

The use of video in teaching psychology and education:

Theory and a case study

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Introduction

As university professors, we often fail to help our students understand psychology and its applications to practice. Although we prepare our lectures carefully, deliver them with brio, and assign important readings, student understanding is often shallow. Many fail to achieve a genuine integration of their “scientific” (or organized) knowledge (Vygotsky, 1986) and their everyday experience. They can tell you what Piaget says but cannot use the concept to interpret ordinary behavior. Our experience is that teachers often emerge from schools of education with knowledge of vague general concepts (like constructivism) but do not appreciate their relevance to practice in the classroom. As Nabakov put it, “[A]ll ‘general ideas’ (so easily acquired, so profitably resold) must necessarily remain but worn passports allowing their bearers shortcuts from one area of ignorance to another” (Remnick, 2006). This leads students to the cynical conclusion that their training was merely “academic,” in the pejorative sense of “useless.”

So, how do we, their professors, face the challenge of providing them with training that is both intellectually meaningful and useful for practice? Those who have studied situated learning tell us that, “For newcomers...the purpose is not to learn *from*

talk as a substitute for legitimate peripheral participation; it is to learn *to* talk as a key to legitimate peripheral participation” (Lave & Wenger, 1991, p. 109). Clearly, then, we need to create learning environments that will allow students to participate in the dialogue that is relevant to our particular fields, in this case, developmental psychology. At the same time, we must recognize that participating in academic dialogue involves the understanding and application of abstract, formalized knowledge that is always, to some extent, removed from experience. In this case, as Laurillard has noted, “Teaching is essentially a rhetorical activity, seeking to persuade students to change the way they experience the world through an understanding of the insights of others. It has to create the environment that enables students to embrace the twin poles of experiential and formal knowledge” (Laurillard, 2002, p. 23).

How, then, do we encourage our students to embrace these twin poles and apply their increasing knowledge of developmental theory and research to the consideration of children’s behavior as well as to their own experiences when interacting with children, sometimes in the role of teacher? Obviously, this question has no single answer. There are many ways in which we as teachers can attempt to support such student learning. One approach is to engage students in some kind of real life activity, like practice teaching in a school. Although such experiences undoubtedly are useful, sending students outside the university for their education does not solve the problem of making university teaching meaningful.

Our approach has been to use video and multimedia tools for university teaching. In this paper, we discuss how the use of video in the classroom can assist in bridging the gap between students’ direct experiences with children and their developing

understanding of the formalized knowledge available in the field of developmental psychology. The examples discussed here are related to two overlapping areas of inquiry, or questions:

- How can we teach students to apply their formal knowledge of developmental psychology in their everyday lives, which may include the role of teacher?
- How can video help us to achieve this goal?

In order to address the first question, we begin with a consideration of our overall goals for students. What does it mean to apply the formal knowledge of developmental psychology to a situation? What are the required skills that students must master in order to achieve this goal successfully? Although there are many skills that could be relevant, we will discuss three that we consider to be essential: careful observation of children, comprehension and recognition of potentially relevant developmental theory and research, and interpretation of how this theory and research can inform practice in specific situations.

In approaching the second question, we must first clarify that our approach to video use is highly *interactive*. In the examples we discuss, students are not simply asked to view video designed to support certain learning outcomes. Instead, their viewing itself is guided in particular ways by the professor, who uses both the video viewing and the interaction surrounding the viewing as means for supporting student learning. Having said this, it is still useful to consider some of the specific ways in which video itself can provide support for general learning outcomes. Schwartz and Hartman (2007) have suggested that designed video can support students' seeing, engaging, doing, and saying. We are interested, therefore, in how our interactive use of

video can support students' efforts to "see", "engage", "do", and "say", while in the process of learning how to carefully observe children, make connections to formal knowledge in the field of developmental psychology, and apply these observations and formal knowledge to the interpretation of specific, everyday situations.

Goals for Student Learning

Our first goal is to help the students learn to carefully *observe* children's behavior. They need to learn to see what is important in everyday interactions. They need to learn to perceive important details and to ignore what is not important. Yet acquiring the skills of observation is no mean feat. Part of the reason is that observation requires knowing what to look for. As Piaget (Piaget, 1976) said about observers, "...if they are not on the look out for anything... they will never find anything..." (p. 9). But then, given knowledge of what to look for, the observer must perceive and mine the available evidence with care and accuracy.

