DOCUMENT RESUME

ED 472 672 IR 021 879

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| AUTHOR | Arafeh, Sousan; McLaughlin, Mary |
| TITLE | Legal and Ethical Issues in the Use of Video in Education Research. Working Paper Series. |
| INSTITUTION | National Center for Education Statistics (ED), Washington, DC.; Education Statistics Services Inst., Washington, DC. |
| REPORT NO | NCES-WP-2002-01 |
| PUB DATE | 2002-01-00 |
| NOTE | 53p.; Project Officer, Patrick Gonzalez. |
| AVAILABLE FROM | ED Pubs, P.O. Box 1398, Jessup, MD 20794-1398. Tel: 877-433-7827 (Toll Free); Fax: 301-470-1244; e-mail: edpubs@inet.ed.gov; Web site: http://www.ed.gov/pubs/edpubs.html. For full text: http://nces.ed.gov/pubs2002/200201.pdf. |
| PUB TYPE | Reports - Evaluative (142) |
| EDRS PRICE | EDRS Price MF01/PC03 Plus Postage. |
| DESCRIPTORS | Data Collection; *Educational Research; Educational Researchers; *Ethics; Information Dissemination; Intellectual Property; Interactive Video; *Legal Responsibility; Nonprint Media; *Research Methodology; *Video Equipment |
| IDENTIFIERS | *National Center for Education Statistics |

ABSTRACT

The National Center for Education Statistics (NCES), through the Education Statistics Services Institute, supported the research in this report to help frame future discussions about the use of video research techniques in educational settings. This paper addresses the context of technological, legal, and ethical change facing researchers who use video in their work, and examines how these influence the research and treatment of research subjects. A synopsis of past governing ethical and legal guidelines in social science research is provided along with an account of recent developments. The process of research planning and risk assessment is examined, including the use of informed consent and permissions. Also included are concerns surrounding the analysis and dissemination of data in networked telecommunications environments, as well as issues of intellectual property ownership. Some key suggestions for how education researchers using video in their work might proceed in this new context are also provided. Although much of what this paper outlines pertains to electronic data of any kind, including alphanumeric data, graphical data, and pictures, the collection and handling of data in each medium takes place within those legal and ethical boundaries that pertain to its particular type. In this paper, legal and ethical issues that pertain to video data are the primary focus. A listing of NCES Working Papers to Date is provided at the end of the document. (Contains 47 references.) (Author/AEF)

# NATIONAL CENTER FOR EDUCATION STATISTICS

Working Paper Series

## Legal and Ethical Issues in the Use of Video in Education Research

Working Paper No. 2002-01 January 2002

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**Suggested Citation**

U.S. Department of Education, National Center for Education Statistics. *Legal and Ethical Issues in the Use of Video in Education Research.* Working Paper No. 2002-01, by Sousan Arafeh and Mary McLaughlin. Project Officer, Patrick Gonzales. Washington, DC: 2002.

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# Legal and Ethical Issues in the Use of Video in Education Research

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U.S. Department of Education
Office of Educational Research and Improvement
National Center for Education Statistics

January 2002

## PREFACE

The National Center for Education Statistics (NCES), through the Education Statistics Services Institute, supported the research in this report to help frame future discussions about the use of video research techniques in educational settings. With the launch of the 1995 Third International Mathematics and Science Study Videotape Classroom Study (TIMSS Video) and subsequent release of results and public-use video clips, NCES made its first large-scale foray into the collection of video data for the study of actual classroom instructional practices. The TIMSS Video study was designed to complement information collected through self-reported student and teacher questionnaires as part of the TIMSS assessment study. Through discussions with researchers and other interested parties, it became evident that the use of video in educational research presented some unique ethical and legal questions that, to our knowledge, had not been clearly resolved, either within the profession or through the law.

The research presented in this report is intended to raise issues that require further discussion within the education and legal communities. As the education community increasingly turns to video and digital technology to record and understand the education process, issues such as those raised in this report will need to be clearly addressed. For its part, NCES will continue to seek ways to ensure that the impact of data collection and data reporting on study subjects stays within the law and professional ethics and continues to benefit the nation.

Finally, this work was conducted under Task 1.3.4.91 with the Education Statistics Services Institute, funded by contract number RN95127001 from the National Center for Education Statistics. The opinions expressed here are solely those of the authors and do not necessarily represent the views of the Education Statistics Services Institute, the National Center for Education Statistics, or the U.S. Department of Education.

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## EXECUTIVE SUMMARY

The education and science research and funding communities have expressed growing interest in the use of video for research purposes. Video has long been used for data collection and as a data source. However, technological advances in the form of digitization, computerization, and network-based transfer of information (e.g., the Internet) have begun to change the way that video data are collected, analyzed, and disseminated.

With the increasing use of these new technologies for collecting education data, one important question to ask is whether current ethical guidelines and legal regulations that govern the behavior of researchers adequately anticipate their potential effects. Issues of privacy, confidentiality, and intellectual property have taken on new dimensions with the advancement of digitized audiovisual-based data and the spread of worldwide distribution networks through the Internet. The information available to researchers, funders, educational agencies, and educational policymakers interested in using video data is limited regarding appropriate ethical and legal practices.

This paper addresses the context of technological, legal, and ethical change facing researchers who use video in their work, and examines how these influence the research and treatment of research subjects. A synopsis of past governing ethical and legal guidelines in social science research is provided along with an account of recent developments. The process of research planning and risk assessment is examined, including the use of informed consent and permissions. Also included are concerns surrounding the analysis and dissemination of data in networked telecommunications environments, as well as issues of intellectual property ownership. Some key suggestions for how education researchers using video in their work might proceed in this new context are also provided.

Until legal, professional, ethical, and other decision-making bodies broach and more clearly resolve the many issues at hand, researchers will have to educate themselves and ensure their responsible conduct. This paper offers the following suggestions for the video research community:

- Compile up-to-date descriptive information on laws and professional and practitioner guidelines on an ongoing basis to determine what restrictions currently exist. While this is important domestically, it is also important for international comparative work.

- Compile a record of current scholarly practices for addressing legal and ethical issues regarding video-based research on an ongoing basis as well as critical commentary as to whether they are adequate and justified.
- Make the information in the first two bullets widely available and easily accessible.
- Conduct further research on how new media such as video affect the research process and its various theoretical and methodological frames.

- Increase researcher exposure to legal and ethical conventions and expectations through researcher networks, conferences, and collaborative projects, and increased attention to the matter in graduate coursework.
- Increase researcher exposure to scholarship on the impact of audio-visual imagery on viewers.
- Develop models for clearly defining, articulating, and documenting research studies and their terms (i.e., study intentions, procedures, and proposed outcomes).
- Determine appropriate legal and ethical models for developing commercial and non-commercial products from video studies or video data from such studies.
- Develop more models for gaining participant permissions, offering privacy or confidentiality, and establishing intellectual property rights for both research staff and subjects.
- Explore and establish responsible training of researchers interested in using audio-visual images in their work, and
- Understand the range of stakeholders implicated and affected by pending legal and ethical developments regarding video's use for research.

Although much of what this paper outlines pertains to electronic data of any kind, including alphanumeric data, graphical data, and pictures, the collection and handling of data in each medium takes place within those legal and ethical boundaries that pertain to its particular type. In this paper, legal and ethical issues that pertain to video data are the primary focus.

## ACKNOWLEDGEMENTS

We would like to thank the following people for their generous contributions in reviewing this paper: Valena Plisko, Eugene Owen, and Patrick Gonzales of the National Center for Education Statistics; Janet Schofield at the University of Pittsburgh; James Stigler at the University of California in Los Angeles; Rikki Goldman-Segall at the University of British Columbia; Catherine Lewis at the Mills College Women's Leadership Institute; Laura Salganik at the Education Statistics Services Institute of the American Institutes for Research, George Wheaton at the American Institutes for Research, and Ivor Pritchard at the Office of Educational Research and Improvement.

Thanks also to Winnie Tsen and Jennifer R. Anderson of the Education Statistics Services Institute for their administrative assistance.

## INTRODUCTION

Advances in digital technology have made it easier and more viable to use video and other new media in research studies. As the science and education communities exhibit greater interest in the use of video for research purposes (Arafeh & Tsen, in review), consideration of legal and ethical issues surrounding these modes of research is warranted.

This paper explores three questions of interest to scientific and educational researchers, funders, legislators, policy makers, and professional and institutional bodies charged with legal and/or ethical oversight of research practices:

1. What laws and ethical guidelines currently apply to researchers who use human subjects in their work?
2. Are current laws and ethical guidelines adequate for video-based research and do they anticipate changes?
3. What might researchers using video and video data want to know and do in this less-than-clear and changing legal/ethical context to ensure their work maintains high professional standards and the privacy and confidentiality of their subjects?

These questions are important for any researcher who uses video in his/her work. However, they may be particularly important for researchers whose work is high-profile and/or publicly funded. These individuals have a special obligation to the public trust that includes solid legal and ethical conduct and public review and disclosure of such conduct.

## BACKGROUND

The use of video for research is not new (Arafeh, Smerdon & Snow, in review; Prosser, 1998). Educational researchers have used video for both quantitative and qualitative studies in mathematics education and professional development, for example, since the early 1960s. Many of these studies have been case-based and small-scale (Berliner, 1969; Erickson and Wilson, 1982).

