Best Practices for Producing Video Content for Teacher Education

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Abstract

Through the use of Web 2.0 technologies the production and distribution of professional digital video content for use in teacher education has become more prevalent. As teachers look to learn from and interact with this video content, they need explicit support to help draw their attention to specific pedagogical strategies and reduce cognitive load. This support can be provided through the use of different design strategies that include providing access to prompts, teacher commentary, reflective tools, and multiple representations of a particular observation. This article provides a review of these design strategies and discusses the ways in which they can be used to produce effective video for teacher education.

Learner-centered videos depicting classrooms and events situated within authentic contextual settings promote in-depth analysis and higher order thinking (Risko, Yount, & McAllister, 1992). Videos can also provide a common point of reference for reflection and the social construction of knowledge about teaching (Barab, Hay, & Duffy, 1999) through purposeful editing and production that draws explicit attention to a pre-identified set of skills, behaviors, or knowledge (Fishman, 2003). However, designers of effective video must understand how to arrange supports so that attention is drawn to relevant information and learners are supported in their construction of new knowledge rather than being distracted or overwhelmed by stimuli (Salomon, 1994). This article presents a set of best practices to follow when creating instructional videos for teachers accompanied by a specific rationale describing how the different strategies help support learning from video.

The proliferation of intuitive video editing tools and free media sharing sites has made it possible to easily produce and distribute educational videos to a broad audience of teachers. Most new computers are equipped with software such as Windows Movie Maker (PC) or iMovie (Mac), both of which provide teacher educators with an extensive range of features with which to create professional looking video.

In addition, the popular video sharing service YouTube has inspired the creation of several similar sites designed specifically for educational content, which include SchoolTube, TeacherTube, and TestToob, to name a few. Teacher educators can even create their own YouTube-style sites with Fliggo, where they can control who uploads, views, and comments on videos. (***Editor Note:*** Website URLs can be found in the Resources section at the end of this paper.)

Capturing video footage has also become increasingly easier with the availability of mini digital camcorders (e.g., Flip cameras), cell phones, and other consumer grade digital video cameras capable of recording video at a cost of only a few hundred dollars. However, the availability of tools to capture, edit, and share video does not automatically result in the production of high-quality videos that can be used effectively in teacher professional development.

Affordances of Video Materials for Teacher Education

Research on professional development has revealed that teachers benefit from learning in environments that are learner centered (Bransford, Brown, & Cocking, 2000) and intentionally designed to build upon the learner's strengths, knowledge, and interests. One way to achieve this goal is by providing learning opportunities that are specifically tailored to the learners' needs and housed within a relevant contextual setting (Loucks-Horsley & Matsumoto, 1999). Additionally, meaningful learning occurs when learners have the opportunity to construct meaning from multiple representations of the same material (Mayer, Moreno, Boire, & Vagge, 1999) rather than relying on a single viewpoint or perspective. Video is one way to provide a learning environment that both is learner and knowledge centered and that contains a multitude of perspectives (Lampert & Ball, 1998).

Videos are an effective way to "immerse preservice teachers in issues, problems, and solutions of teaching practice" (Richardson & Kile, 1999, p. 122) by providing an authentic context within which teachers can situate their learning (Brown, Collins, & Duguid, 1989). Using video to situate learning within complex classroom settings encourages deep analysis and higher order thinking on the part of preservice teachers (Risko et al., 1992) while providing a common ground for teachers to explore and discuss issues of practice. Videos can show, for example, teachers dealing with student misconceptions, behavior management, and the teaching of complex material, giving viewers a chance to think about and analyze situations that they may encounter in their own teaching.

Videos allow teachers to peer vicariously into real classrooms, which is the context within which teaching ultimately takes place (Beck, King, & Marshall, 2002). The video medium enables customization of the learning experience by providing images of classroom practice that are most relevant to a given teacher's needs (Bransford et al., 2000).

The Inquiry Learning Forum (Barab, MaKinster, Moore, & Cunningham, 2001) utilizes a "visit-the-classroom" metaphor in order to produce videos that accurately represent the sights, sounds, and interactions that naturally occur in classrooms. These videos provide a common focal point around which teachers can discuss and reflect on authentic practice and work collaboratively to construct knowledge about teaching. In addition, they situate learning within authentic examples of teaching and give teachers the opportunity to solve realistic problems rather than deal only with hypothetical or abstract scenarios.

