



Video Data Collection, Processing, and Coding

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Presentation Outline

- Project Overview: Measures of Effective Teaching: Extension
- Challenges and Solutions:
 - Video Data Collection
 - Receipt Control and Review
 - Post-Data Collection Processing
- Similarities and Differences Posed by New Technologies



Project Overview

Measures of Effective Teaching – Extension

- Collect 16000 classroom videos from 330 teachers over 2 academic years
- Receipt and review video, link to hard copy artifacts, allow teacher review
- Deliver video to coding partner (University of Michigan)



Video Data Collection: Challenges

- Camera selection/deployment
 - Video: must see board, teacher, students
 - Audio requirement: must hear teacher and as many students as possible
 - Easy to use and durable
 - Supportable from home office
- Active consent: need 100% parental consent
- Video capture
 - Variety of environmental considerations: placement, lighting, etc.
 - Accompanying artifacts



Video Data Collection: Solutions Camera Selection/Deployment

- Evaluated available commercial options
- Eventually adopted “Best Buy” solution
 - 2 Commercial Kodak PlayTouch cameras
 - Wide angle lens for classroom camera
 - 2 Revolab wireless microphones
 - All customized into a single “kit” with one power source, charging for microphones, very portable...
- Key drivers: COTS + price



Video Data Collection: Solutions Camera Selection/Deployment(cont'd)





Video Data Collection: Solutions Camera Selection/Deployment (cont'd)

- Custom ship/store case
- Quick start materials
- Sent training teams to schools

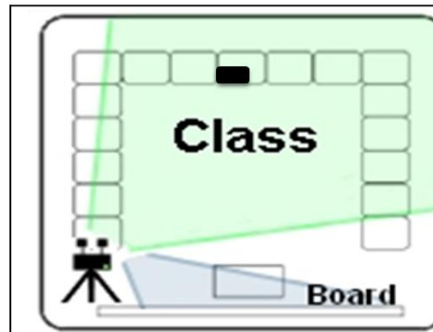




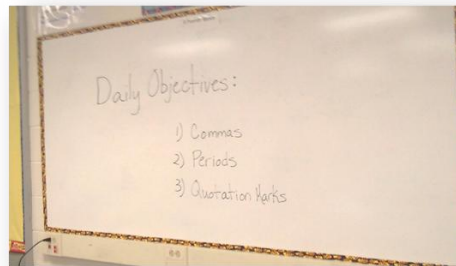
Video Data Collection: Solutions Video Capture

Developed guidelines for camera placement, sample:

Equipment Placement – Horseshoe



- The camera unit should be placed either next to the front right desk or front left desk.
- May need to tilt Board camera slightly in order to capture tall boards.





Video Data Collection: Solutions

Video Capture (cont'd)

Other Issues

- Synchronization
- Incremental incentives
- District schedules



Comparison Between Video and CASIC Data Collection

Similarities

- Need consent
- Facilitate data collection using supporting field materials
- Scheduling issues

Differences

- Consent at 100%
- Hardware: cameras
- Training
- Scheduling video capture in classrooms
- Staffing and support



Receipt Control and Review: Challenges

- Receipt all packet contents
- Validate student consent
- Link videos to study ID
- Review video captures for quality



Receipt Control and Review: Solutions Receipt All Packet Contents

- Capture packets arrive daily containing:
 - Transmittal Form
 - Student Roster
 - 2 SD cards
 - Supporting Materials (lesson plans, handouts, etc)
- Each packet's contents receive the same Receipt Control Number (RCN) which serves as study ID (the link that ties the materials all together).



Receipt Control and Review: Solutions Validate Student Consent

- “Active” student consent required
- Each teacher has copies of student roster, attached to transmittal form
- Student roster may note new students
- Home office staff compares roster to student consent forms kept on file
- Consent problems hold a video from further processing



Receipt Control and Review: Solutions Review Videos for Quality

- Problem: what is an acceptable video?
- Board cam rubrics

Board QC Criteria					
	5 Mins	10 Mins	15 Mins	25 Mins	40 Mins
▶ Board is legible	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Camera is focused	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Camera positioned correctly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video is not obstructed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Classroom cam rubrics

Classroom QC Criteria					
	5 Mins	10 Mins	15 Mins	25 Mins	40 Mins
▶ Camera focused	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Camera positioned correctly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instruction taking place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Student audio is clear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teacher audio is clear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Camera is not obstructed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rim of wide angle lens is not in view	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Receipt Control and Review: Solutions Review Videos for Quality (cont'd)





Comparison Between Video and CASIC Receipt Control

Similarities

- Supplemental hard copy
- Standard consent issues
- Receipt control

Differences

- Video shipped rather than sent
- Assign IDs after the fact
- QA Review



Post Data Collection Processing: Challenges

- Data delivery
 - Raw video files
 - Metadata
 - Transcoded web-ready video files
- Video available for review on web



Post Data Collection Processing: Raw video data delivery

Objective:

- Provide raw video to University of Michigan for archive.