Until recently, it was largely analog video that was collected and subjected to analysis in video-based research studies. With the advent of digital technology in recent years, however, more of these video data are being collected and encoded as digital files (Arafeh & Tsen, in review). Either video format fairly accurately represents the faces, bodies, and voices of real students and teachers. Both formats also fairly accurately represent the physical environments of actual classrooms and schools and the materials used within them.

The advent of digital and networked technologies has resulted in increased incentives to use such technology in all aspects of education, administration, and research. These incentives have, in part, resulted in more interest in, and resources for, research uses of video such as classroom studies, studies of instructional practice and pedagogical

techniques, and the use of video to model teaching and learning for professional development purposes (Gallick, 1998).

One important development in mathematics-focused video-based research has been the 1994-1995 Third International Mathematics and Science Study Videotape Classroom Study (TIMSS Video) (Stigler et al., 1999). This study of 231 eighth-grade mathematics classrooms in Germany, Japan, and the United States demonstrated that large-scale, international, quantitative research on nationally representative samples of teaching could be undertaken using video and state-of-the-art software applications (Stigler and Fernandez, 1995). In part, this type of large-scale video research was made possible by technological developments in digital video formats and video analysis applications. In addition, however, it was facilitated by a general interest, acceptance, and desire for using computer and video-based information in research. It is in this context of new technology and increasing interest in video-based research that educational researchers, science and education funders, and other relevant parties have gathered to think about the future of research practice and tools.

The growth of both small- and large-scale video studies—and the high-profile success of video studies like the TIMSS Video Classroom study—has resulted in attention to both new video studies and secondary analyses of extant video datasets where new codes, new protocols, or wholly new analytic approaches may be employed. As a byproduct, this has created great interest in access to the videos for secondary research, professional development activities, and general viewing purposes. However, in the course of doing research involving human subjects, video-based or not, researchers are expected to adhere to laws and guidelines pertaining to the well-being and privacy of study participants. It is general ethical practice in studies using both video and alphanumeric data to ensure that study subjects are given the opportunity to agree to participate in a study via formal permission forms. In addition, researchers typically attempt to disclose the level of confidentiality that such subjects can expect for their participation.

The main difference between research that generates video data and research that generates alphanumeric data is that the former contains images of actual places and people's faces, bodies, and voices that can only be disguised via technical means. These procedures involve a fair amount of financial, time, and human resource burden. While alphanumeric data can contain information that makes it possible to identify individuals, such information can be mitigated through a variety of techniques such as data aggregation or the use of pseudonyms, among other techniques. As will be discussed in more detail below, it is very difficult to hide the identities of the people and places that appear on a videotape and, in many cases, such measures alter the data in essential ways that reduce its utility for research. As well, emerging digital and networked technologies offer new possibilities for information manipulation and transfer. These new capabilities likewise require new safeguards.

Video's highly correspondent representational ability—that is, its ability to represent real people, places, and things—gives video unique qualities that alphanumeric data do not have. In addition to the physical identification of individual people and places,

videotapes of classrooms capture entire lessons in which copyrighted materials from textbooks or other educational tools or media may be in use. Does their appearance on video constitute a breach of copyright? And, when video captures the lesson plans, materials, or pedagogical practices of teachers, should these be considered copyrightable "works" that require permission for their use?

Do the unique attributes and qualities of video require new ways of thinking in regard to privacy, confidentiality and property rights? Are current legal and ethical guidelines for research sufficient to address the qualities of research using video data that make it unique, especially in the emerging technological context?

Three responses by education researchers, science and education funders, and other relevant parties regarding these questions are a 1998 University of Michigan workshop—*New Technologies for the Study of Teaching* (Lampert and Hawkins, 1998), a Board of International Comparative Studies in Education (BICSE) workshop *The Uses of Video in International Education Studies: A Workshop* (BICSE, 1999; National Research Council, 2001), and the *Shared Multimedia Database for the Study of Classroom Discourse* conference sponsored by the TalkBank project.[1] Each workshop brought people together from technology, research, education, and communications communities to explore how video should be used in the design and execution of educational research. Participants entered into cross-disciplinary discussions that resulted in a very clear call for more research and development on video's use for educational research.

This paper considers an aspect of research and development that was raised in the Michigan workshop and further identified as a pressing research need at the BICSE discussions: the matter of how educational researchers should deal with legal and ethical issues presented by video-based research on classrooms, students, and teachers. For educational researchers who use video images of schools, teachers, and children in their work, knowing more about what constitutes legal and ethical practice is important.

In what follows, general legal and ethical issues pertaining to video-based education research are addressed. Of course, the many legal and ethical questions that can and should be raised regarding video and technologically-advanced research are not exhausted in this paper. However, it does tease out some of the current quandaries raised by these research practices in an increasingly information-based age. Past and more recent legal and ethical issues are considered, including guidelines and permissions for human subject-oriented research and the matters of data/findings property and ownership rights. This information is presented to provide a background of knowledge on these topics. How education researchers have adhered to legal and ethical responsibilities in the past, and what they may need to consider for doing video research in the current context of new technologies and regulations is also described and recommendations for future work regarding these issues are offered.

[1] (http://www.talkbank.org). All but the TalkBank workshop participants focused largely on mathematics education research.

## DEFINING TERMS: LEGAL VS. ETHICAL

Throughout this paper the terms "legal" and "ethical" are used. Legal issues are those that pertain to, or are governed by, formal national or international law. They have specific formal dimensions that are governed by law, and are enforceable and answerable to the law. Ethical issues pertain to professional standards or codes of conduct that are not legally binding but can have serious professional or personal consequences through non-legal sanctions. Moral notions of good, right, and propriety underpin both legal and ethical approaches to governing professional and personal conduct. In most cases, however, these moral or value notions are implicit and a function of long-standing traditions of code and/or practice.

Legal codes and ethical conventions are typically established over time. Traditionally, U.S. law has been defined incrementally by ongoing legislative reform and case law (Carter et al., 1996). Professional ethics are shaped either by an informal normative process and/or a more formal process where rules are established within a particular community of practice. Both legal and ethical constraints are required for gathering and using video for research purposes. Because the use of video for research is relatively new, however, the legal and ethical conventions applicable to such practices are still emerging. This is also the case for digitized information more generally. For example, there is a great deal of current national and international debate on what laws and standards are appropriate and necessary for protecting intellectual property and privacy (c.f. the websites of the U.S. Copyright Office http://lcweb.loc.gov/copyright/ and the World Intellectual Property Organization http://www.wipo.org/ for an overview of current activities).

## WHAT LAWS AND ETHICAL GUIDELINES CURRENTLY APPLY TO RESEARCH USING HUMAN SUBJECTS?

At different phases in the research process, different legal and ethical requirements inhere. When gathering data, researchers have been expected to concern themselves with their subjects' current and future physical and emotional well-being. When analyzing data, researchers have been expected, when appropriate, to maintain the confidentiality of participants and to ensure the data are not used for profit or in unauthorized or unintended ways. Researchers have also been expected to interpret their data within the confines of the empirical evidence it presents. Lastly, researchers have been expected to ensure that data and findings are distributed to the appropriate people or communities of interest—typically professional—and that they are not misconstrued or used in ways that would compromise the subjects, researchers, or institutions involved.

Both legislation and professional guidelines for data's restricted use have been developed and employed for these purposes. These have typically included binding legal elements. To ensure that safeguards are properly communicated and enforced, institutional bodies overseeing institutionalized procedures have been created. In the following sections, the primary legal and ethical standards concerning gathering, using, disseminating and

storing video data are detailed. Various institutional bodies governing these are discussed, along with the broad procedures that they employ.

***Laws and Guidelines Regarding Human Subjects, Privacy and Confidentiality, and Informed Consent***

Researchers from all disciplines have faced both legal and ethical issues with regard to the use of human subjects in studies. Federal and State regulations have been promulgated to ensure that human subjects have been treated responsibly in research studies. For all federally funded research conducted both intra- and extramurally in over 15 federal agencies, the Department of Health and Human Services' "Common Rule" regulations — 45 C.F.R. Part 46 – Protection of Human Subjects – form the basis for how to address the treatment of human subjects before, during, and after data collection. These regulations are further spelled out for educational researchers in 34 C.F.R. Part 97 – Protection of Human Subjects. Additional legislation such as the U.S. Department of Justice's *Privacy Act of 1974* (5 U.S.C. §552A) and the U.S. Department of Education's codification of its spirit in the *Family Educational Rights and Privacy Act of 1974* (FERPA, 35 C.F.R. Part 99) and the *National Education Statistics Act of 1994* (5 U.S.C. §401) requires that recorded identifying information about individual subjects be obscured or removed during and after a study to maintain privacy.

It should be noted that regulations may not cover some federal agency-sponsored research and non-federally-sponsored research unless an involved institution has elected to apply the Common Rule regulations to it. In addition, the regulations themselves exempt some research from their own provisions (see 45 C.F.R. Part 46.101 (b) (1-4)). Thus, there are instances where exempted research or research undertaken by an agency not bound by the Common Rule would not be legally required to show human subjects compliance. However, whether such research is being undertaken ethically would be of concern.