Another goal is to help our students *understand the readings*. Most often this involves teaching the students to describe what the readings say. (This is analogous to mathematics students who can apply a formula without understanding what it means. Such students often score high on standard tests whose validity is therefore questionable.) Describing the readings' content is important, but not enough. A deeper understanding involves the ability to make that elusive, meaningful connection between the readings—what the professionals have learned about the topic at hand—and their own personal experience. We want the students to feel that their academic learning is not merely academic. For example, students should be able to see how readings about children's addition strategies relate to their work with children in a classroom.

A third goal is *interpretation*. Students must interpret what has been observed in light of the readings and other available evidence, and this presents many challenges as well. Interpretation requires critical thinking—understanding what claims can be fairly made from the available evidence. It also requires understanding how the evidence relates to and informs hypotheses based on the formal concepts deriving from the course lectures and readings. For example, after students read about attachment theory and after we lecture about it and discuss it in class, we want them to be able to examine a mother-child interaction, determine what kind of attachment it entails, and justify their interpretations in terms of the course readings.

How We Employ Interactive Use of Videos to Support Our Goals

Our experience suggests that interactive use of video in the classroom has the potential to support our learning goals quite effectively. In fact, we have been exploring this possibility in many ways over the past few years. Certainly, as Schwartz and Hartman (2007) note, video footage itself can be designed to provide students with special opportunities to see, engage, do, and say. In the context of using video interactively in the classroom, however, we have also discovered that the same segment of video footage, when carefully examined with the guidance of an instructor, can be utilized to support multiple teaching goals. For instance, we often take a short segment of video (one that is carefully selected to illustrate important concepts), show a few seconds of the clip, and ask students to interpret what they see, to offer different possible interpretations, and to justify their own. We then continue the process with another short segment, viewing and reviewing and re-reviewing the video along the way. Students get actively engaged in the process and rate it very highly in their evaluations of the course.

Indeed, many students say that analysis of videos is one of the most important features of the course.

Our method, therefore, clearly involves more than simply showing a video, as one might show an educational TV show and then moving on to the next part of the lecture. But what exactly is entailed in our method of using video in the classroom? What are its key features? We must confess that originally we more or less fell into this method of teaching without much explicit thought or planning or awareness of it. It was one of those pedagogical techniques that one uses more or less unconsciously. But following Freud, we wanted to make the unconscious conscious. We wanted to understand our own intuitive practice and determine whether it is really as successful as it seems. Consequently we conducted a case study in which we videotaped our use of video in the college classroom so as to elucidate our intuitive methods, and then used a grounded analytic method to examine the processes involved in what we can modestly term our “expert” practice and the students’ reactions to the experience.

Method

We studied the classroom use of video in a graduate level course on the “development of mathematical thinking,” which was intended to introduce students to a cognitive developmental perspective on mathematics education through elementary school. The instructor (Herbert Ginsburg) has been teaching this course for some 20 years, and has been using videos in his courses for even longer. Because the course covered a blend of psychological and educational topics, the student body of about 60 was diverse, and included teachers, school administrators, cognitive and developmental psychology students, media and technology students, and others. The diversity of the

student body and the lack of prerequisites resulted in a considerable range of student psychological preparation and knowledge, from minimal (or less, defined as students who thought they knew a lot of psychology but really didn't) to considerable.

In each session, the instructor discussed the assigned content and also introduced several video clips that typically involved the instructor or another interviewer performing clinical interviews with young children. Other clips presented naturalistic observations of children at play or various teaching episodes in classrooms for young children. The clips were generally short, most under three minutes. Most classroom sessions, which were about 90 minutes long, involved somewhere between 3 to 6 videos. The instructor offered comments and posed questions to students before, during and after video clips were shown. Discussion surrounding the video clip ranged from two minutes to twenty minutes, with most discussions lasting less than ten minutes. References to the video clips were made throughout the lecture and memorable clips presented in one session were often discussed in later weeks.

Over the course of fourteen weeks, one of us (Eram Schlegel) videotaped seven 90-minute class sessions. The recordings focused mainly on the instructor, who wore a wireless microphone so as to insure faithful capture of his comments, and on the videos shown to the class. Only audio data were recorded for students. From this material, we selected twenty "cases" in which the instructor employed video clips in his pedagogy.

