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Video-Based Research Made “Easy”: Methodological Lessons Learned from the TIMSS Video Studies

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In this article, the authors share some of the methodological lessons learned from the Third International Mathematics and Science Study (TIMSS) 1995 and TIMSS 1999 Video Studies. They focus on their experiences overseeing these large-scale, video-based, cross-national surveys of teaching. The article documents some of the progress the authors made, as well as some of the obstacles they encountered. The authors hope that the ideas shared here help prevent possible missteps, enhance the quality of projects, and encourage researchers to advance the use of video as a methodology.

Keywords: video; large-scale studies; TIMSS Video Studies; education research

Particularly in the field of education, video-based research is increasingly recommended and implemented. For example, the Board on International Comparative Studies in Education specifically recommends the use of video technology as a research tool (Ulewicz and Beatty 2001). Recent educational studies based on video data range from large-scale projects such as the Learner’s Perspective Study, which examines the patterns of participation in “competently taught” mathematics classrooms in nine countries (Clarke 2002), to much smaller-scale projects investigating teaching and learning in schools (e.g., Stipek et al. 1998; Cobb et al. 2001; Jacobs and Morita 2002).

Also gaining in popularity is the use of interactive video for teacher professional development and for research on effective teacher training programs (Brophy 2004). Research teams around the world have begun to engage in this pursuit. For example, in Australia, the Quality in Learning and
Teaching Project allows preservice teachers to examine more than 300 video clips of elementary and high school classrooms and see linked interviews with teachers and students, while researchers monitor the participants’ pathways through the program (Baird 2003). In the United States, several recent professional development and accompanying research programs engage teachers in studying video—either from their own classrooms or the classrooms of “exemplary” teachers (e.g., Rosebery and Warren 1998; Seago 2004; Sherin in press).

As part of the Third International Mathematics and Science Study (TIMSS) 1995 video study, more than 200 randomly selected eighth-grade mathematics lessons were filmed in Germany, Japan, and the United States. In addition to providing rich and detailed information about teaching in these three countries, a primary goal of the TIMSS 1995 video study was “to assess the feasibility of applying videotape methodology in future widescale national and international surveys of classroom instructional practices” (Stigler et al. 1999:1).

Because of the interest generated by this study and the perceived feasibility of videotape methodology, five school years later, more than 1,000 randomly selected eighth-grade mathematics and science lessons in seven countries were filmed for the TIMSS 1999 video study (Hiebert et al. 2003a; Roth et al. 2006). Similar to the first video study, the second video study sought to compare eighth-grade mathematics teaching practices but expanded to cover science teaching and specifically included multiple countries with high achievement. These two video studies are the largest of their kind in the education field. In this article, we briefly share some of the methodological lessons learned from the TIMSS 1995 and TIMSS 1999 Video Studies. We focus on our experiences overseeing these large-scale, video-based, cross-national surveys of teaching. The article documents some of the progress we made as well as some of the obstacles we encountered.

The TIMSS 1995 video study was funded by the U.S. Department of Education’s National Center for Education Statistics. The TIMSS 1999 video study was funded by the National Center for Education Statistics and the Office of Educational Research and Improvement of the U.S. Department of Education as well as the National Science Foundation. It was conducted under the auspices of the International Association for the Evaluation of Educational Achievement. The views expressed in this article are the authors’ and do not necessarily reflect those of the International Association for the Evaluation of Educational Achievement or the funding agencies. We express our sincere thanks to James Hiebert for his guidance on the video studies and for his comments on this article. Thanks are also extended to Ronald Gallimore, Nicole Kersting, and James Stigler for their participation in numerous discussions regarding these issues.
LESSON 1: DETERMINE HOW VIDEO WILL HELP MEET THE GOALS OF THE STUDY

Initially, it may seem as if the use of video data can help simplify the research process. After all, videotaping is an efficient way to capture behavior and enables a wide range of analyses. However, collecting and analyzing video come with particular costs, including the obvious time and monetary costs and more elusive costs associated with the often subconscious expectation that video recordings are objective or theory neutral (Hall 2000). Erickson (in press) adds that “information derived from video, in itself, does not give us direct, unmediated access to ‘the facts.’” In fact, projects involving video data have many more complexities than researchers might at first anticipate.