Guidelines developed by agencies and professional organizations in the medical and behavioral sciences have been influential in the promulgation of regulations for ensuring research subjects' ethical treatment and privacy. For example, the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research's *Belmont Report* (1979) directly influenced the development of the Common Rule. Other guidelines such as the *American Psychological Association Ethical Principles of Psychologists and Code of Conduct* and the *American Education Research Association Ethical Standards* promote certain researcher activities that encourage the ethical treatment of subjects in research endeavors (American Psychological Association, 1992; American Educational Research Association, 2001).

The impetus for regulations and guidelines regarding the ethical treatment of human subjects was misconceived and misguided research such as that which took place during World War II or the Tuskegee experiment on syphilis, for example. In cases such as these, a number of researcher activities resulted in subjects being emotionally and/or physically abused or endangered. In part, this was because subjects were not informed of

the research's potential effects on them, were not given the opportunity to consent to their participation in such studies, were exposed to dangerous or atrocious conditions as part of the study's design, were not allowed to withdraw from a study, and the like. In contrast, and to ensure such atrocities would not occur again, human subjects regulations and guidelines were predicated on the belief that human beings have certain unalienable rights such as the right to the property of one's body for which one can and should make rational, informed decisions as regards conduct and conditions. Autonomy, privacy, safety from harm, and fairness also underpin human subject guidelines. In the broadest sense, these guidelines translate into researcher concern for risk/benefit assessment, informed consent, and confidentiality.

In principle, a research study should be "fair" to its participants, and anticipated benefits should outweigh potential risks. "Risk" is difficult to define. The term usually refers to both the range and probability of harm coming to a potential subject. Risks can be varied in nature, are not confined to physical harm, and thus could include psychological, legal, social, and economic harms. The Common Rule, for example, deems "...risk of criminal or civil liability or be damaging to the subject's financial standing, employability, or reputation" as being relevant to assessing risk. Many ethical guidelines suggest that all types of harm be considered during a research study risk/benefit assessment, and that efforts should be made to make a reasonable estimate of both factors. The social harm that comes from breaches of confidentiality (e.g., public criticism, embarrassment, isolation from coworkers or other community members) is a particularly important concern of researchers generally, and researchers using video data in particular. What constitutes a "benefit," however, is an evolving notion. Usually a study's benefit is an outcome of positive value related to individual or social health or welfare. An outcome does not have to directly impact the particular subjects of a study, however.

The *Privacy Act of 1974* describes the fundamental responsibility of government agencies (and private agencies by extension) to protect the privacy of human subjects for "any record of identifiable personal information." This Act suggests that human subjects of a research study should expect privacy when divulging personal information or behaving in an environment where a reasonable person would assume that no observation was taking place. The legislation imposes a substantial penalty of law on researchers who access, publish, or disseminate licensed individually identifiable information about subjects (misdemeanor and/or fine up to $5000). The *National Education Statistics Act of 1994* offers similar protections. This Act directs the National Center for Education Statistics to "develop and enforce standards designed to protect the confidentiality of persons [through the disclosure of individually identifiable information] in the collection, reporting, and publication of data under this title [i.e., Title 35: Education]" (5 years imprisonment and/or fine up to $250,000). That the penalties for breeches of these Acts are so grave indicates the importance that U.S. society places on research participants' privacy and confidentiality. U.S. courts are responsible for enforcing these laws.
To oversee the proper compliance of Federal regulations and ethical guidelines, Institutional Review Boards (IRB) have been established at government and research institutions. These bodies are required to review and approve research projects when stipulated conditions are met. They are also required to maintain a system of checks and

balances to ensure confidential, safe, and fair treatment of study participants. While IRBs are authorized by Federal law to refuse, suspend, or withdraw approval from a research project that does not comply with regulations, there appears to be no post hoc sanctions available to them. When individuals or institutions are found guilty of human subjects breeches, however, debarment or suspension can be an outcome. The activity of IRBs and their ongoing authority are monitored by the Department of Health and Human Services (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

Although not necessary when the Common Rule does not apply, in those cases where researchers are complying with such legal requirements and/or ethical guidelines a main component has been acquiring participants' informed consent. Depending upon the type and scope of a study, there are legal and/or ethical procedures to be followed. These procedures typically require that risk and privacy safeguards be disclosed and agreed upon at the beginning of a study by gaining informed consent.

Consent or permission for participating in a study is usually obtained by informing a subject about a study's general purpose, procedures, possible risks and anticipated benefits. This information may be imparted orally, or through written materials outlining data collection, analysis, storage, and distribution intentions. Potential subjects then sign a form indicating, for example, their willingness to participate, researcher use of their words or images, or waiving of their consent provisions per regulations (34 CFR 97. 116). Researchers typically store such records in their files for the period determined during the human subjects review process.

Gaining informed consent and ensuring confidentiality are not always straightforward or failsafe undertakings, however. For example, not all human subjects are deemed eligible for consenting on their own behalf. Children, people with mental disabilities, and the infirm are often unable to comprehend the advantages and disadvantages of a study. In such cases, parental and/or guardian permissions are sought. Third party guardians like these may withdraw a subject from a study (34 CFR 97 Subpart D). This legal provision has direct implications for educational research undertaken on school-aged children who have not reached the age of majority. There is the broader issue, however, as Erlandson et al. (1993) suggest, that informed consent:

> ...cannot be entirely achieved at the beginning of a study, even if it is the intent of the researcher to do so because the research context is constantly in flux and neither researcher nor anyone else really knows what is being consented to (p. 155).

## THE UNIQUE CHALLENGES OF VIDEO-BASED RESEARCH

### *Differences in the Identifiability of Personal Information*

The main difference between alphanumeric data and video data is that the latter is integrally comprised of nearly correspondent image-based representations of people, places, and things. In other words, video data contain information that clearly identifies

people's faces, bodies, voices, and names. Depending upon what kind of footage is shot, the name or location of a school or the city in which it is located may also be apparent (e.g., on a bulletin board, an overhead used for classroom instruction, a building entrance). Finally, video data may contain identifiable images of materials from textbooks or other educational tools or media that are copyrighted.

Because video data contain actual visual images and audio tracks, the risk of identification is much greater relative to the same risk regarding traditional alphanumeric data sets. Potentially identifying features in alphanumeric survey or observation data can be altered to greatly reduce or eliminate risk of identification with little to no effect on the quality or usability of the data or data set. With video data, however, virtually all individuals are identifiable unless significant efforts are taken to mask identifying factors. Aggregation or pseudonyms are useful tools for concealing identifiable information in alphanumeric data. These can also be employed for any text transcripts, notes, or analytic summaries that researchers might develop from video data. However, as Pirie (1996) notes, "...of what value is an intention to change the names of participants in the written text [i.e., a transcript of a videotape's audio], if their faces can be seen on the video recording?" (p.10). In order to conceal the identities of the research subjects in video data in keeping with human subjects, privacy, and restricted-use laws and guidelines, different techniques must be employed, such as eye blocking, face blurring, and voice modification. In addition to the financial, labor, and time costs associated with these techniques, they have proven problematic for researchers interested in presenting their data and findings to the public and to research peers.

By utilizing identity-hiding techniques — with either analog or digital video data — the concealments can also constitute a physical alteration of the data and, to varying degrees, alter the way the images, subjects, or data are or could be perceived. The question of what constitutes a significant alteration of the data to render the videos less amenable to particular analyses is a sticky one. For example, if a research question relies on an analysis of verbal behavior cues or facial expressions, or examines interpersonal relationships of subjects who are masked, can the data still be considered valid and reliable? There are many questions of this kind that, although raised, have not yet been resolved by the research, professional, funding, and legal communities.

Another technique for concealing subjects' identity in video data is to remove their image from the video altogether. Video researchers such as Pirie (1996) and Goldman-Segall et al. (1999) have suggested that subjects should be able to request removal of their images from video data if they so desire. This alternative increases the amount of control subjects have over the use of their images in research and may encourage participation. However, unlike masking, removing some or all of a videotape's imagery clearly alters the events and people being studied in a vital way.

### *Informed Consent and New Technologies*

In addition to the unique challenges of video studies in maintaining the confidentiality of subjects, the growth of worldwide distribution networks, particularly the Internet, raise

new concerns about whether current safeguards adequately cover the potential of these new media outlets. That is, can research subjects fully understand, or be made to fully understand, the potential impact on their lives should their image, voice, and actions be distributed and shown nationally and worldwide? And, how can researchers anticipate new media outlets that were not available when consent was originally obtained? For example, when the teachers gave their permission to appear in public-use video for the TIMSS Video study, could they really have anticipated the amount of attention paid to their teaching and the praise and criticism that followed in the media and in face-to-face and web-based discussions around the nation and the world?

Web-based data collection and dissemination of data is very quickly developing in the research fields. As a way to promote economies of scale and scope and bring data collection protocols and reporting more conveniently to subjects, researchers are increasingly turning to the Internet. To date, large scale, restricted-use video data sets such as TIMSS are not available via the Internet primarily due to concerns of security and confidentiality. Some public-use video, however, can be accessed on the Web (e.g., http://www.pointsofviewing.com).

