Video Research in Education: Can We Establish Standards?

Sharon J. Derry
University of Wisconsin-Madison
Conference Questions

1. What is the potential of videography research to improve STEM education?
2. Can we develop standards for guiding future research, calls for funding, and proposal evaluation?
Concerns Motivating Quest for Standards

1. Resource Issues
   1. Time
   2. Funding
   3. Duplication of Effort

2. Quality

3. Desire to Orchestrate Distributed Expertise

4. Need for Problem Analysis
Challenges of Setting Standards

- The cultures of educational research are diverse and seemingly disagree.
- There are many types of standards.
- Standards require tradeoffs & compromises.
- Educational researchers resist standardization.
Educational Researchers . . .

- Wear many different video hats
- Are unpredictable creative cats
- Who never, ever hang like bats
- But, deeply engrossed in ritual chats
- Like different methods, tools, and formats
The “Video Hats” of Educational Research

Researcher
Teacher
Producer
Technologist
Research as many dimensions

- Timescales, analytical levels and grain sizes
  - 5-minute interactions to entire school years
  - Microsociology to macrosociology
  - Small social groups to entire villages

- Theoretical perspectives
  - Distributed cognition
  - Cognitive approaches to collaborative learning
  - Activity theory
. . . and research questions . . .

- Understanding role of gesture in mathematical communication
- Showing how microsocial encounters translate into broad patterns of inequality
- Examining the role of boundary objects in interdisciplinary problem solving
. . . and methods:

- Ethnomethodology
- Ethnography
- Cognitive Ethnography
- Conversation analysis
- Interaction analysis
- Interpretive staring
- Counting and coding
- Controlled experimentation (e.g., on instructional designs)
- Staring and praying
The Doctoral Research Experience

“I come to work, I go to my cave, I stare at my video and the questions I thought I was asking change.”

A graduate student’s reflection on dissertation work in progress.
“... despite the successful outcome of the project and the many personal rewards and moments of joy, suffering was my topmost, dominating feeling. I realized that my intense participation in these two domains and related communities ... literally almost paralyzed my participation in other communities and domains of my personal life, including family, social events, and hobbies.”

Mervi Hasu writes about dissertation experience (2005)
“Marginality is a powerful experience.”
- Susan Leigh Star (1991)

Is this a standards issue?
National Bureau of Standards

A branch of the U.S. Department of Commerce that maintains scientific, technical and industrial standards, and acts as a research and testing agency for the government.
Standard Defined (Funk & Wagnall’s)

4. n. - Any established measure of extent, quantity, quality, or value

5. n. - A type, model, or example for comparison; a criterion of excellence; test: a *standard* of conduct or taste

1. adj. - Having the accuracy or authority of a standard; serving as a gage, test or model of recognized excellence
A quality or measure which is established by authority, custom, or general consent.

A concrete example of an item or a specification against which all others may be measured.

A set of properties that a product or service should have.

There are "voluntary" standards to which the producers adhere voluntarily. Such standards are laid down by an organization gathering representatives of producers and users of the type of product or service.
Video Research in the Learning Sciences
Goldman, Pea, Barron, Derry (Eds)

- **Cases** of Good Video Research
  - Informal and Naturalistic Settings
  - Teacher and Classroom Learning
  - Technology Futures
- Struggles made visible
- Importance of community
The “Video Hats” of Educational Research

Researcher
Teacher
Producer
Technologist
Teachers ask . . .

- Where do I get video that meets my goals and standards for my teaching domain?
- What video teaching methods should I use?
  - Lesson study?
  - Reflective self-study?
  - Contrasting case designs?
  - Problem-based learning (PBL)?
- How can I use video to share my work as scholarship?
- How can my students use video as a learning tool?
Sharing Teaching Expertise

Pointer Mace, Hatch, liyoshi

**Yvonne Divans Hutchinson in her classroom, and the website representing her scholarship.**
Yvonne Hutchinson: [http://gallery.carnegiefoundation.org/yhutchinson](http://gallery.carnegiefoundation.org/yhutchinson)
Irma Lyons: [http://gallery.carnegiefoundation.org/ilyons](http://gallery.carnegiefoundation.org/ilyons)
Heidi Lyne: [http://gallery.carnegiefoundation.org/hlyne](http://gallery.carnegiefoundation.org/hlyne)
Emily Wolk: [http://gallery.carnegiefoundation.org/ewolk](http://gallery.carnegiefoundation.org/ewolk)
Bill Cerbin: [http://gallery.carnegiefoundation.org/bcerbin](http://gallery.carnegiefoundation.org/bcerbin)
Elizabeth Barkley: [http://gallery.carnegiefoundation.org/ebarkley](http://gallery.carnegiefoundation.org/ebarkley)
Dennis Jacobs: [http://gallery.carnegiefoundation.org/djacobs](http://gallery.carnegiefoundation.org/djacobs)
Bruce Cooperstein: [http://gallery.carnegiefoundation.org/bcooperstein](http://gallery.carnegiefoundation.org/bcooperstein)
What Teachers Need

- Ideas & advice on design of video-case learning environments
- Access to materials indexed to:
  - Goals and standards of teaching domains
  - Preferred teaching practices
- *Practical* technical support for video access, storage, production
- Systems for publishing teaching scholarship
Toward Standards for Teaching

- Are methods and materials accepted by educational research community?
- Is teaching reflective design scholarship?
- Is video matched to goals and methods?
- Is teacher proficient with *technologies* that enable:
  - finding digital materials matching my goals
  - sharing teaching scholarship
  - producing my own digital resources?
The “Video Hats” of Educational Research

Researcher
Teacher
Producer
Technologist
Video Producer Hat

- What is produced?
  - Instructional cases
  - Case studies
  - (In-between things)
- Collections and libraries
  - For research (whose kind of research?)
  - For teaching (whose goals?)
Some Production Questions

- Built-in scaffolding versus “remnant cases?”
  - What is the role of narrative and perceptual enhancements?
  - Whose point of view?
- Mini-cases vs. maxi-cases?
- Human subjects regulations
- How the heck can I publish this stuff?
Toward Production Standards

- What research will be done with video? Will productions meet standards of target research communities.
- What teaching goals and methods will video support? Will productions meet standards of target teaching communities?
- What technology literacies for production, editing, storing, publishing are needed?
- What legal and ethical standards for protection of human subjects must be met?
The “Video Hats” of Educational Research

Researcher
Teacher
Producer
Technologist
What Kinds of Technologies are Developed?

- Sociotechnical systems for instruction
- Tools and sociotechnical systems for analysis
- Tools and methods for data collection
- Sociotechnical systems for archiving and accessing large data banks
- Systems supporting publication and sharing of video papers
Standards Questions for Technologists

- What metadata standards will allow users to find, access and contribute video resources that match diverse needs?
- What instructional and research methods should interface designs support on a large scale?
- What are sociotechnical design standards for supporting creative, reflective, adaptive user communities?
- How do we design to meet legal and ethical standards for privacy?
Technology Gift-Wrapping vs. Technological Determinism
Standards: New Definitions

- Standards as Boundary Objects of Interdisciplinary Work.
- Standards as Design Tradeoffs
What Kinds of Things Might We Standardize for Videography Research?