Standard research agenda items, such as designing a data collection protocol and developing an analysis plan, have an added twist when video is involved. The data collection protocol must take into account the many factors related to videotaping such as equipment and filming requirements. For example, what kind of video, audio, and computer equipment will need to be purchased; how many cameras (and camera operators) will be needed to capture the images of interest; and what type of camera angle will work best under various circumstances? Developing an analysis plan requires consideration of what supporting data should be collected and how the video should be coded and analyzed. Erickson’s (in press) discussion of “procedures for discovering and analyzing data from videotape” may be an extremely helpful resource in this pursuit.

What Did We Do in the Video Studies?

In the 1995 and 1999 TIMSS Video Studies, a list of both general and specific research questions was defined at the outset (see Stigler et al. 1999 and Hiebert et al. 2003a for a description of some of these). The broad goal for both video studies was to describe and compare teaching practices internationally. More specific questions were asked, such as, “What mathematical content was covered in the lessons?” “How was the mathematics worked on?” and “What was the nature of the classroom discourse?” The broad span and nature of these questions was such that observational data or checklists would have been impractical (Hiebert et al. 2003b). Furthermore, videotaping helped us more easily handle the complexity involved in obtaining reliable judgments across a wide range of lessons and countries (Stigler and Hiebert 1999; Hiebert et al. 2003a).

Consistent with the main goal of the studies—to describe and compare teaching practices—videotaping protocol was constructed so that the main...
One focus would be on capturing the actions of the teacher. This decision had multiple implications, such as what filming equipment to select (we invested considerably in teacher microphones), how many videographers would be needed to film each lesson (only one), and what type of perspective the videographers should take (their goal was to capture the classroom from the point of view of an “ideal student”; see Jacobs et al. 2003 for more details).

In the first video study, a single camera was used that nearly always followed the teacher. As anticipated, very limited information on the students was available. In the second video study, to obtain slightly more information about the students while still maintaining a primary focus on the teacher, a single videographer filmed each classroom using two cameras—an operated camera following the teacher and a stationary camera capturing a wide view of the classroom. In this way, two angles of the classroom were available without undue expense. In addition, a short background questionnaire was administered to all the videotaped students.

Perhaps the most important supporting data gathered for both of the TIMSS Video Studies were the teacher questionnaire data and the textbook/worksheet pages used in each lesson. The teacher questionnaire data were intended to aid in analysis and interpretation of the videotapes by providing background information on the teacher and eliciting some of their beliefs and views on the videotaped lesson. We consulted the questionnaires, for example, when coding the data (for example, to determine if material was new or review) and when determining the relationship between teachers’ “reform” views and their instructional practices (Stigler et al. 1999). The textbook and worksheet pages were often invaluable in deciphering the content students worked on.

We considered obtaining copies of students’ work completed during the lesson but decided that since few of our research questions focused specifically on students’ work, collecting copies or getting shots of their work was not worth the added effort and expense. Other supplementary materials that we considered, but did not collect, were teachers’ lesson and unit plans, homework assignments, and assessments based on the material covered in the lesson. These materials would have provided contextual information that may have been relevant in interpreting the teachers’ classroom instructional practices but were ultimately not deemed critical enough to our research questions to justify the expenditures.

What Are Some Potential Pitfalls?

Decisions made about data collection will affect and limit what can later be coded and analyzed. For instance, if the videotaping protocol reflects a decision to focus on the teacher (as in the TIMSS studies), less information
may be available about the students’ written work and interactions with one another, especially during periods of private interaction when students work at their desks. Decisions about resource allocations also have similar ramifications. In the TIMSS studies, we chose to use high-quality video cameras, zoom microphones (to hear the whole class), and teacher microphones. However, we opted not to place microphones around the classroom or on students’ desks because this was deemed too costly and potentially disruptive and because our specific research questions did not justify it.

A serious potential pitfall is not collecting enough supporting data to understand the videotaped events or to use the videotaped data in unanticipated ways. Because video images are so vivid and lend themselves to a wide variety of secondary analyses, it may be difficult to fully consider all of their future uses. Therefore, it would be wise to collect as much supplementary information during the data collection period as time and resources allow, even if the original research project can only make partial use of this information. Going back to participants long after they have been videotaped can be quite an involved process, and participants may no longer be able to provide fresh recollections of the filmed events.

LESSON 2: DEVELOP A DETAILED TRAINING MANUAL FOR VIDEOGRAPHERS AND ESTABLISH QUALITY CONTROL PROCEDURES

It is standard practice in research to create a detailed data collection protocol and carefully consider quality control procedures such as establishing the reliability of measures and coders. In live observations, for example, it is critical to consider beforehand what should be noted and recorded, and how reliability between observers can be determined. Although in some respects, videotaping can simplify this process (i.e., reliability between observers does not need to be established at the time of videotaping), in other respects, videotaping adds a layer of complexity.