With the increase in distribution of video data via the Internet and other technologies, researchers and government agencies using web-based data collection and dissemination approaches need to consider potentially new issues of privacy and informed consent. The technologies underpinning web-based research, and managing and safeguarding the information gathered or disbursed are improving daily. And although large-scale web-based data are primarily alphanumeric, in addition to large-scale video data such as that from the TIMSS Videotape Classroom Study, the photographic and video images of schools, classrooms, teachers, and students from small-scale or case-based studies can also appear on the Web (see, for example, Goldman-Segall's interactive book and feedback forum on student thinking at http://www.pointsofviewing.com/index.html). It can be anticipated that web-based access to video data from both large- and small-scale video research will likely increase in coming years, particularly since video modeling of exemplary and/or standards-based teaching practice seems to be on the rise. Some of these videos will be public-use and will not require licensure for access.

One result of this trend toward web-based collection, analysis, and dissemination of alphanumeric and video data is that such data are not likely to subside or remain within national borders. As with traditional forms of data, when video data cross national borders, the original set of guidelines and laws that protected its access and use may no longer apply. Thus, even as individual organizations and agencies are developing internal standards for video and other forms of data, methods of ensuring national and international data security and the maintenance of research subjects' rights will need to be considered.

Overall, new digital technology and new relational and networked data management and dissemination capabilities make it more difficult to plan the risk/benefit of a study and ensure subjects' privacy and confidentiality. In addition, there is no way now for researchers to predict whether future information gathering capacities will exceed current

or future safeguards. This would suggest that traditional forms of planning and protections cannot be assumed to be adequate for the future. In this context, video studies may face the same sorts of dilemmas as studies that do not use images. For example, just as other studies involving children may face the issue of their subjects discontinuing participation in the study after reaching the age of majority, what happens to children who later decide that they would like to revoke permission for the continued research use of their image when they did not initially assent to participation on their own behalf? What authority do they draw upon to remove their image from a videotape or video database at a later date? What if they are willing only to allow access to their image by a restricted group of people or in a restricted geographic area? These questions are just beginning to arise—domestically and internationally. New technologies can both alleviate and exacerbate them. At the moment, however, the research, legal, and professional communities are only now beginning to address these eventualities.

***Intellectual Property Rights, Copyright and Educational Research***

Yet another difference between video data and alphanumeric data is the challenge that the former poses regarding questions of intellectual property. The following questions arise only in the context of image-based data such as video data and, to date, have not been formally or adequately addressed by either legal or professional means:

- When video data contain representations of parts of or entire lessons, or copyrighted materials from textbooks or other sources, does this fall under the fair use clause of U.S. copyright law?

- When video captures the lesson plans, materials, or pedagogical practices of teachers or other persons in the classroom (e.g., teacher aides, invited speakers, students), should these be considered copyrightable "works" that require permission and/or compensation for their display or use?

The term "intellectual property" is a legal term that refers to intangible assets such as, but not limited to, human knowledge and ideas. In the United States, intellectual property is a First Amendment protection that, previous to 1995, was operationalized nationally by the *Copyright Act of 1976*, and internationally by the *1971 Berne Convention.* More recently, modifications to the *Copyright Act* were enacted in 1998 in the *Digital Millennium Copyright Act (DMCA)* which strove to update print-based notions of copyright and include digitally-based "works" as well. Intangible aspects of intellectual property are deemed "ownable" when they are fashioned into tangible forms. Tangible expressions of intellectual property are generally divided into two areas: industrial property and copyright. The former refers to ownership through the authorship of "inventions, trademarks, industrial designs, and appellations of origin" and is governed by patent law. The latter refers to ownership through authorship of "literary, musical, artistic, photographic and audiovisual works," and is governed by copyright law.

Copyrights permit the creator of a "work that conveys information or ideas . . .in tangible expression" to control how that work is used (U.S. Copyright Office, 1976). This

includes written or printed materials such as non-product-type articles, reports, and papers developed by researchers, as well as film, CD-ROM, video, video games, paintings, music software, computer code, photographs, choreography and architectural design. Thus, in terms of intellectual property law, copyright law would broadly govern the "works" of or captured in video data. This determination, however, is not so simple.

According to the *Copyright Act*, facts are not copyrightable. "Any facts that an author discovers in the course of research are in the public domain, free to all, even if the author spends considerable time and effort discovering things that were previously unknown." There is the question of whether video data constitute records of "facts" (i.e., the representations contained on the video are representations of actual people and activities). However, there seem to not have been any conclusive legislation concerning this point. "Work for hire" is likewise not copyrightable to the independent employee who has signed a legally-binding agreement to generate work for an employer. In this case, the entity that commissioned the work owns the copyright. This is true of research done by university staff, for example, or graduate assistants who work for a senior researcher on a grant. Often, but not always, research undertaken with federal grants or private funds typically are copyrighted to the funding agency.[2] If a copyrighted work is wrongfully used, the owner can obtain legal recourse for any losses, usually in the form of monetary compensation.

One important aspect of educational research that copyright law has not addressed is the question of whether the information, artifacts, or images provided by participants in the course of a research study are copyrightable to them. In the case of video data that includes the work of a teacher in a classroom and the materials he or she uses, there is no clear statement of whether these are considered intellectual property. Can distribution of video images of teachers, their pedagogical practices, and the curricular materials or lessons that they develop for use in their classes therefore be construed as infringing on their intellectual property rights? Furthermore, if teachers are employees of local public school districts, do they work and teach in a public domain? Is the work that they do in the space of their classrooms "work for hire" which results in no claim to their ideas, materials, and practices?

Such instances are not explicitly covered in either the *Copyright Act* or the *DMCA*. Until more explicit legislative guidance is formed, such issues will be determined through case law. However, when there is no federal precedent, such cases are left to individual states. As of this writing, we know of no federal or state case law that specifically considers matters of informant- or participant-generated intellectual property in relation to educational research activity – whether video-based or not. Developments along these lines may be forthcoming in proposed and enacted legislation that governs copyright, research, or distance education activities.

Because there has been no specific directive to researchers by copyright law or human subjects guidelines to establish copyright, specific terms of ownership, or waivers or

[2] Information gathered for some federal agencies is considered public-domain and available to anyone based on terms described in the Freedom of Information Act (FOIA) (1967, 1999) legislation.

royalty procedures in educational research studies, such matters have typically not been addressed. Some researchers, such as Schrum (1995), suggest that in order to mitigate social and psychological risk, study participants should be the rightful owners of any information or materials that they contribute or create. She argues that their data should not be shared without expressed permission, and that they should have the opportunity to modify or correct statements for content, substance, or language. It may well be that subjects participating in video studies may feel a greater ownership of their contributions to the data because they recognize their digital images as a more salient representation of themselves than verbal or written statements. They also may feel more "invested" in the research process and therefore may require greater protection from risk. Lastly, because the data-based outcomes of video studies are so much more accessible to viewers (i.e., video "documents" are easier to digest than written documents), they may desire a greater opportunity to shape the progress or outcomes of the projects in which they are involved.

There is a significant downside to this approach to copyright for research, however, part of which was discussed earlier in the section on privacy and confidentiality to research subjects. Research may be impacted negatively if subjects are allowed to withdraw or destroy video data at any time during the research process based on their right of ownership to their video image. Not only could accurate data analysis be jeopardized, resources could be wasted if frequent re-collection of data becomes necessary as a result of individuals changing their minds about the release of data or desiring modification to it. In order to avoid these complications, some researchers may feel the need to request a signed consent form that grants long-term, blanket permission for the use of video data with limited opportunity for input.

There is another aspect to copyright issues when classrooms are videotaped: what if a teacher uses a textbook or other materials copyrighted by another (e.g., a teacher colleague, a technical assistance organization, a district office, a publisher) in the course of presenting a lesson? Should the teacher have the rights to the lesson? Should the teacher or the video researcher get permission to use such materials or pay royalties? In such cases, who "owns" the lesson?

Increased interest by subjects in the use of their images combined with formal ownership rights to their images or materials represented in the data has even further effects when such data are fashioned into salable educational ideas and products. Video data hold high commercial promise, especially in the teacher education/professional development content areas. However, questions of copyright ownership for financial gain have not been of great concern to researchers historically because of longstanding professional perception and practice of work being for the benefit of society and not for professional or financial gain. Typically, data and findings were expected to be public domain upon publication and copyright protection from plagiarism and other types of intellectual poaching was what copyright law safeguarded against; not ownership of a work or a product derived from a work. However, since the traditional textbook-based curricula have been expanded to use electronic and on-line educational materials in recent years, the curricular materials market for primary, secondary, tertiary, vocational, continuing

and education pre-service and professional development programs has expanded considerably (U.S. Copyright Office, 1999).

Keeping up with the content demands of these markets is difficult but, for many, is highly desirable. It is likely that the desire and demand for educational video and multimedia will continue to grow among parents, teachers, and policymakers, especially now that there is compelling technology (e.g., computer, network, multimedia, and video) that is relatively stable (Lampert and Hawkins, 1998). Video recordings of the practices and interactions of classrooms, teachers, and students gathered in the course of research—while they do not wholly reflect what goes on in a classroom—are the richest documentation of actual classroom practice to date and comprise the raw or underlying source material for the kinds of educational products alluded to here. Thus, what teachers and students do when videotaped for research purposes can be and is being used for commercial purposes. However, clear guidelines about the intellectual property contributions of researchers, participants, and materials developers are not yet available.