In this paper, we focus on one of our 20 cases to present an account of what we consider to be the most productive uses of video to promote learning—*as we value it*—in the University classroom. Remember that the kind of learning we wish to promote involves connecting the readings with relevant everyday experience, observing carefully

and thoughtfully, and interpreting observations with a critical mind. Despite its small size, this single case, or more precisely a small portion of one case, illustrates key phenomena basic to the pedagogy of teaching with video. We present the account through the voice of the instructor, who not only describes and analyzes what he did but also reflects on his practice.

Results

The method begins with careful selection of videos to be shown in class. My course on the development of mathematical thinking is relatively distinctive. It's not a course on mathematics education in the usual sense, although I do discuss the educational implications of the work. The topic is perhaps obscure, although I obviously think it is important. In any event, when I began there were few relevant videos available for the course. Consequently, I had to make them. Most I did myself, although gradually colleagues and students joined me in the effort (Ginsburg et al., 2006). In any event, at the time of the taping I was able to draw upon a large digital library of videos, including naturalistic observations of children, clinical interviews on particular concepts (like addition), and classroom teaching episodes. (Indeed, we now have literally hundreds of videos that form the heart of the VITAL project.) As a result of previous experience, I knew the content of the videos and even more importantly whether they attracted student interest, channeled attention to certain topics, and afforded the kind of discussion that I wished to promote. Consequently, when I prepared for a lecture, I had a good idea of which video to insert in appropriate parts of the PowerPoint presentation.

The first and perhaps obvious lesson then is that the *use of videos in the University classroom depends on the quality of the videos*, where quality is defined not

only in terms of channeling attention to certain content but also by potential to attract interest and provoke discussion. These two features are worth further discussion. To some extent the videos are selected because of their dramatic value. The children are cute and the action surprising. The viewer is led to expect one outcome and is surprised by what happens. In these senses, the videos may be atypical, even though their essential psychological content is not. Also, partly because of their dramatic value—the twists of plot—the videos provoke discussion and argument, the kind of cognitive conflict or disequilibrium that Piaget felt is so crucial to intellectual growth.

The first lecture we recorded covered the origins of mathematical thinking in babies and little children. After dealing with administrative details (for example, responding to inevitable student questions about the assignments and grading), I began in fairly traditional lecture mode by describing the topics to be covered—my advanced organizer for the session. Then I introduced the main theme, namely infants' and young children's mathematical knowledge. I asked the students to consider whether babies begin as “blank slates” or whether they already possess various perceptual and conceptual competencies, and remarked on how this has been an enduring and central philosophical issue. I pointed out that research (which was not included in the assigned readings) showed that babies are born with the ability to perceive key aspects of the physical world.

These fairly traditional lecture remarks were brief, and after a very short period of time, I framed the issue by saying, “So we know that... babies are not blank slates, but what about the case of math? Now you watched Baby Hope, and the question now is, what do you see? You all had a chance to watch this; this is why we gave you this

assignment. Now chime in whenever you see anything mathematical; we can stop it and review it and you can give your interpretations.”

The students had been asked to watch the video on the course web site before the class. The video was presented not as an incidental feature of the course, but rather as a key element of study, like a textbook or a journal paper. Preparing for the course lecture was expected to include not only traditional readings, but also study of the behavioral phenomena as presented on the video clip. Whether the students actually looked at the tape beforehand was not known, but they were asked to do so. Sometimes, I strongly “encouraged” viewing of certain video clips by requiring students to write a brief essay about them. One of the main functions of grading is to motivate students to do something (regardless of whether the grading offers an accurate evaluation of what they have accomplished).

The second pedagogical technique then was to *ask or require the students to study the video in advance of the lecture*. This is not always necessary or useful, as we shall see. Sometimes it is important not to give students this kind of preparation and instead to challenge them to analyze some related (in the sense of near transfer) or even relatively new (far transfer) video material.

Next I showed the first eight seconds of the video, in which the 18-month-old baby holds in her hands some rings, refers to them individually as “ring” and then collectively as “rings.” I often introduced video clips with a kind of focusing scaffold in which I attempted to focus student attention on a very specific aspect of the example. In this case, I might ask for example, “What does this teach us about Hope’s idea of number?” Or I might even be more specific, focusing on a second or two of video and

asking “What did you see there?” and “What did you notice about that?” and “Anything important there?” Sometimes I even asked questions that further directed the student’s attention to a single action or word. Often I played the video clip a second time or a third or a fourth.

