion was beneficial to both the teacher and the students, allowing him to "gauge...where they are in their understanding...I can try and make my explanations fit the way that they see it...instead of presenting it the way that I see it, which might not necessarily be the same thing" (Baseline Interview, p. 1). Case construction appeared to facilitate connections between his theoretical grasp of the role discussions can play and how his pedagogy was enacted.

Learning about himself. When asked what he had learned about himself or his students, Nate replied that he learned "probably more about myself than my students" (Final Interview, p. p.11). His demonstration with the marble had been a "spur of the moment sort of thing" intended to engage the students' interest, and his original iMovie was mostly about engaging his peers' interest. In contrast, in editing the video case for an administrator audience, he realized that there were significant aspects of his teaching that he had not noticed before: "I was kind of able to

hone in on what worked well . . . and what things I might need to change” (Final Interview, p. 11). For example, Nate recommended that future interns could work on their discussion leading skills by using video and audio clips to point out what they notice from repeated viewings. He explained, “now that I’ve heard [the things the student was saying] three times I think I can understand a little bit easier what he was trying to say and I know how I’d respond a little bit better” (Final Interview, p. 14).

Not noticing. While Nate showed the beginnings of a more student-centered practice, we noticed something that Nate did not: he was not listening to his students to the extent he thought he was. He valued talk among students in groups because it allowed students to develop a “shared perspective on things...It’s easier...for them to explain an idea to each other than it is for me to explain it to them, because they’re looking at it...through a similar viewpoint” (Baseline Interview, p. 2). Here we see he values social construction of knowledge in science and thinks students can more easily communicate with one another.

In spite of these beliefs, probing during the design session and final interview revealed that he never noticed that the completed movie/case failed to support his theorizing. He explained that he compiled clips that showed the main points of his lesson and showed students at work. However, while the clips do show students working, Nate did not notice that there were no instances of students helping each other come to an understanding.

Nate also failed to use the video case as a means of making problematic his theory that good discussions apply to students’ lives (Baseline Interview, p.2). While he had framed the lesson so that the students would “be able to see...their work pay off in an actual physical representation of what we’re studying” (Final Interview, p. 1), he did not notice that the task he set up -- doing calculations and watching a marble go through a hoop – is a physical

representation and an example of hands-on learning, but it does not directly connect to students' lives. It is also significant that Nate did not show any curiosity about what was in the parts of his video that were edited out, nor did he express any regret for having only a three-minute movie to use to analyze his teaching and his students' learning.

Audience matters. For Nate audience had both positive and negative effects. While showing a video to his classmates amounted to amusing his peers, making a case for a potential employer was more interesting to him, and in a sense he moved from showing off to showcasing. In terms of showcasing, he said he would like to put his finished case up on a webpage: "It's not easy to give [prospective employers] an actual physical portfolio or bring in videotapes, but it's simple to give them a webpage to go to and they can watch it there" (Design Session, p. 1). The video task became more high stakes when he had what he considered to be an important potential audience.

Nonetheless, showcasing constrained opportunities for change and growth. Instead of digging into the data and allowing new insights about his practice to emerge, he said, "I want to clean it up a little bit, get some titles in there, do some transitions" (Design Session, p. 2). On the other hand, he did say that making the case allowed him to notice things about his teaching that he deemed important enough to show potential administrators. These included the fact that students appeared to be both interested and involved in their work, and that Nate was the kind of teacher who preferred not to lecture. What is more, while the movie showed the ball successfully moving through the hoop, it actually ended with a failed attempt. By creating a 'showcase', Nate did not mean to 'show off' with a 'perfect' lesson.

Finally, Nate made specific and unsolicited reference to the value of discussing the elements of his case with the researcher. For instance, Nate named conversations with the

researcher that did not set limits on the range of the talk as a significant 'plus'. He said, "we don't really get a lot of opportunity [in the TE courses] to do just spoken reflection on things either, so that's somewhat beneficial to get some practice in that sort of thing" (Final Interview, p. 14).

Discussion

Bill's and Nate's cases illustrate the value of video case construction in supporting novice teachers to engage in more in-depth analysis of their teaching about their own questions. Nonetheless, each intern brought a unique stance to the study and constructed different types of video cases. Below, we highlight key similarities and differences in each intern's learning.

The Importance of Naming and Framing for Change to Occur

In his seminal work on how professionals acquire expertise, Schon (1983) emphasized the importance of novices learning to name and frame problems, since what we name as issues requiring our attention and how we frame what is salient or problematic about our practice influences what we bring into or leave out of view. Bill's and Nate's initial stance toward using video to analyze teaching influenced what they were able to learn from it. Bill assumed he would not learn from the task, just did what he had to in order to get it done, and concluded that it was not a worthwhile activity. Nate invested effort in identifying "highlights" of his lesson with the primary intent of not boring his peers, but another benefit emerged for Nate as he worked on his editing; he noticed the importance of featuring his students in order to illustrate constructivist learning. With this willingness, early on, to try to construct a useful product to share with his peers, he developed a "frame" that carried through his case construction process. Thus, stance, or openness to learning from a particular activity shapes whether or not a frame will be made explicit. Nonetheless, it is also apparent that neither intern delved as deeply as he might have

into his analysis; neither one got to the “theory building” aspect of working with video cases where a conscious mental framework would be developed and used systematically (Hewitt et al., 2003).