Questions regarding the commercial use of subjects' images and copyrighted materials in video data also are impacted by secondary uses of such data. Whether a particular researcher is interested in using his/her video or image-based data to develop a commercial educational product, there is always the possibility that the data generated could be used by someone else—particularly in cases where data are made available for secondary analyses—and later fashioned into something salable. It is likewise possible that a researcher could benefit materially from ideas or activities revealed in the raw data produced during a video study. As the number and scope of video studies expand, and as the data generated from the studies are made widely available, ownership issues like these could arise. Since copyright laws are still in flux, these questions have yet to be fully resolved and warrant issue and feasibility studies.

A current problem for educational researchers using video is that the law is biased toward ownership as regards commercial media. For example, the *Copyright Act* and the *DMCA* assume moving images and "performances or displays" to refer to commercially created ones. Educational uses of these works are either placed in very particular educational contexts such as distance education, or are exempted and, therefore, are not at all clearly-defined. For example, the recent *Register of Copyright's Report on Copyright and Digital Distance Education* (U.S. Copyright Office, 1999) provides a very limited treatment of "the institutional/faculty discussion over ownership of original content created by faculty." While the report states that "this issue will begin to affect licensing practices and needs at educational institutions within the foreseeable future...", guidelines for this eventuality are not presented. Regarding audiovisual works for use in distance education, it states:

> For audiovisual works in particular, individual faculty are encountering the complex copyright issues in this medium with little knowledge or experience. Educational video producers too appear to be focusing on meeting the needs of faculty with new products and services, rather than improved licensing systems...In general, these organizations are

convinced that the technology, expertise, and resources required to produce high quality materials will drive the market to different kinds of partnerships between educational institutions and content producers for the production of audiovisual materials for distance education. It is safe to assume that such works could and would be used for classroom-based instruction as well. (p. 53).

Because the legal guidance on the use of video-based academic or government research is sparse, Iino's (1998) call for "detailed guidelines specifically for the use of video recorded data for 'academic' purposes" (p. 18) is apt.

## ARE CURRENT LAWS AND ETHICAL GUIDELINES ADEQUATE FOR RESEARCH USING VIDEO DATA?

Like all research, educational research involving the use of video data representing human subjects is bound by particular human subjects-based laws, guidelines, and IRB reviews; laws governing access to public information and the data's restricted use; and laws governing intellectual property. To date, however, research using video data has largely been treated as if it were similar to data collected in other types of observational research and has not received special consideration. As the discussion above has shown, there are important differences between video data and traditional observational or survey data that challenge the ability for current laws and ethical guidelines to ensure subjects' privacy and intellectual property.

As noted earlier, video data include undeniable identifying information of actual faces, places, and things. Because of this, the risk of breaching subjects' privacy is greatly increased and, along with this, the possibility of effecting personal or institutional harm. Unlike data gathered from paper and pencil surveys, observation check lists, or interviews involving hand-written, or even audio, notes, video data cannot be made anonymous through techniques such as the use of aggregation or pseudonyms without greatly reducing its usability for research purposes. The inability to use safeguards viable for these other types of data with video data demonstrates that, on some important levels, video data exceed those laws and guidelines that have governed data generally, and the procedures thus far established to ensure subjects' privacy.

Lastly, there are very thorny and potentially very important issues regarding questions of intellectual property in the case of the images collected on video data. Video data contain the individual expressions and works of teachers and students, as well as instructional materials that might be copyrighted or copyrightable. Yet, no clear laws for their procurement or terms of use exist. Thus, researchers gathering such data currently are working in the dark doing their best to fashion appropriate and responsible procedures to deal with these issues and research subjects may be even less aware of the possible value of their contributions.

In sum, current laws and ethical guidelines do not adequately address the unique qualities of video data relative to alphanumeric data. Because of this, video researchers need to determine what practices will best address current legal and ethical guidelines while working to both imagine, keep abreast of, and possibly influence, developments in the future.

## WHAT EDUCATION RESEARCHERS SAY ABOUT LEGAL AND ETHICAL GUIDELINES FOR VIDEO-BASED RESEARCH

### *Research on New Media Environments*

There is a small but growing literature on legal and ethical concerns in the new media environments of cyberspace such as the Internet, listservs, e-mail, distance learning scenarios, classrooms, and other virtual and real-space communities and applications (U.S. Copyright Office, 1999; National School Boards Association, 1999; Schrum, 1995; Jones, 1994; Smith, 1994; Howard, 1993; Sullivan, 1993; Oakley, 1991; Branscomb, 1991; Goldstein, 1984). In the case of video's use for research, however, the literature is scant. In other words, current scholarship on legal and ethical considerations for networked, digital information –whether video-based or not—is still emergent. And the literature addressing legal and ethical issues surrounding electronic interactions in research is significantly more limited.

One of the more pointed discussions of ethics in an electronic communications environment to date was undertaken by Schrum (1995). At that time, her review of the literature revealed that the subject had not yet been substantively explored. Thus, she proposed a framework of guidelines for undertaking ethical qualitative educational research in the information age that extended what had traditionally been identified as ethical practice in qualitative research to electronic environments and conditions.

In the case of researchers who have written on video-related legal and ethical issues in mathematics education research, these individuals have tended to focus on how to comply with privacy, and confidentiality requirements via informed consent permissions, with some mention of ownership and intellectual property issues (Pirie, 1996; Lampert and Hawkins, 1998; Iino, 1998; Paine, Fernandez, and Schofield, 1999).[3] Overall, they are interested in understanding compliance with human subjects guidelines and establishing parameters for disseminating findings. In these articles or reports, there is a very high level of generality and indeterminacy. Thus, when Pirie (1996) asks "[w]ho owns the images and who decides the purposes to which they may be put?" ( p.11) and Paine et al (1999) ask "[w]hat are ethical issues associated with international video research in education...[or]...what are the [ethical] obligations of video researchers to those they study, to the analyses they undertake, and to the audiences to whom they present video-based work...?" (p. 2), these questions largely go unanswered. Scholars such as Iino (1998) advance that "there should be some detailed guidelines specifically

[3] As noted earlier, we focus on mathematics education research contributions here because of the long tradition of video study in this field as well as its recent turn to larger-scale video studies.

for the use of video recorded data for 'academic purposes'" (p. 18). Lampert and Hawkins (1998) similarly urge that privacy, permissions, and intellectual property are all issues that "need to be resolved" (p. 7).

Resolution in terms of clear laws and guidelines about how to proceed with such research have not yet been established along with matters of how restrictive any laws or guidelines governing video-based research should be, or whether such parameters would help or hinder researchers. However, based on the comments above, which are representative of the literature, there is a desire on the part of researchers for more ethical and legal guidance and specificity. In the face of little movement along those lines, however, researchers using video have attempted to explore some of the issues themselves and suggest alternatives.

In an early attempt at substantive discussion of legal and ethical requirements for video, Erickson and Wilson (1982) discussed their own notions of researcher responsibility to protect human subjects from harm. They suggested that researchers and subjects should agree to the terms of data's use and dissemination based on the environment in which it is collected, and how and where such information will later be displayed. It was their opinion, however, that offering subjects total confidentiality for their participation should not be a formal requirement if subjects are informed and protected against negative outcomes during the collection and dissemination stages of the research process. In other words, they suggested that such protections should not be codified as an objective legal standard.

Similar comments can be found in the more recent literature. As noted earlier, Pirie (1996) and Goldman-Segall (1999) suggested that subjects should be able to request that images they feel uncomfortable with be removed from a data sample. Yet, removing individual images or entire sections of data from data samples would likely constitute irreparable modification to the data. Analysis of data modified in this way would require new substantive theoretical and methodological approaches.

A response to human subjects permissions and control over their images in video data that straddles the divergent positions of Erickson and Wilson (1982) and Pirie (1996) and Goldman-Segall (1999) is a proposal for levels of confidentiality and calls for further IRB specificity and direction in guidelines developed during Carnegie Mellon's TalkBank Project's (1999) *Shared Multimedia Database for the Study of Classroom Discourse* conference. Based on the notion that the kind of permission that subjects give regarding their participation and the use of their images are key for video-based research, members of this conference suggested that researchers should allow their subjects to determine which of nine levels of confidentiality they would agree to for participating in a study.

Tied closely with standards used by Human Subjects review committees at the University of Minnesota and the University of California at Berkeley, these levels of confidentiality range from a fully Internet accessible and copyable level of access to identifiable data (level 1) to a restricted access level limited to researchers who sign a non-disclosure form

(level 5) to a fully restricted level where only the investigator may view the data set (level 9). Other levels entail various amounts of researcher control, including watermarking and software blocks to ensure that downloaded data is deleted and not distributed, and in-person or online supervision. In some cases, transcript data using pseudonyms may be publicly accessible, while the original video data is held at a higher confidentiality level. In addition to allowing subjects to choose what level of confidentiality they would agree to for participating in a study, these nine levels could also be used by researchers to determine what level of confidentiality would be appropriate and desired for a particular study or type of data set.

Overall, the academic literature on legal and ethical aspects of video research reveals an increase in questions and an increase in their complexity as technology has continued to evolve. As the context in which research takes place is increasingly digitized, networked, immediate, infinitely reproducible, global, and privatized, the challenge facing researchers today is to expand or modify current legal and ethical codes to account for the rising impact of technology on research now and in the future -- particularly when identifiable pictorial images of people are used. That answers to such questions have either not been forthcoming or have been slow to emerge is, in part, the function of legal and ethical indeterminacy more generally as regards information and communications regulation. At this time, education researchers are clearly becoming more savvy about the need to know more about the legal and ethical parameters of their video-based research. However, while there has been a significant increase in consideration of new technological effects on teaching and learning, far less attention has been paid to these effects on research processes and, particularly, the matter of video's use in research for which there is still more to be learned.