Any time an activity is filmed, the videographer has to make a series of choices about what angle to shoot, what might be interesting to the audience, when to zoom in, and so forth. Many camera operators are used to shooting aesthetically pleasing footage and/or capturing events of dramatic interest. A detailed, standardized training manual is critical in helping the videographers, professional or novice, learn about your research questions and how those translate into filming procedures. Training workshops in which the specified requirements are explained, discussed, and practiced are critical. Part of the workshop should involve field trials to test both the
equipment and the filming techniques. Reviewing the videotapes and providing continual feedback to the videographers throughout the filming stage is another essential component for maintaining consistency and quality.

What Did We Do in the Video Studies?

We enlisted the assistance of a lead, professional videographer in creating a data collection protocol and selecting video equipment for both video studies. It was critical that the videographers shoot all the features we knew we needed to analyze (such as close-ups of the board and teacher and student interactions during private work). We also wanted the videographers to limit their own judgment of what might be interesting (such as a student who is doodling or an event taking place outside the classroom) and maintain an objective manner of filming that was consistent with the goals of the study.

The lead videographer collaborated with the research team to write a detailed data collection manual (the manual for the TIMSS 1999 video study is available at http://www.lessonlab.com/TIMSS/procedures.htm) and conduct a multiday training session. During the training session, the videographers became familiar with the handbook and equipment and filmed staged and real lessons. These initial lessons were then discussed and critiqued, as were randomly selected lessons filmed by each videographer throughout the data collection period.

What Are Some Potential Pitfalls?

The major pitfall in this area is not anticipating or being sufficiently prepared for the challenges of filming specific environments for research purposes. Without a standardized protocol, multiple practice opportunities for videographers, and regular feedback on the quality of their work, the end product may be videotapes that are difficult to work with. We recommend training one or more videographers as backups to prepare for any number of unexpected complications.

In addition, filming equipment presents its own special challenges, and being unprepared for relatively common circumstances such as a failed battery (charge them beforehand, bring extras, and bring a power adapter and extension cord) or a student’s knocking over a camera (bring duct tape to use as needed and keep the camera as far away from students’ seats as possible) can result in the loss of critical data. We also advise buying extra equipment and establishing a relationship with a dependable service center.
Institutional review boards have long made researchers aware of the need to obtain informed consent from participants. As with other lessons presented in this article, this step in the research process is applicable to video studies with an added twist. One of the most compelling aspects of video-based research is that the data are in a form that is easily communicable. This quality that serves researchers so well also makes some potential participants particularly wary of involvement. Collecting videotape data requires a careful consideration of ethical and legal obligations regarding the protection of the confidentiality and privacy rights of those individuals who are filmed. If conducting cross-national studies, researchers should be aware that some countries have more fully developed laws and regulations than others, often with specific considerations for minors.

In all cases, it will be necessary to obtain formal written permissions and releases prior to videotaping. In our experience, most countries (including the United States) are moving toward differential policies regarding “restricted” and “unrestricted” videotapes. Restricted release means that the videotapes can be shown only under the specified circumstances, whereas unrestricted release means that the videotapes can be used and distributed in any way. Because videotapes have such long shelf lives, the manner in which they could be useful might change over time (Stigler et al. 1999; Ulewicz and Beatty 2001), and unrestricted permission allows the most flexibility. However, in many cases, participants will grant only restricted-use permissions for the videotapes (meaning that they can be seen only by specific people and/or used for particular purposes). Although this limits the use of the data, it is likely to allow for a broader pool of research subjects and a higher participation rate.

Copyright permission may also come into play. If teachers use copyrighted materials in their lessons or copyrighted resources displayed in their rooms are caught on camera, for example, clearance must be sought to show these resources to a more public audience. Such audiences include teachers participating in a professional development program or viewers of video displayed over the Internet.

What Did We Do in the Video Studies?

We obtained formal restricted release permissions from all the teachers in both video studies, which stated that the videos would not be shown to anyone out of the research team and would be used for research purposes.
only. In most countries, similar permissions were collected from the parents of each student in the class. In addition, a smaller number of lessons were collected in each country from teachers (and students’ parents) who were willing to provide unrestricted releases. These lessons were made publicly available, as described in the Lesson 6 section below. All permission forms noted the broad goals of the study, specified the intended uses of the videotaped lessons, and described the level of confidentiality provided to the participants. We also obtained copyright clearances for all published textbook and worksheet pages that were used in the lessons made publicly available.