Another way to think about this issue relates to the work done by van Es and Sherin (2002) and Sherin and van Es (2005). These authors argued that novices need to learn to pay attention to what is important, connect actions with broader concepts and principles, and use knowledge of context to reason about a situation. Our study shows that by deciding on a particular focus and audience in order to construct a case, Nate and Bill created their own guidelines for paying attention to what they thought was important. Nate wanted to make a “showcase” of how he promotes student-to-student interaction and consequently focused his video clips on students as much as possible. Bill problematized his facilitation of class discussions by focusing on what constitutes good and poor interactions. These foci helped them move away from general observations to more specific forms of noticing. In addition, Bill and Nate increasingly paid attention not only to their instruction (versus surface features such as clothing or facial expression) but also were interested in its consequences for promoting student interaction and learning. Both interns sought evidence that they pay attention to context—that is, to what they think their students need in order to connect to the science content (Bill included sports and cars; Nate provided a physical demonstration). However, neither one dug deeply into whether these approaches were likely to benefit all students.

Case Construction as a Socio-Cultural Process

Not only did having a targeted audience of their choice provide motivation to put forth effort and create a quality product, it caused Bill and Nate to ask questions about what their audience would think is important. Both interns decided to communicate with prospective

employers and therefore worked to illustrate issues that were central to what they thought was good science teaching—engaging students in well facilitated interactions around science content. They were intent on communicating their engagement with questions of student learning and both seemed to think that not sharing “perfect” examples (e.g., sharing examples of “poor” interactions; showing a failed demonstration) would communicate their inclination to learn from experience.

The two stories also illustrate the value of conversation throughout the case construction process. Discussing the video excerpts with their peers felt inauthentic to them. Discussing their case construction with researchers seemed to be another matter. Bill enjoyed having questions posed that got him thinking about issues he would not necessarily bring up on his own. Nate liked having a more open-ended opportunity to talk about his case versus more structured conversations and writing that take place in teacher education classes. This suggests that an authentic task geared toward an authentic audience makes the prospect of reflecting on it more appealing and worthwhile.

Challenges of Developing Discussion Skills in Science

Bill and Nate seemed eager to move away from traditional discussion patterns that feature asking questions to elicit “right answers,” but they failed to recognize fully the limitations of their current practice. Bill recognized the challenges of facilitating rich interactions so his first step identified instances of good and poor ones. Yet we did not see evidence that he went beyond that first step to consider what he might have done instead, or what he might try in future discussions to hone his skills further. Nate also recognized the value of discussions in science, but seemed to side-step his role in the process, in part, by claiming that students' interactions with one another were more important than those with the teacher. Both

interns neglected to consider what role they might play in helping students work with argument and evidence to reach a consensus. Moreover, they paid little attention to the nature of the discussion topic and whether or how it lent itself to building consensus based on evidence and reasoning. Although the case construction process influenced the interns to look more carefully at how they facilitate discussions in science, there were many gaps in their reflections on this issue.

Implications for Facilitating More Complex Analysis of Teaching

We have seen that the power of video-case construction is rooted not only in the potential of video to be a second pair of eyes, but also in the dialogic nature of the design process. An interesting question is why the interns did not value the in-class video analysis with their peers, but did value their participation and discussion during the research process. In a way, the opportunity to review their videos for their own purposes provided a kind of 'crash and burn, then come back and learn' experience. Our research suggests that teacher educators need to create more authentic tasks to support more complex analysis of teaching supported by dialogue. By having particular audiences in mind, interns worked to construct a storyline that would be understood and valued by their audience. We also speculate that the research protocols, where interns were asked to explain their reasoning for video clip selection and their goals for their case, provided a scaffold to guide their reflection. Each time they were interviewed, they became increasingly more focused on making problematic their practice and going beyond showcasing. This is consistent with Hewitt et al.'s (2003) finding that teacher candidates benefit from discussing video examples more than simply viewing them on their own.

As both interns indicated, questions and conversation scaffolded their learning and pushed them to go beyond what they might consider (or not) on their own. This is consistent

with the notion that “just noticing” is not sufficient. Novices must learn to notice what is important and salient for worthwhile inquiry into their practice. This suggests that making the purpose of analysis tasks explicit is another key element of authenticity. We wonder what would have happened if each intern had been asked to interrogate his purpose and articulate more specifically why the story being told was important for himself and the audience, and how the particular evidence provided a convincing case. We speculate that this type of inquiry might have pushed them into building a conscious mental framework for inquiring into their practice (Hewitt et al., 2003). Just as argument and evidence must be brought to bear in science discussions, the same would be beneficial in helping novices not only construct video cases and learn to notice important aspects of their teaching, but also learn to appraise their cases for their coherence and validity.

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