### *The Hidden Power of Images and the Researcher/Subject Relationship*

One final ethical consideration that some researchers have highlighted in their discussions of video-based research is researcher responsibility to understand both the power of the images they are gathering via video, as well as the power researchers have to influence the perceptions and decisions of people who have access to such data relative to the subject participants of such studies.

Most scholars who use video in their work on mathematics are aware that it is an extraordinarily powerful medium (BICSE, 1999). Many, however, are less aware of, or do not draw upon, scholarship about the power of symbols undertaken in fields such as sociology, anthropology, and history; semiotics, literary, film, television, and cultural criticism; and communication arts and production. In these fields, scholarship has been undertaken to explore how visual images such as photographs, films, and videos "work" to document and represent the world. In these literatures, there is significant agreement that visual images, while powerful, are partial, selective and, therefore, biased (Winston, 1998). This can occur in the way such images are captured (e.g., the camera framing of an image), manipulated (e.g., editing images), and disseminated (e.g., how images are presented and in what context). Researchers who are not aware that visual images have a certain "grammar" can undertake studies that represent their subjects falsely or

negatively, or impact their viewers in unintended ways. Researchers may inadvertently show primarily African-American students in a video segment on learning disabled children when, in fact, the learning-disabled sample population of a study or area is comprised of other racial and ethnic groups. Or, a research team might tend to shoot its video using camera angles that look down on students and up to teachers making the former seem smaller and less powerful, and the latter seem larger and more powerful.

The power involved in the researcher/subject dynamic is also an important ethical issue that some researchers who use video have considered. In contrast to the view that researchers are objective or neutral observers of human cognitive and behavioral activities, there are other schools of thought that believe this is not possible. Rather, when researchers frame their questions, design and conduct their studies, and analyze, interpret, and report their data, they have a privileged position relative to their study participants and cannot avoid shaping inputs and outputs with their perspectival biases. This is a problem for research of all types, but it has particular visceral impact when video is the medium through which study results are reported. Thus, in a study where researchers videotape interviews with students about their perceptions of the adequacy of school resources, for example, but only allow students to discuss those resources identified in a researcher-developed list and not additional ones that they might prefer to discuss or feel are more important, the resultant video data can be misleading.

The matter of researcher power of this kind is a longstanding theme in the hard and social sciences as evidenced by both past and current research (e.g., American Association for the Advancement of Science, 1981; Daly, 1996; Wright & Wright, 1999). However, while significant attention has been devoted to developing methods for equalizing this power relation (e.g. action research, self-reflexive research) (Zeni, 2001), some would argue that researchers always have power over their study subjects (Tobin and Davidson, 1990; Lee, 2001). It has been suggested that to mitigate such power imbalance, researchers must learn more about the power of images and their own power in the research process and do their best to understand it and try and be as inclusive of subject perspective and desires and be reflexive as possible. This includes learning about the "grammar" and impact of audiovisual images (e.g., how the visual framing or editing of an image encourages some viewing effects over others), as well as learning about how these might be used responsibly in both research and more public settings. Research subjects may be a primary source for this kind of information.

## NEW DIRECTIONS IN VIDEO RESEARCH; NEW CONSIDERATIONS FOR VIDEO RESEARCHERS

There can be no doubt that technical and intellectual changes in recent years have affected what it means to "do" video-based research and how this plays out along legal and ethical lines. For the research community, these changes are not only affecting ways that data and findings are collected, stored, analyzed, presented, and disseminated, but also the legal and ethical procedures and relationships involved. As we have shown,

educational researchers are aware of many of these changes and desire more solid guidance about how to proceed with their work relative to them.

Researchers will continue to need to ensure that their studies are clearly defined and communicated, that their subjects are as fully informed as possible, and that terms of copyright ownership are explicit and mutually agreed upon. It would seem that detailed and explicit permission/informed consent forms are currently the best way for researchers to address these kinds of issues. Thus, it is very important that these binding documents be thoughtfully and thoroughly prepared and collected from all study participants (Lampert and Hawkins, 1998; BICSE, 1999; National Research Council, 2001; TalkBank Project, 1999).

Because human subjects guidelines and privacy and copyright law only address audiovisual works in a general way, it is likely that case law will play a defining role in the future. Thus, it is important for researchers to keep abreast of the law as it changes. Until clearer legal or ethical guidelines are developed, educational researchers who use video should anticipate the many uses to which their video data and findings might be put, and attempt to address them in the course of gathering participant permissions. And for researchers who do international comparative work, the protocols and permissions may be quite different.

Until legal, professional, ethical, and other decision-making bodies more clearly address the many issues at hand, researchers will have to educate themselves and ensure their responsible conduct. To effect these ends, we offer the following suggestions:

- Compile up-to-date descriptive information on laws and professional and practitioner guidelines on an ongoing basis to determine what restrictions currently exist. While this is important domestically, it is also important for international comparative work.

- Compile a record of current scholarly practices for addressing legal and ethical issues regarding video-based research on an ongoing basis as well as critical commentary as to whether they are adequate and justified.
- Make the information in the first two bullets widely available and easily accessible.
- Conduct further research on how new media such as video affect the research process and its various theoretical and methodological frames.
- Increase researchers' educational and intellectual exposure to legal and ethical conventions and expectations through researcher networks, conferences, and collaborative projects.
- Increase researcher exposure to scholarship on the impact of audio-visual imagery on viewers.
- Develop models for clearly defining, articulating, and documenting research studies and their terms (i.e., study intentions, procedures, and proposed outcomes).
- Determine appropriate legal and ethical models for developing commercial and non-commercial products from video studies or video data from such studies.

- Develop more models for gaining participant permissions, offering privacy or confidentiality, and establishing intellectual property right for both research staff and subjects.
- Explore and establish responsible training of researchers interested in using audio-visual images in their work, and
- Understand the range of stakeholders implicated and affected by pending legal and ethical developments regarding video's use for research.

There are many complex issues regarding the use of video in educational research. These will continue to evolve, and a legal and ethical structure for them is coming into place. This paper has offered pertinent information for those interested in, or charged with, sorting out legal and ethical questions regarding research that uses the medium of video for collecting, analyzing, and disseminating educational data.

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## Listing of NCES Working Papers to Date

Working papers can be downloaded as pdf files from the NCES Electronic Catalog (http://nces.ed.gov/pubsearch/). You can also contact Sheilah Jupiter at (202) 502–7444 (sheilah.jupiter@ed.gov) if you are interested in any of the following papers.

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| **Baccalaureate and Beyond (B&B)** | | |
| 98–15 | Development of a Prototype System for Accessing Linked NCES Data | Steven Kaufman |
| 2001–15 | Baccalaureate and Beyond Longitudinal Study: 2000/01 Follow-Up Field Test Methodology Report | Andrew G. Malizio |
| **Beginning Postsecondary Students (BPS) Longitudinal Study** | | |
| 98–11 | Beginning Postsecondary Students Longitudinal Study First Follow-up (BPS:96–98) Field Test Report | Aurora D'Amico |
| 98–15 | Development of a Prototype System for Accessing Linked NCES Data | Steven Kaufman |
| 1999–15 | Projected Postsecondary Outcomes of 1992 High School Graduates | Aurora D'Amico |
| 2001–04 | Beginning Postsecondary Students Longitudinal Study: 1996–2001 (BPS:1996/2001) Field Test Methodology Report | Paula Knepper |
| **Common Core of Data (CCD)** | | |
| 95–12 | Rural Education Data User's Guide | Samuel Peng |
| 96–19 | Assessment and Analysis of School-Level Expenditures | William J. Fowler, Jr. |
| 97–15 | Customer Service Survey: Common Core of Data Coordinators | Lee Hoffman |
| 97–43 | Measuring Inflation in Public School Costs | William J. Fowler, Jr. |
| 98–15 | Development of a Prototype System for Accessing Linked NCES Data | Steven Kaufman |
| 1999–03 | Evaluation of the 1996–97 Nonfiscal Common Core of Data Surveys Data Collection, Processing, and Editing Cycle | Beth Young |
| 2000–12 | Coverage Evaluation of the 1994–95 Common Core of Data: Public Elementary/Secondary School Universe Survey | Beth Young |
| 2000–13 | Non-professional Staff in the Schools and Staffing Survey (SASS) and Common Core of Data (CCD) | Kerry Gruber |
| 2001–09 | An Assessment of the Accuracy of CCD Data: A Comparison of 1988, 1989, and 1990 CCD Data with 1990–91 SASS Data | John Sietsema |
| 2001–14 | Evaluation of the Common Core of Data (CCD) Finance Data Imputations | Frank Johnson |
| **Data Development** | | |
| 2000–16a | Lifelong Learning NCES Task Force: Final Report Volume I | Lisa Hudson |
| 2000–16b | Lifelong Learning NCES Task Force: Final Report Volume II | Lisa Hudson |
| **Decennial Census School District Project** | | |
| 95–12 | Rural Education Data User's Guide | Samuel Peng |
| 96–04 | Census Mapping Project/School District Data Book | Tai Phan |
| 98–07 | Decennial Census School District Project Planning Report | Tai Phan |
| 2001–12 | Customer Feedback on the 1990 Census Mapping Project | Dan Kasprzyk |