This third pedagogical maneuver involved focusing student attention on a particular issue and then showing and repeating very little video. The reason for focus is clear: the instructor has to decide on the issue to be discussed (at least initially). But why so little video and why the repetition? One reason was to impress on the students the fact that small bits of behavior can be meaningful so that they have to look very carefully and even repeat the viewing. They are not allowed to get lazy in their observing and then tell me only the overall gist of what they saw. Behavior really is very complex. I have been amazed over the years at how I have come to see new features of videos I have viewed over and over again—sometimes literally 20 or 30 times.

Then I asked, “OK, what about that?” *The fourth pedagogical maneuver was a challenge to the students to interpret.* It told them that they were expected to make sense of what they saw and they could not depend on me to tell them. For many students this is a radical and unwelcome requirement. After all they have been accustomed to learn what they have been told, not to think for themselves. For other students, the responsibility to make sense of what they see can be intellectually liberating.

One student commented that the segment illustrated the baby’s understanding of “one-to-one correspondence.” I did not understand what she meant, and suspected that she was throwing around big words irrelevant to the behavior shown in the video clip. I immediately shot back, “Why one-to-one correspondence?” The student replied that

one-to-one correspondence is one of the key principles of counting (which she had read about in one of the course readings). I challenged her with, “But what did she [the baby] do? Never mind the principles of counting.” In retrospect, the comment seems a bit harsh, but the goal was to have the student think through exactly how the theoretical concept she offered might apply to this particular case. I did not simply tell her that she was wrong, but pushed her to explain what she meant and to say exactly how the concept related to the behavior in question. I learned that she was referring to the fact that the baby referred to individual rings and then to the collection. The student thought incorrectly that referring to separate rings—“that each ring is one”—indicated one-to-one correspondence. I asked other students for their comments, but few offered any, perhaps because at this point in the course the rules of discourse had not yet been well established. (At the same time it is unfortunately true that even after a period of time some students remain silent, perhaps responding mostly to the e-mail they can access on the web during class.)

The fifth pedagogical principal is to *challenge the student’s interpretation*, with the goal of getting her to make clear its evidentiary foundation. The subtext is that students are not allowed simply to express an “opinion” but must make a claim that can be supported by evidence. All “opinions” are not equally valid and valued. This can again be a shock to many students, whose epistemological position is “relativist,” not yet having understood that different views need to be justified and evaluated with evidence.

Then my sixth move was to *make explicit the weakness I saw in her comment*. I would rather that other students had performed this task for me, but they were silent. So I said that I agreed with her observation that the video did indeed make very clear that

the baby could distinguish between singularity and the larger collection, between the unit and the many. At the same time, I pointed out that referring to this phenomenon as “one-to-one correspondence” was not accurate. I explained what we normally mean by the concept and how the evidence available in this case did not support this interpretation and in fact pointed to another, much simpler claim. I even assumed a very metacognitive stance and explicitly told the students that they should always attempt to look carefully and buttress claims with relevant evidence. I tried to make very clear the kind of approach that I wanted them to take.

This short interchange, lasting about a minute and a half from the beginning of the tape to the discussion with the student, entailed several important elements. I presented the students with striking video to observe and interpret. One of the students was sufficiently engaged to offer an interpretation. But it depended upon a concept she did not fully understand. I challenged her and helped her to see how the video offered evidence for a simpler interpretation and that the evidence did not support the interpretation she offered. I tried without success to get other students to offer their views. My hope was that they would show her the error of her ways, so that I would not have to.

The interchange represents the essence of my method of using video in the classroom. I confronted them with an empirical problem—figure out Baby Hope’s mathematical thinking—and they had to solve it, using the evidence available. They were not able to conduct an experiment (for example, manipulating the number of rings or the manner of their presentation). Instead, they had to deal with the evidence provided—a kind of historical record. But given this constraint, they had to use the

evidence as judiciously as possible, engaging in a kind of critical thinking (Kuhn, 2005). The instructor's role was to select the video, to frame the questions, and to challenge the student's interpretations, pointing out evidence ignored or beside the point, contradictions in thinking, or interpretations that are unsound.

Note that this kind of teaching requires knowledge of the content, insight into the student's reasoning, and ability to respond to the individual student's reasoning—pointing out contradictions or introducing challenges—on the spot. This, I think, is the essence of good teaching, and is not unique to the use of video. It is also the kind of interaction that takes place in a good clinical interview.