Capturing images of practice and other instances of classroom activity on video creates a permanent record that can be reviewed and analyzed without limitation. Video also facilitates the viewing of the same situation multiple times and from multiple perspectives, providing the opportunity for deeper analysis (Beck et al., 2002; Sherin, 2004). The repeated analysis of a case can result in a more refined integration of concepts and a broader understanding of potential perspectives (Lunderberg & Scheurman, 1997).

Because video provides the opportunity to stop and replay the complex activity of the classroom, its use affords a different set of practices in teacher education (Sherin, 2004). With video it is unnecessary to make immediate judgments in response to student questions or pedagogical dilemmas that arise. Teachers can stop, reflect, discuss, and access alternate resources before deciding on an appropriate course of action. They can also view a single video from multiple lenses which can impact what teachers notice and how they interpret information (Miller, 2006). For instance, during a first viewing the teacher may choose to focus only on content issues, whereas during a second viewing, attention may turn to issues of classroom management or assessment strategies exhibited by the enacting teacher. These are not inconsequential changes, and viewpoints impact what teachers take away from a video.

Video is not without its shortcomings. First, unlike a live classroom observation, a video can show only the perspective of the camera and the videographer who produced it, meaning that side conversations and interactions that take place outside the scope of the camera lens are not captured. A teacher's decisions and actions can often be impacted by these side occurrences that go undetected by the passive viewer (Fishman, 2003).

Second, viewers of video are automatically placed in a passive role. No chance exists to interact with the students or teacher being observed in the video (Barab et al., 2001). In a live classroom the observer has the possibility of asking a student to repeat a question or of discussing the lesson with the teacher after students are dismissed.

Finally, a video can present only a snapshot of what is happening in a particular class during a particular time of a particular day. It does not capture the context of the lesson or the history and culture of the class as a whole. This contextual information is essential when trying to interpret classroom events and teaching practice, in particular (Lampert & Ball, 1998). Even with these shortcomings, video is a powerful tool that can be used to support teacher learning.

The Importance of Noticing

Within this discussion of video as an effective way to provide an authentic view of classroom practice is the underlying assumption that teachers possess the necessary skills to notice relevant content. These in-the-moment decisions require that teachers notice what problems students are experiencing and recognize what type of response is appropriate. This ability to make informed instructional modifications can improve self-

efficacy, as teachers see how they can control the learning outcomes of their students (Smith, 1996). For expert teachers, these modifications become automatic as they are able to draw on past experiences and an established base of professional knowledge to address problems that arise in the classroom (Hiebert, Gallimore, & Stigler, 2002; Leinhardt & Greeno, 1986).

Video can be used as a way to support novice teachers as they learn to notice the intricacies of classroom interactions and develop their own professional knowledge (Sherin & van Es, 2005). However, if being able to notice and identify classroom interactions is a necessary component to the development of expert teachers, it is important to elaborate on what it means to notice. Sherin and van Es (2005) proposed three key elements in teachers' ability to notice. First, expert teachers are able to notice and identify the relevant aspects of classroom interactions as they happen in real time. This attribute is critical considering the vast number of interactions that occur in a classroom on a daily basis. A teacher cannot feasibly respond to and afford each occurrence the same amount of time and energy, so being able to notice which interactions require attention is crucial.

The second element of noticing is the ability to make connections between individual interactions and the broader context of teaching and learning in which they reside. Like individuals who possess expertise in other domain areas, expert teachers are distinguished from their novice peers because they are able to visualize the larger picture, as opposed to focusing on discreet interactions one at a time (Chi, Glaser, & Farr, 1988). Put in the context of teaching, noticing that an interaction is important is not sufficient. Rather, seeing what that interaction represents on a larger scale is necessary in terms of what students are learning and what impact the teacher is having using the instructional approach (Shulman, 1992; Tochon, 1999).

Finally, noticing requires teachers to use what they know about their own teaching context to make reasonable and informed decisions in different situations. Experts are more adept at making these decisions because they have had more time to practice their skills and draw on knowledge gained through extensive trial and error (Chi et al., 1988). Therefore, experts need not engage in elaborate experimentation when faced with a decision because they can rely on past experience and knowledge of the classroom to make an informed and appropriate choice (Hiebert et al., 2002). In summation, then, noticing involves identifying important interactions, making connections between those interactions and broader issues, and using existing knowledge of the classroom to make informed decisions.