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| **Early Childhood Longitudinal Study (ECLS)** | | |
| 96–08 | How Accurate are Teacher Judgments of Students' Academic Performance? | Jerry West |
| 96–18 | Assessment of Social Competence, Adaptive Behaviors, and Approaches to Learning with Young Children | Jerry West |
| 97–24 | Formulating a Design for the ECLS: A Review of Longitudinal Studies | Jerry West |
| 97–36 | Measuring the Quality of Program Environments in Head Start and Other Early Childhood Programs: A Review and Recommendations for Future Research | Jerry West |
| 1999–01 | A Birth Cohort Study: Conceptual and Design Considerations and Rationale | Jerry West |
| 2000–04 | Selected Papers on Education Surveys: Papers Presented at the 1998 and 1999 ASA and 1999 AAPOR Meetings | Dan Kasprzyk |
| 2001–02 | Measuring Father Involvement in Young Children's Lives: Recommendations for a Fatherhood Module for the ECLS-B | Jerry West |
| 2001–03 | Measures of Socio-Emotional Development in Middle Childhood | Elvira Hausken |
| 2001–06 | Papers from the Early Childhood Longitudinal Studies Program: Presented at the 2001 AERA and SRCD Meetings | Jerry West |
| **Education Finance Statistics Center (EDFIN)** | | |
| 94–05 | Cost-of-Education Differentials Across the States | William J. Fowler, Jr. |
| 96–19 | Assessment and Analysis of School-Level Expenditures | William J. Fowler, Jr. |
| 97–43 | Measuring Inflation in Public School Costs | William J. Fowler, Jr. |
| 98–04 | Geographic Variations in Public Schools' Costs | William J. Fowler, Jr. |
| 1999–16 | Measuring Resources in Education: From Accounting to the Resource Cost Model Approach | William J. Fowler, Jr. |
| **High School and Beyond (HS&B)** | | |
| 95–12 | Rural Education Data User's Guide | Samuel Peng |
| 1999–05 | Procedures Guide for Transcript Studies | Dawn Nelson |
| 1999–06 | 1998 Revision of the Secondary School Taxonomy | Dawn Nelson |
| **HS Transcript Studies** | | |
| 1999–05 | Procedures Guide for Transcript Studies | Dawn Nelson |
| 1999–06 | 1998 Revision of the Secondary School Taxonomy | Dawn Nelson |
| **International Adult Literacy Survey (IALS)** | | |
| 97–33 | Adult Literacy: An International Perspective | Marilyn Binkley |
| **Integrated Postsecondary Education Data System (IPEDS)** | | |
| 97–27 | Pilot Test of IPEDS Finance Survey | Peter Stowe |
| 98–15 | Development of a Prototype System for Accessing Linked NCES Data | Steven Kaufman |
| 2000–14 | IPEDS Finance Data Comparisons Under the 1997 Financial Accounting Standards for Private, Not-for-Profit Institutes: A Concept Paper | Peter Stowe |
| **National Assessment of Adult Literacy (NAAL)** | | |
| 98–17 | Developing the National Assessment of Adult Literacy: Recommendations from Stakeholders | Sheida White |
| 1999–09a | 1992 National Adult Literacy Survey: An Overview | Alex Sedlacek |
| 1999–09b | 1992 National Adult Literacy Survey: Sample Design | Alex Sedlacek |
| 1999–09c | 1992 National Adult Literacy Survey: Weighting and Population Estimates | Alex Sedlacek |

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| 1999–09d | 1992 National Adult Literacy Survey: Development of the Survey Instruments | Alex Sedlacek |
| 1999–09e | 1992 National Adult Literacy Survey: Scaling and Proficiency Estimates | Alex Sedlacek |
| 1999–09f | 1992 National Adult Literacy Survey: Interpreting the Adult Literacy Scales and Literacy Levels | Alex Sedlacek |
| 1999–09g | 1992 National Adult Literacy Survey: Literacy Levels and the Response Probability Convention | Alex Sedlacek |
| 2000–05 | Secondary Statistical Modeling With the National Assessment of Adult Literacy: Implications for the Design of the Background Questionnaire | Sheida White |
| 2000–06 | Using Telephone and Mail Surveys as a Supplement or Alternative to Door-to-Door Surveys in the Assessment of Adult Literacy | Sheida White |
| 2000–07 | "How Much Literacy is Enough?" Issues in Defining and Reporting Performance Standards for the National Assessment of Adult Literacy | Sheida White |
| 2000–08 | Evaluation of the 1992 NALS Background Survey Questionnaire: An Analysis of Uses with Recommendations for Revisions | Sheida White |
| 2000–09 | Demographic Changes and Literacy Development in a Decade | Sheida White |
| 2001–08 | Assessing the Lexile Framework: Results of a Panel Meeting | Sheida White |
| **National Assessment of Educational Progress (NAEP)** | | |
| 95–12 | Rural Education Data User's Guide | Samuel Peng |
| 97–29 | Can State Assessment Data be Used to Reduce State NAEP Sample Sizes? | Steven Gorman |
| 97–30 | ACT's NAEP Redesign Project: Assessment Design is the Key to Useful and Stable Assessment Results | Steven Gorman |
| 97–31 | NAEP Reconfigured: An Integrated Redesign of the National Assessment of Educational Progress | Steven Gorman |
| 97–32 | Innovative Solutions to Intractable Large Scale Assessment (Problem 2: Background Questionnaires) | Steven Gorman |
| 97–37 | Optimal Rating Procedures and Methodology for NAEP Open-ended Items | Steven Gorman |
| 97–44 | Development of a SASS 1993–94 School-Level Student Achievement Subfile: Using State Assessments and State NAEP, Feasibility Study | Michael Ross |
| 98–15 | Development of a Prototype System for Accessing Linked NCES Data | Steven Kaufman |
| 1999–05 | Procedures Guide for Transcript Studies | Dawn Nelson |
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| 2001–08 | Assessing the Lexile Framework: Results of a Panel Meeting | Sheida White |
| 2001–11 | Impact of Selected Background Variables on Students' NAEP Math Performance | Arnold Goldstein |
| 2001–13 | The Effects of Accommodations on the Assessment of LEP Students in NAEP | Arnold Goldstein |
| 2001–19 | The Measurement of Home Background Indicators: Cognitive Laboratory Investigations of the Responses of Fourth and Eighth Graders to Questionnaire Items and Parental Assessment of the Invasiveness of These Items | Arnold Goldstein |
| **National Education Longitudinal Study of 1988 (NELS:88)** | | |
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| 95–05 | National Education Longitudinal Study of 1988: Conducting Trend Analyses of NLS-72, HS&B, and NELS:88 Seniors | Jeffrey Owings |
| 95–06 | National Education Longitudinal Study of 1988: Conducting Cross-Cohort Comparisons Using HS&B, NAEP, and NELS:88 Academic Transcript Data | Jeffrey Owings |
| 95–07 | National Education Longitudinal Study of 1988: Conducting Trend Analyses HS&B and NELS:88 Sophomore Cohort Dropouts | Jeffrey Owings |
| 95–12 | Rural Education Data User's Guide | Samuel Peng |
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| 98–09 | High School Curriculum Structure: Effects on Coursetaking and Achievement in Mathematics for High School Graduates—An Examination of Data from the National Education Longitudinal Study of 1988 | Jeffrey Owings |
| 98–15 | Development of a Prototype System for Accessing Linked NCES Data | Steven Kaufman |
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| **National Household Education Survey (NHES)** | | |
| 95–12 | Rural Education Data User's Guide | Samuel Peng |
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| 96–14 | The 1995 National Household Education Survey: Reinterview Results for the Adult Education Component | Steven Kaufman |
| 96–20 | 1991 National Household Education Survey (NHES:91) Questionnaires: Screener, Early Childhood Education, and Adult Education | Kathryn Chandler |
| 96–21 | 1993 National Household Education Survey (NHES:93) Questionnaires: Screener, School Readiness, and School Safety and Discipline | Kathryn Chandler |
| 96–22 | 1995 National Household Education Survey (NHES:95) Questionnaires: Screener, Early Childhood Program Participation, and Adult Education | Kathryn Chandler |
| 96–29 | Undercoverage Bias in Estimates of Characteristics of Adults and 0- to 2-Year-Olds in the 1995 National Household Education Survey (NHES:95) | Kathryn Chandler |
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| 97–06 | Unit and Item Response, Weighting, and Imputation Procedures in the 1995 National Household Education Survey (NHES:95) | Kathryn Chandler |
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| 97–19 | National Household Education Survey of 1995: Adult Education Course Coding Manual | Peter Stowe |
| 97–20 | National Household Education Survey of 1995: Adult Education Course Code Merge Files User's Guide | Peter Stowe |
| 97–25 | 1996 National Household Education Survey (NHES:96) Questionnaires: Screener/Household and Library, Parent and Family Involvement in Education and Civic Involvement, Youth Civic Involvement, and Adult Civic Involvement | Kathryn Chandler |
| 97–28 | Comparison of Estimates in the 1996 National Household Education Survey | Kathryn Chandler |
| 97–34 | Comparison of Estimates from the 1993 National Household Education Survey | Kathryn Chandler |
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| 98–10 | Adult Education Participation Decisions and Barriers: Review of Conceptual Frameworks and Empirical Studies | Peter Stowe |
| **National Longitudinal Study of the High School Class of 1972 (NLS-72)** | | |
| 95–12 | Rural Education Data User's Guide | Samuel Peng |
| **National Postsecondary Student Aid Study (NPSAS)** | | |
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| 2000–17 | National Postsecondary Student Aid Study:2000 Field Test Methodology Report | Andrew G. Malizio |
| **National Study of Postsecondary Faculty (NSOPF)** | | |
| 97–26 | Strategies for Improving Accuracy of Postsecondary Faculty Lists | Linda Zimbler |
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| 2000–01 | 1999 National Study of Postsecondary Faculty (NSOPF:99) Field Test Report | Linda Zimbler |
| **Postsecondary Education Descriptive Analysis Reports (PEDAR)** | | |
| 2000–11 | Financial Aid Profile of Graduate Students in Science and Engineering | Aurora D'Amico |
| **Private School Universe Survey (PSS)** | | |
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| 95–17 | Estimates of Expenditures for Private K–12 Schools | Stephen Broughman |
| 96–16 | Strategies for Collecting Finance Data from Private Schools | Stephen Broughman |
| 96–26 | Improving the Coverage of Private Elementary-Secondary Schools | Steven Kaufman |
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| 97–07 | The Determinants of Per-Pupil Expenditures in Private Elementary and Secondary Schools: An Exploratory Analysis | Stephen Broughman |
| 97–22 | Collection of Private School Finance Data: Development of a Questionnaire | Stephen Broughman |
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| 2000–15 | Feasibility Report: School-Level Finance Pretest, Private School Questionnaire | Stephen Broughman |
| **Recent College Graduates (RCG)** | | |
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| **Schools and Staffing Survey (SASS)** | | |
| 94–01 | Schools and Staffing Survey (SASS) Papers Presented at Meetings of the American Statistical Association | Dan Kasprzyk |
| 94–02 | Generalized Variance Estimate for Schools and Staffing Survey (SASS) | Dan Kasprzyk |
| 94–03 | 1991 Schools and Staffing Survey (SASS) Reinterview Response Variance Report | Dan Kasprzyk |
| 94–04 | The Accuracy of Teachers' Self-reports on their Postsecondary Education: Teacher Transcript Study, Schools and Staffing Survey | Dan Kasprzyk |
| 94–06 | Six Papers on Teachers from the 1990–91 Schools and Staffing Survey and Other Related Surveys | Dan Kasprzyk |
| 95–01 | Schools and Staffing Survey: 1994 Papers Presented at the 1994 Meeting of the American Statistical Association | Dan Kasprzyk |
| 95–02 | QED Estimates of the 1990–91 Schools and Staffing Survey: Deriving and Comparing QED School Estimates with CCD Estimates | Dan Kasprzyk |
| 95–03 | Schools and Staffing Survey: 1990–91 SASS Cross-Questionnaire Analysis | Dan Kasprzyk |
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| 95–09 | The Results of the 1993 Teacher List Validation Study (TLVS) | Dan Kasprzyk |