What Are Some Potential Pitfalls?

A potential pitfall is not obtaining broad enough written permission before the filming takes place. If researchers obtain only restricted permission, for example, but then want to obtain unrestricted permission, this means having to go back to the participants to obtain another round of permissions. In fact, this happened in the TIMSS Video Studies. At some point after the lessons were collected, a decision was made to use a small subset for teacher professional development. Although in some countries, it was possible to go back and request these permissions, in other countries (including the United States), it was not. Therefore, additional lessons with unrestricted permissions needed to be collected.

A second potential pitfall, which has occasionally occurred in the TIMSS Video Studies, is that participants can decide to revoke their permission. Although this may be unavoidable, we tried to establish an open relationship with each teacher so that he or she could freely discuss any concerns with us. In addition, we sent each teacher a copy of his or her lesson shortly after it was filmed. If the participants feel fully informed and the research team is open to their inquiries, it is likely that most will remain cooperative and positive about their contribution.

A third potential pitfall is that participants may act differently when videotaped, and this is commonly perceived as a large hurdle for researchers who bring cameras into the classroom. Therefore, in both TIMSS Video Studies, we asked teachers about the typicality of their videotaped lesson and the influence of the video camera. The majority of teachers told us that the lessons we filmed accurately represented their classrooms and that the camera did not have a substantial influence on their conduct or that of their students (Stigler et al. 1999; Hiebert et al. 2003a). Our research suggests that teaching is “cultural activity” and as such is hard to change dramatically because of the presence of a video camera (Stigler and Hiebert 1999; Stigler, Gallimore, and Hiebert 2000).
LESSON 4: USE DIGITAL TECHNOLOGY TO VIEW THE VIDEOTAPES ON A COMPUTER NETWORK OR OVER THE INTERNET

Working with analog video (such as VHS or Hi-8 tapes) is cumbersome for a variety of reasons. These forms of video are not particularly durable; they are awkward to stop, fast forward, and rewind; they are difficult to share among multiple researchers; and they greatly limit the degree of sophistication more advanced technologies offer for coding and analysis. A much more user-friendly and versatile strategy is to convert the tapes to digital images or to use camera equipment that captures digital images from the outset. Digital images then can be stored on computing devices and/or saved to DVDs.

Because of increased accessibility and affordability of large storage devices, even lengthy video footage can be viewed via a computer network or the Internet. Some examples of video databases that currently are available to the public over the Internet are PBS’s TeacherSource (http://www.pbs.org/teachersource/), Teachers Network’s Videos for Teachers (http://www.teachersnetwork.org/media/), Ricki Goldman-Segall’s Points of Viewing Children’s Thinking: A Digital Ethnographer’s Journey (http://www.pointsofviewing.com), and the TalkBank Project (http://www.talkbank.org). The expected audiences for these Web sites include teachers, professional developers, researchers, and interested others. However, making video publicly accessible virtually guarantees that it will be viewed and considered in ways unanticipated by the people who collected and uploaded them.

What Did We Do in the Video Studies?

In the video studies, the video footage was digitized and stored on a video server in MPEG-1 format. The tapes were viewed and coded using vPrism multimedia database software, which features the ability to see time-linked transcripts (Knoll and Stigler 1999). This software also allowed for the input and export of time-linked codes applied to each lesson, useful for data analysis and efficiently searching for video examples.

To address most of our research questions, it was necessary to translate and/or transcribe all of the lessons into English. Although the translation/transcription process is fairly labor intensive and costly, we developed what we feel is an efficient and high-quality protocol. Interested parties can download the transcription handbook created for the TIMSS 1999 video study at http://www.lessonlab.com/TIMSS/database.htm.

By digitizing the videos, translating them in English, and using interactive software, we have been able to successfully show the videotapes to educators and teachers in six of the countries that participated in the TIMSS
1999 video study (Australia, the Czech Republic, Hong Kong SAR,\textsuperscript{1} the Netherlands, Switzerland, and the United States). Of course, such an undertaking requires access to computers and related technology, although this was not an obstacle in these six countries.

What Are Some Potential Pitfalls?

This stage involves some expense and technical savvy. Which digitizing and storage equipment is the most dependable? Which computer system should you buy? Which software is most appropriate? These are all questions that need to be explored at length. Some of the detailed information about the technological decisions we made in the TIMSS Video Studies can be found in Stigler et al. (1999) and Jacobs et al. (2003); however, with such rapid technological advances, it is best to look into the most current systems.