Supporting Learning From Video

Sweller's cognitive load theory (2002) posited that at any given time the working memory has a limited amount of capacity to store new information, suggesting that as humans watch a video, even one that is short in duration, they will not likely be able to process and retain all the information contained within that video. Thus video materials must be created to highlight relevant content and minimize extraneous information that might detract from or compete with intended learning objectives. Research on the use and design of video in teacher education has revealed a variety of strategies to help novice and expert teachers notice relevant content. These strategies are specifically designed to help reduce the cognitive load of the teacher and draw attention to the explicit and implicit knowledge being represented onscreen. Individuals and organizations who create video for teacher professional development should take these design and editing techniques into consideration when producing video for teacher education.

Explicit Prompts

Explicit prompts that point out, for instance, important aspects of practice to attend to are an effective way to promote learning from video (Beck & Marshall, 2002). One way to provide these prompts is through onscreen text or title overlays that contain relevant information or draw attention to specific occurrences (Brunvand & Fishman, 2006). Videos can also be segmented into topic-specific chapters with audio or text-based prompts placed at the beginning of each chapter as a way to introduce the scene and focus attention on featured pedagogical strategies.

A variety of teacher learning environments (e.g., Teachscape® and Inquiry Learning Forum) utilize prompts to draw attention to different behaviors, themes, or strategies as they are played out onscreen. These prompts can also be used to provide background information about the students, teacher, and unit of study featured in a given video, which helps establish a relevant context for the scenario depicted (Lampert & Ball, 1998). This contextualization is critical, as it provides important information about what is *not* being shown in the video and can help set the stage for teachers as they prepare to watch a specific instance of classroom practice.

Teacher Commentary

Another effective way to contextualize scenarios represented in videos is through the use of teacher commentary, which can also provide insight into the featured teacher's thinking (Richardson & Kile, 1999). In their work with the Strategic Teaching Framework (STF), Chaney-Cullen and Duffy (1998) discovered that access to teacher commentary had a significant impact on teacher behavioral and conceptual change, as it allowed observers to understand better the thought process of teachers and the factors they used to make decisions.

The availability of teacher commentary also enhances the ability of the viewer to notice relevant content by drawing attention to the instructional decisions the teacher is making in the moment (Brunvand & Fishman, 2006). Commentary can be provided at the beginning of a segment as a way to introduce the scene.   Another option is to intersperse the commentary throughout a particular depiction of classroom practice whereby the teacher talks about the different decisions made during the lesson while the viewer watches the lesson unfold onscreen. This format is similar to watching a movie with the director's commentary turned on.

Establishing Perspective and Tasks

Teachers need to have their learning with video structured around a clearly articulated set of objectives (Tochon, 1999), because they attend to different aspects of a video based on the viewing tasks they are assigned (Miller, 2006). The perspective teachers need to assume as they watch various video cases also needs to be defined, since teachers view and interpret instances of classroom practice differently depending on their perspective (Abell & Cennamo, 2004; Rand, 1998). Teachers who view video from a student perspective tend to base their analysis of teaching on teacher personality, classroom management, and various student variables, while teachers who watch the same video from a teacher perspective analyze the practice by focusing on the teaching methods used and the thought processes of the students (Rand, 1998; Richardson & Kile, 1999). In addition, a clear set of objectives should be defined so that teachers understand what they should be able to do or understand as a result of watching a specific video segment.

Process Management

Quintana et al. (2002) established a scaffolding design framework to provide guidelines on how scaffolds should be developed and what kinds of supports should be included in technology-based learning materials. In their guidelines they recommended that scaffolds include support for process management to help learners progress through a set of tasks in an orderly fashion while still allowing them to make important decisions along the way. There are a variety of ways videos can be produced and edited to include this kind of support. First of all, a video can be sequentially arranged to depict a classroom lesson in chronological order as it occurred, thereby helping the observer make sense of what happened at the beginning, middle, and end of the lesson.

Hyperlinks can be incorporated within video that connect to supplementary resources, such as expert commentary, background information and additional perspectives for dealing with the problems featured in the video. Having access to these additional resources has been shown to impact teacher learning and promote the construction of knowledge (Jacobson & Spiro, 1993). Finally, videos can be purposefully edited so that only specific portions of a particular lesson are featured, serving to narrow the learner's focus to a discreet subset of skills or knowledge.