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| 95–15 | Classroom Instructional Processes: A Review of Existing Measurement Approaches and Their Applicability for the Teacher Follow-up Survey | Sharon Bobbitt |
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| 95–18 | An Agenda for Research on Teachers and Schools: Revisiting NCES' Schools and Staffing Survey | Dan Kasprzyk |
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| 96–05 | Cognitive Research on the Teacher Listing Form for the Schools and Staffing Survey | Dan Kasprzyk |
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| 96–07 | Should SASS Measure Instructional Processes and Teacher Effectiveness? | Dan Kasprzyk |
| 96–09 | Making Data Relevant for Policy Discussions: Redesigning the School Administrator Questionnaire for the 1998–99 SASS | Dan Kasprzyk |
| 96–10 | 1998–99 Schools and Staffing Survey: Issues Related to Survey Depth | Dan Kasprzyk |
| 96–11 | Towards an Organizational Database on America's Schools: A Proposal for the Future of SASS, with comments on School Reform, Governance, and Finance | Dan Kasprzyk |
| 96–12 | Predictors of Retention, Transfer, and Attrition of Special and General Education Teachers: Data from the 1989 Teacher Followup Survey | Dan Kasprzyk |
| 96–15 | Nested Structures: District-Level Data in the Schools and Staffing Survey | Dan Kasprzyk |
| 96–23 | Linking Student Data to SASS: Why, When, How | Dan Kasprzyk |
| 96–24 | National Assessments of Teacher Quality | Dan Kasprzyk |
| 96–25 | Measures of Inservice Professional Development: Suggested Items for the 1998–1999 Schools and Staffing Survey | Dan Kasprzyk |
| 96–28 | Student Learning, Teaching Quality, and Professional Development: Theoretical Linkages, Current Measurement, and Recommendations for Future Data Collection | Mary Rollefson |
| 97–01 | Selected Papers on Education Surveys: Papers Presented at the 1996 Meeting of the American Statistical Association | Dan Kasprzyk |
| 97–07 | The Determinants of Per-Pupil Expenditures in Private Elementary and Secondary Schools: An Exploratory Analysis | Stephen Broughman |
| 97–09 | Status of Data on Crime and Violence in Schools: Final Report | Lee Hoffman |
| 97–10 | Report of Cognitive Research on the Public and Private School Teacher Questionnaires for the Schools and Staffing Survey 1993–94 School Year | Dan Kasprzyk |
| 97–11 | International Comparisons of Inservice Professional Development | Dan Kasprzyk |
| 97–12 | Measuring School Reform: Recommendations for Future SASS Data Collection | Mary Rollefson |
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| 97–22 | Collection of Private School Finance Data: Development of a Questionnaire | Stephen Broughman |
| 97–23 | Further Cognitive Research on the Schools and Staffing Survey (SASS) Teacher Listing Form | Dan Kasprzyk |
| 97–41 | Selected Papers on the Schools and Staffing Survey: Papers Presented at the 1997 Meeting of the American Statistical Association | Steve Kaufman |
| 97–42 | Improving the Measurement of Staffing Resources at the School Level: The Development of Recommendations for NCES for the Schools and Staffing Survey (SASS) | Mary Rollefson |
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| 98–05 | SASS Documentation: 1993–94 SASS Student Sampling Problems; Solutions for Determining the Numerators for the SASS Private School (3B) Second-Stage Factors | Steven Kaufman |
| 98–08 | The Redesign of the Schools and Staffing Survey for 1999–2000: A Position Paper | Dan Kasprzyk |
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| 98–13 | Response Variance in the 1994–95 Teacher Follow-up Survey | Steven Kaufman |
| 98–14 | Variance Estimation of Imputed Survey Data | Steven Kaufman |
| 98–15 | Development of a Prototype System for Accessing Linked NCES Data | Steven Kaufman |
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| 1999–02 | Tracking Secondary Use of the Schools and Staffing Survey Data: Preliminary Results | Dan Kasprzyk |
| 1999–04 | Measuring Teacher Qualifications | Dan Kasprzyk |
| 1999–07 | Collection of Resource and Expenditure Data on the Schools and Staffing Survey | Stephen Broughman |
| 1999–08 | Measuring Classroom Instructional Processes: Using Survey and Case Study Fieldtest Results to Improve Item Construction | Dan Kasprzyk |
| 1999–10 | What Users Say About Schools and Staffing Survey Publications | Dan Kasprzyk |
| 1999–12 | 1993–94 Schools and Staffing Survey: Data File User's Manual, Volume III: Public-Use Codebook | Kerry Gruber |
| 1999–13 | 1993–94 Schools and Staffing Survey: Data File User's Manual, Volume IV: Bureau of Indian Affairs (BIA) Restricted-Use Codebook | Kerry Gruber |
| 1999–14 | 1994–95 Teacher Followup Survey: Data File User's Manual, Restricted-Use Codebook | Kerry Gruber |
| 1999–17 | Secondary Use of the Schools and Staffing Survey Data | Susan Wiley |
| 2000–04 | Selected Papers on Education Surveys: Papers Presented at the 1998 and 1999 ASA and 1999 AAPOR Meetings | Dan Kasprzyk |
| 2000–10 | A Research Agenda for the 1999–2000 Schools and Staffing Survey | Dan Kasprzyk |
| 2000–13 | Non-professional Staff in the Schools and Staffing Survey (SASS) and Common Core of Data (CCD) | Kerry Gruber |
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| **Third International Mathematics and Science Study (TIMSS)** | | |
| 2001–01 | Cross-National Variation in Educational Preparation for Adulthood: From Early Adolescence to Young Adulthood | Elvira Hausken |
| 2001–05 | Using TIMSS to Analyze Correlates of Performance Variation in Mathematics | Patrick Gonzales |
| 2001–07 | A Comparison of the National Assessment of Educational Progress (NAEP), the Third International Mathematics and Science Study Repeat (TIMSS-R), and the Programme for International Student Assessment (PISA) | Arnold Goldstein |
| 2002-01 | Legal and Ethical Issues in the Use of Video in Education Research | Patrick Gonzales |

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