Key Consideration:

- 7 GB of video, plus additional files





Post data collection processing: Solutions

Web-enabled video

- Video Services in the cloud: why?
 1. Storage
 2. Processing
 3. Bandwidth



Post data collection processing: Solutions

Web-enabled video

- Video Services in the cloud: what
 - Upload
 - Transcode
 - Host
 - Delivery
- Player
- Workflow



Post Data Collection Processing: Web-Enabled Video

Must upload the video files

mozilla Firefox

File Edit View History Bookmarks Tools Help

https://aspera.ingest...form.com/aspera/user/

theplatform.com https://aspera.ingest.theplatform.com/aspera/user/

Welcome west_bmgf01 (change user)

aspera connect server

aspera.ingest.theplatform.com

Download Upload Delete New Folder

	Name	Size	Last Modified
<input type="checkbox"/>	_bad_metadata		06-Feb-2012 10:33
<input type="checkbox"/>	_logs		09-Feb-2012 00:03
<input type="checkbox"/>	00021-Board-video-raw.mp4	1752MB	09-Feb-2012 11:38
<input type="checkbox"/>	00021-Board-video-raw.mp4.aspx	64B	09-Feb-2012 11:38
<input type="checkbox"/>	00021-Classroom-video-raw.mp4	3564MB	23-Jan-2012 11:34
<input type="checkbox"/>	00054-Board-video-raw.mp4	2802MB	27-Jan-2012 09:58
<input type="checkbox"/>	00054-Classroom-video-raw.mp4	2803MB	27-Jan-2012 09:58

Powered by Aspera

Aspera Connect Server (2.7.4.43614)

S3Fox Fiddler: Disabled



Post Data Collection Processing: Web-Enabled Video (cont'd)

Video transcoding

The screenshot shows the mpX web interface in a Mozilla Firefox browser window. The browser title is "mpx: Westat Gates Foundation - Mozilla Firefox". The address bar shows "mpx.theplatform.com". The page header includes "Account: Westat Gates Foundation" and "Rick Rogers | Sign out | Help |".

The main content area displays a media library with a table of items. The table has columns for "Media", "Title", and "Added". The "Media" column contains thumbnail images for each item. The "Title" column contains alphanumeric IDs, and the "Added" column contains timestamps.

Media	Title	Added
	00054-NA	2/9/2012 2:34 PM
	00185-PR	2/9/2012 2:24 PM
	00164-NA	2/9/2012 1:22 PM
	00168-NA	2/9/2012 12:31 PM
	00167-PR	2/9/2012 12:21 PM
	00010-NA	2/9/2012 12:00 PM
	00172-NA	2/9/2012 11:50 AM
	00173-NA	2/9/2012 11:45 AM
	00066-PR	2/9/2012 11:30 AM
	00097-NA	2/9/2012 10:23 AM
	00001	2/9/2012 4:40 AM
	00002	2/9/2012 4:30 AM
	00003	2/9/2012 4:20 AM
	00009	2/9/2012 4:10 AM
	00015	2/9/2012 3:59 AM
	00016	2/9/2012 3:49 AM

The right side of the interface features a "Preview" pane with a video player showing "No preview available". Below the preview is a "Metadata" section with fields for "Title" (00054-NA), "Description" (Teacher: ; Capture Date: 1/27/2012; Section: Alt1; Section ID: 5th Grade; Not Accepted), and "Categories" (Grade/5, Grade/5/unassigned, Subject/). There are also sections for "Policies", "Publish Status", "History", and "MET Extension".

At the bottom of the browser window, the status bar shows "S3 Fox Fiddler: Disabled".



Post Data Collection Processing: Web-Enabled Video (cont'd)

Custom player

00012
RCN: 00012; Subject: ELA; Grade: 5
Teacher: ; Capture Date: 12/15/2011; Section: 50100500; Section ID: Period 11; Approved

00012
Teacher:
; Capture
Date:
12/15/2011;
Section:
50100500;
Section ID: Period
11; Approved



Summary: The Life Cycle of a Video

- Captured in classroom
- Mailed to Westat
- Receipted and reviewed
- Copied to external drive and shipped
- Uploaded to the Platform via Aspera
- Transcoded to .MP4
- Streamed over Internet
- Moved to Amazon



Questions and Contacts

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