Provide Alternate Perspectives

Video materials can be specifically designed to provide teachers with multiple perspectives and interpretations of a single classroom event (Bransford, Kinzer, Risko, Rowe, & Vye, 1989). When providing learners with multiple interpretations of a given situation, it is inevitable that some of the interpretations will represent ways of thinking about the practice of teaching that the learner has yet to entertain. In some cases, learners may even be faced with an interpretation that completely contradicts their perceptions of what took place. Piaget (2000/1972) argued that these experiences help promote mental maturation by providing learners with new experiences and, thereby, requiring them to assimilate new information with their preexisting cognitive structures and reconcile any discrepancies that occur.

By being able to observe examples of classroom instruction, novice teachers can start to learn the language, behaviors, and norms associated with teaching and work to assimilate new perspectives with their own preexisting knowledge. Schön (1987) argued that new teachers need these opportunities to make connections between authentic situations of practice and their own existing body of knowledge to start thinking like a teacher. Video is the perfect medium for providing exposure to these examples of classroom practice from multiple perspectives and viewpoints.

Reflection Tools

Being able to reflect on and process new information is an important part of the knowledge construction process (Bransford et al., 2000; Brown et al., 1989). Making a permanent record of their thinking as they work to assimilate new information into their preexisting knowledge is helpful for learners. The process of reflection also provides the learner with an opportunity to arrange new information in meaningful ways that encourage deeper analysis. Learning environments that incorporate video can include tools for reflection in a variety of ways. For instance, many of the media sharing sites allow users to write comments and responses to the videos they view. This comment feature could be structured as an opportunity for reflection with specific prompts and questions for teachers to consider and respond to.

Teachers could also use any number of electronic notebook tools (e.g., Zoho Notebook) to record their reflections and then decide whether to keep those reflections private or share them with a larger audience of colleagues. Video annotation tools such as Project Pad and VCode can be used to tie reflections more closely to specific locations within a video. These tools allow users to attach comments to different sections of a video, much like inserting comments within a Word document, making it possible to associate a reflection directly with a particular event. Supporting teachers in their reflection through the use of these and other tools can help them make sense of the videos they watch.

Cueing Systems

Videos used in teacher education often include visual information in the form of live-action footage and verbal information in the form of natural classroom dialog and teacher/expert commentary. As teachers watch these videos, they receive the visual and verbal information simultaneously, requiring them to make constant decisions about what information they should attend to and what can be ignored (Mayer et al., 1999). Complicating this process is the fact that humans process and represent verbal and visual information differently, making it necessary to reconcile data received visually with data received aurally (Paivio, 1971).

Contextual clues (Chun & Jiang, 1998) can be used to help guide teachers' attention as they interact with videos by drawing explicit attention to different aspects of the video. These clues can be provided through camera movement, visual effects, onscreen titles, and a variety of other techniques designed to draw attention to specific attributes. For instance, irrelevant portions of a scene could be blurred or shaded so that the eye is naturally drawn to the featured content. Slow motion and freeze frame effects can be used to slow down time and give the viewer a chance to study a situation in more depth. Arrows and other highlighting tools can help direct attention toward specific areas of interest. Each of these cueing techniques should be used to support teachers and guide them in completing whatever task or objective has been defined for a given video.

Conclusion

Video provides many opportunities to explore and investigate the intricacies of classroom practice. In order to fully harness the power of video as an educational medium, it is important to employ the various design strategies outlined in this article so that teachers are supported in their learning. Providing different scaffolds to draw attention to salient content and help teachers focus on specific occurrences of practice serves to enhance the instructional value of video materials.

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Resources

Fliggo - http://www.fliggo.com/

Inquiry Learning Forum - http://ilf.crlt.indiana.edu

Project Pad - http://dewey.at.northwestern.edu/ppad2/documents/help/index.html

SchoolTube - http://www.schooltube.com/

TeacherTube - http://www.teachertube.com/

Teachscape - www.teachscape.com

TestToob - http://www.testtoob.com/

VCode - http://social.cs.uiuc.edu/projects/vcode.html

YouTube - http://www.youtube.com/

Zoho Notebook - http://notebook.zoho.com