Privacy issues again come into play when videotapes are digitized and viewed over a computer network or the Internet. For all restricted-use data, efforts must be made to ensure that they cannot be accessed by outsiders. It is helpful in this regard to establish a secure firewall and to require that passwords be used to gain access to the data files.

**LESSON 5: CONSIDER THE VIDEO DATA FROM MULTIPLE PERSPECTIVES**

As mentioned previously, it is important to generate specific research questions along with a data analysis plan at the outset of the project. However, the plan should be flexible enough to allow for unforeseen analyses. One of the greatest advantages of video-based data is their versatility; they can be examined from multiple perspectives in ways that the research team might not have originally considered. For example, continual viewings of the tapes by a range of audiences can generate informed ideas and analyses, which can then be subjected to quantitative analyses (Jacobs, Kawanaka, and Stigler 1999). Remaining open-minded and establishing a network of individuals from a variety of backgrounds and disciplines can prove extremely fruitful in bringing fresh perspectives on ways to consider the data.

What Did We Do in the Video Studies?

In the TIMSS Video Studies, we drew ideas on how to code and analyze the data from multiple sources, including theories of teaching and learning, previous studies, cultural insiders, and the videotapes themselves. We used both top-down and bottom-up approaches to develop coding ideas and definitions (Stigler, Gallimore, and Hiebert 2000; Jacobs et al. 2003). Our
The goal was to accurately and meaningfully decipher the features of teaching that influenced opportunities to learn in each country (Hiebert et al. 2005). Table 1 describes this process for the TIMSS 1999 video study, in which we reliably coded more than seventy-five different aspects of the mathematics lessons. The coded data provide quantitative indicators of how often specific teaching features appeared on each videotape and allow for meaningful contrasts across countries. But as Stigler and Hiebert (1999) note, “individual features make sense only in terms of how they relate with others that surround them” (p. 75). Therefore, to more fully address our research questions, and to explore new questions that arose based on the results of the coding, the TIMSS studies drew on individuals and teams with different areas of expertise to analyze and interpret these data.

For example, in both of the TIMSS Video Studies, we assembled an international team of code developers and coders with a wide range of interests and expertise to represent the interests of each country and to consider the data from multiple perspectives. We also established a network of national research coordinators who played a role in everything from generating research questions and guiding the analyses of the videotapes to hiring qualified videographers. In addition, we enlisted specialist coding groups with

<table>
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<tr>
<th><strong>Top-down</strong></th>
<th><strong>Bottom-up</strong></th>
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<tbody>
<tr>
<td>1. Inductive process: Repeatedly review lesson tapes</td>
<td>1. Comb TIMSS 1995 codes for code candidates</td>
</tr>
<tr>
<td>2. Review literatures for accounts of teaching systems</td>
<td>2. Review observation instruments and questionnaires from previous studies of teaching</td>
</tr>
<tr>
<td>3. Construct tentative descriptions of teaching systems within a culture</td>
<td>3. Analyze cultural models constructed through the top-down process for suggested codes</td>
</tr>
<tr>
<td>4. Submit cultural models to “experts” for review</td>
<td>4. Capitalize on TIMSS 1999 field-test analysis, combined with points 1–3 above to create a coding scheme that is both etic and emicb</td>
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<tr>
<td>5. Repeat until consensus is achieved</td>
<td>5. Review tapes to identify additional specific codes</td>
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a. Some aspects of this approach have been described by Glaser and Strauss (1967) as the “discovery of grounded theory.”
b. “Etic” refers to universal indicators, and “emic” refers to culturally particular categories (Pike 1966).
unique fields of expertise to code portions of the data. These groups included mathematicians, mathematics educators, and linguists. We also showed a subsample of the lessons from the TIMSS 1999 video study to groups of mathematics educators internationally to elicit their ideas about what constitutes effective mathematics teaching.

What Are Some Potential Pitfalls?

With video, it is easy to conjure up a wide variety of analyses after the data have been collected, which might necessitate a larger budget and researchers with wider-ranging expertise than originally anticipated. Prioritizing research questions and delegating tasks can become a delicate balancing act. Although video data generally help decrease training difficulties and increase interrater reliability relative to other forms of data (Hiebert et al. 2003a), there are still critical tensions between reliability and validity that need to be taken seriously when determining who will tackle particular analytic tasks. The large international teams of coders for the TIMSS Video Studies relied on explicit written descriptions of codes and often sacrificed higher inference codes on which they could not reach a high level of reliability. The specialist teams, on the other hand, tended to share more implicit understandings about phenomena in their area of expertise and consequently were able to code those phenomena with high agreement.