This approach to teaching with video has many other features as well. Sometimes, I begin by “telling” (Schwartz & Bransford, 1998) about some concept and then use the *video as a fairly straightforward illustration*. Thus, at one point, I introduced Piaget's (1952) idea of seriation first in words and then simply showed the videotape to illustrate the phenomenon. No detailed analysis of the video was required in this case. Thus, I showed a video in which a young child was asked to arrange some sticks in order of increasing length, and observed that, “It looks like she really doesn't seem to get it. There is no lining up of the sticks on the bottom; there isn't a complete series- there was a partial series but it's kind of a mess.” So video as illustration is a simple technique.

Sometimes, I try to train the students in *careful observation*. I play the video over and over, asking the students' to look not only at what the child says but also at her facial expression, or the tone of her remarks, or at what she does with her fingers as she counts. Sometimes the action is so quick and complex (or the quality of the video so

poor) that many viewings are required to see what occurred. Sometimes it is hard even to remember the interviewer's or child's exact words. Presenting videos difficult in these ways is a good pedagogical maneuver: real life events are hard to see too. I want the students to be alert and to learn precision in observation.

Another method is to focus explicitly, in a kind of metacognitive fashion, on *dilemmas of evidence and interpretation*. Thus, early in the term, after we had gone through analysis of a video clip, I said, "Now whenever you make an interpretation I'm going to challenge you as to why you say that, how do you know, what's the evidence that you have. And you have to get that evidence directly in what you see. It's not enough to say 'Piaget says'. What do you see here [in the video]?... Another important principle is that we want the minimal interpretation possible. In other words there are usually many explanations possible, many explanations are sufficient, but we want the one that is minimal—the one that requires the least leap of faith and relies the most on the evidence that we see."

I find that is most difficult for students to come to grips with the situation in which the data do not permit choice among several interpretations in a particular case. For example, in one case, the video shows a girl who says that 3 plus 4 is 6. I stop the tape and ask the students to explain why she might have come up with this answer. Given the evidence available at this point, the observer might imagine that she simply misremembered the number fact or that she quickly tried to count 3 and 4 imaginary objects "in her head" and made a simple execution error. In this situation, both hypotheses are plausible at this point (although in a remarkable dramatic twist, the video later shows that neither of these hypotheses or other plausible ones are correct) and the

students should recognize the inherent uncertainty of the situation, modestly suspend judgment, and understand that further evidence is required. Yet unfortunately some students conclude .in this case that any hypothesis is plausible and equally likely; if there is no absolute certainty, anything goes. So in promoting interpretive skills, the instructor has to deal with epistemological or methodological issues concerning the meaning and status of evidence.

Another problematic issue is the relation between the case under consideration and generalizations about children. Some students conclude that the interpretation of a case may make sense, but that because “you cannot generalize from one example” the results are meaningless. What the students need to learn is that the cases are illustrative of general phenomena. You can generalize from a single case if it was a carefully chosen case. Thus, the case may show that a 4-year-old child solves an addition problem by counting on from the larger number (“5 and 2 is 7 because I go, ‘5, 6, 7, so 7 is the answer”). The video example conclusively shows that it is possible for a 4-year-old child to use this strategy. That’s the sensible generalization. The research literature shows that counting on is a common strategy at this age level with numbers below a certain limit. The combination of the admissible generalization from the case along with the reading of the research literature together allow the student to make some very general statements about young children.

Finally, I sometimes concluded discussion of a collection of video clips with a search for a summary or conclusion, such as, “What can we conclude about Baby Hope’s knowledge of number?” or “Let’s make a list of the mathematical things this kid was involved in here.”

Conclusion

In this paper, we have explored how the use of video in the context of a course on developmental psychology supported the instructor's pedagogical goals. Students' participation in interactive video analysis during class provided them with opportunities to develop skills at connecting the formalized knowledge from the field of developmental psychology with specific, everyday experiences. Because this interactive use of video encouraged them to see (create familiarity, encourage discernment), engage (become interested, contextualize information), do (develop certain attitudes and skills in their approach to analyzing children's behavior), and say (recall facts, provide explanations), students were given the chance to practice applying their increasing formal knowledge of developmental psychology to real life examples. In the process, they were exposed to and apprenticed into an expert's approach at observing carefully, connecting with relevant theory and research, and interpreting situations in light of the available evidence and the relevant knowledge base. Although our exploration of this example has been limited to the interactive use of video in the classroom context, it provides the foundation for much of the discussion that will follow, concerning the use of video in the context of multimedia learning environments.

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