LESSON 6: TO THE EXTENT POSSIBLE, MAKE THE VIDEOTAPES AVAILABLE

Although there is an increasing effort among researchers to make their raw data available to interested parties, and although videotapes are ideal candidates for secondary analyses, this practice has not yet become the norm. Part of the reason may be that in the relatively new field of video-based research, there are many unresolved issues surrounding privacy and confidentiality (Arafeh and McLaughlin 2002).

To the extent possible, disseminating the raw video data would serve a wide host of needs. For example, videotapes provide illustrations of key findings that communicate more clearly than written reports or oral presentations alone. In addition, videotapes can become compelling sources of new ideas. Because these new ideas are concrete and grounded in practice, they have immediate practical potential. Recently, there has been a call for digital libraries of videos from classroom lessons to be made available over the Internet (Hiebert, Gallimore, and Stigler 2002), which would yield
widely accessible video data for practitioners, researchers, and practitioner-researchers. Perhaps most important, publicly released videos can stimulate local and international discussions of teaching that are based on a common frame of reference.

What Did We Do in the Video Studies?

As part of both video studies, several videos in which unrestricted permissions were granted were released publicly. For the TIMSS 1999 video study, twenty-eight mathematics lessons (four lessons from each of seven countries) have been publicly released. A CD-ROM of selected clips from the mathematics lessons accompanies a written report of the study published by the National Center for Education Statistics and illustrates many of the codes used to analyze the lessons (http://nces.ed.gov/timss/Video.asp; note that some of the clips can be viewed online by clicking on the “highlights” document). Also available are full-length videos from the twenty-eight lessons, with accompanying materials including a transcript in English and the native language; commentaries by teachers, researchers, and the national research coordinators; lesson graphs displaying the structure and content of the lessons; and textbook and worksheet pages used in the lessons (http://www.lessonlab.com/bkstore/index.cfm/action/displaybycategory).

The first professional development package to incorporate the TIMSS 1999 video study publicly released lessons is now available and is an exploration of algebra teaching in three high-achieving countries (http://www.intel.com/education/math). Other teacher professional development efforts that utilize video from the TIMSS studies are currently under way.

What Are Some Potential Pitfalls?

As mentioned previously, obtaining the necessary permissions is critical to enable access to videotaped data. Because the field is still at a very young stage, many of the laws and regulations regarding the confidentiality of the individuals in the videos are somewhat unclear (Arafeh and McLaughlin 2002). It is hoped that being videotaped will become increasingly popular and desirable as participants see the promise in watching others and learning from the outcomes of studies such as these.

CONCLUSION

The use of video technologies presents exciting opportunities for researchers in all fields. Because the area is relatively new, researchers
may feel alone in navigating the complexities of collecting and effectively using video data. We hope that the ideas shared here help prevent possible missteps, enhance the quality of projects, and encourage researchers to advance the use of video as part of their methodology.

We note that our experiences using video, as related in this article, are from large-scale educational research studies. More common are smaller-scale studies in which video is used either as a main or as a supplementary source of data. We propose that most of our suggestions are relevant to these smaller studies as well, with some caveats. For example, design experiments (e.g., Cobb et al. 2003) offer more flexibility with regard to when research questions and analysis plans should be generated, thus affecting whether decisions involving video must be made beforehand. Therefore, our first two lessons—determine how video will help meet the goals of the study and develop a detailed training manual for videographers and establish quality control procedures—may be less critical in such research programs. However, our remaining four lessons—collect release forms, use digital technology, consider the video data from multiple perspectives, and make the videotapes available—would seem to apply regardless of the magnitude of the project. We look forward to continuing this type of dialog with our colleagues in the field who are using video in both small- and large-scale projects. Surely they have many details to fill in and additional lessons to offer.

NOTE

1. Hong Kong is a Special Administrative Region (SAR) of the People’s Republic of China.

REFERENCES


**HILARY HOLLINGSWORTH** is an education consultant in Victoria, Australia. Her interests focus on teacher professional learning, mathematics education, and the use of video-cases for professional learning. She has recently published (with J. Lokan and B. McCrae) *Teaching Mathematics in Australia: Results from the TIMSS 1999 Video Study* (2003, Australian Council for Educational Research) and (with D. J. Clarke) “Elaborating a Model of Teacher Professional Growth” (2002, *Teaching and Teacher Education*).