

Evaluation of the Persistent Issues in History  
Laboratory for Virtual Field Experience (PIH-LVFE)

Thomas A. Brush

Indiana University

John Saye

Auburn University

and the PIH-LVFE Development Team

Indiana University

Ugur Kale  
Jung Won Hur  
Yu Feng  
Lixin Chen  
Lijiang Guo  
Simone Symonette  
Theano Yerasimou

Auburn University

Jada Kohlmeier  
Linda Mitchell  
Charles Farmer  
Lamont Maddox  
James Howell

Paper presented at the Annual Meeting of the American Educational Research  
Association, April 13, 2007.

Please address correspondences to:

Thomas Brush  
Indiana University  
Education 2216  
201 N. Rose Ave.  
Bloomington, IN 47405

Phone: 812-856-8458  
Email: tbrush@indiana.edu

## Abstract

The Persistent Issues in History Laboratory for Virtual Field Experience (PIH-LVFE) combines a database of video cases of authentic classroom practices with multiple resources and tools to enable pre-service social studies teachers to become better teachers: teaching resources (lesson plans, assessment tools, activity materials) associated with the videos; pre- and post-interviews with classroom teachers; reflections of teaching practices by history and social studies educators; and online tools that allow faculty and pre-service teachers using the video database to annotate specific video segments, discuss teaching practices with peers and mentors, and integrate database resources into university classroom activities.

In this paper, we present the results of two studies designed to provide formative evaluation results from our initial implementations of PIH-LVFE resources with pre-service social studies teachers. In study A, we examined usability issues with regard to the PIH-LVFE interface with a small group of pre-service teachers. In study B, we examined pre-service teachers' perceptions of the usefulness and benefits of PIH-LVFE resources when they were integrated into a focused reflection activity utilizing one specific video case.

Evaluation of the Persistent Issues in History  
Laboratory for Virtual Field Experience (PIH-LVFE)

Introduction

One of the most formidable challenges facing beginning teachers as they struggle to understand the complexities of problems encountered while teaching is their lack of experience in the profession. Cognitive flexibility theorists refer to the three dimensions that experts perceive in a problem landscape (Spiro, Collins, & Thota, 2003; Spiro & Jehng, 1990). Novices tend to focus only on the two-dimensional surface features of a case. Experts incorporate an abstract third dimension, broader conceptual structures that help them organize and analyze information in order to reason through a problem or issue. Most beginning teachers have difficulty understanding this “third dimension” - specific strategies employed by experienced teachers to address issues encountered in the classroom.

Over the past two decades, many in the field of teacher education have called for an increase in the quantity and quality of field-based experiences (Darling-Hammond & Sykes, 1999; Soares & Soares, 2002; Wilson & Floden, 2003) in order to provide as much experience with this “third dimension” for beginning teachers as possible. Research has demonstrated that extended field experiences have had a positive impact on beginning teachers’ classroom management skills (Watzke, 2003), that field experiences can enhance beginning teachers’ feelings of empathy and caring towards their students (Goldstein & Lake, 2003), and that field experiences have positive effects on pre-service

teachers' understanding and application of content standards in their teaching (Darling-Hammond & Youngs, 2002; Taylor, 2002).

Unfortunately for many pre-service teachers, numerous issues hinder the quantity and quality of the field-based components of their teacher education experiences.

Difficulties in finding placements, numbers of students to place, and limited funds for supervision are some of the reasons why many teacher education programs are forced to include few (and sometimes no) field experiences in their teacher certification program (Allen, 2003; Wilson & Floden, 2003). Even in institutions that provide multiple field experiences to their pre-service teachers, it is difficult to expose them to quality models of a wide variety of effective teaching practices focusing on a multitude of prospective strategies effective with specific students (Posner, 1996; Smoot, 2003). Teacher candidates need to observe, interact with, and receive targeted feedback on their initial attempts at teaching and teaching related activities from experienced and competent teachers who are skilled at mentoring. However, some mentor-teachers providing field experiences for pre-service teachers lack the experience and expertise to effectively model and coach various teaching strategies (e.g., effectively integrating technology, implementing inquiry activities) in their classrooms (Brush et al., 2003; Teale, Leu, Labbo, & Kinzer, 2002). In addition, as Teale et al. (2002, p. 655) state, "...teachers who provide outstanding...instruction are usually in such demand to assist with staff development and mentoring first- and second-year teachers in their building that they rarely have time to supervise pre-service field work...". Finally, even if mentor-teachers do have expertise in one or more of these areas, they may not have the *opportunity* to

model diverse teaching strategies in the limited amount of time a pre-service teacher is present in the classroom.

### Video Cases in Teacher Education

These issues have led many researchers to suggest that the development of rich, case-based video databases of teaching practices may serve to supplement actual classroom experiences (Chaney-Cullen & Duffy, 1998; Hung, 2002; PT3 Group at Vanderbilt, 2003; Savenye et al., 2002; Schrader et al., 2003; Stirling, Williams, & Padgett, 2004). The case analysis approach has been highly successful in teaching law, medicine, and even social work (Schrader et al., 2003). Similar to education, these are professions in which a wide variety of potential issues can arise in a given professional situation, and educators need to provide opportunities for trainees in these professions to experience as many authentic situations as possible within their training experiences.

*Overview of the PIH-LVFE.* Over the past three years, we have developed a video case database of wise teaching practices focusing on inquiry-based approaches to teaching history and civics. The Persistent Issues in History Laboratory for Virtual Field Experience (PIH-LVFE) combines a database of video cases of authentic classroom practices with multiple resources and tools to enable pre-service social studies teachers to become better teachers: teaching resources (lesson plans, assessment tools, activity materials) associated with the videos; pre- and post-interviews with classroom teachers; reflections of teaching practices by history and social studies educators; and online tools that allow faculty and pre-service teachers using the video database to annotate specific video segments, discuss teaching practices with peers and mentors, and integrate database resources into university classroom activities.

The theoretical framework for the cases included in the PIH-LVFE is based on problem-based historical inquiry instruction, or PBHI (Saye & Brush, 1999, 2004). PBHI differs from what many times occurs with more traditional social studies instruction or other types of inquiry in that instructional activities focus students on examining persistent societal problems in a particular historical context. In the PBHI curricular framework, each unit of study begins with the explicit posing of a persistent societal problem that provides the motivating context for disciplined inquiry. Unit activities engage students in PBHI to explore the featured problem as it is instantiated in the particular historical period of study. In the process, students develop foundational knowledge, clarify key concepts, and confront pertinent ethical issues. As a culminating unit activity, students propose problem solutions and defend them with historical evidence. Such study should develop citizens who can critically weigh evidence and use knowledge generated from sound historical analysis to inform their decisions about these essential societal questions as they arise in the present and future.

Currently, the PIH-LVFE includes over 20 cases that exemplify actual classroom implementations of PBHI lessons. Each case includes from 20 to 40 minutes of classroom video, reflections of the implementation of the classroom activity by the teacher, pre- and post-interviews with the teacher, state and national standards associated with the activity, and any resources used by the teacher and/or students during the activity (Brush et al., 2005). Topics within the database include the African- American Civil Rights Movement, the Cold War, the U.S. Civil War, George Washington's Presidency, the U.S. in the 1920s, and the War in Iraq.

## Key Features of the PIH-LVFE

*Structured video case organization.* We developed a unique organizational structure to help pre-service teachers understand the variety of instructional strategies related to problem-based historical inquiry (see Figure 1). We categorized all the video cases into four groups based on main teaching strategies: Powerful Learning Strategies (PLS), Models of Exemplary Performance (MEP), Meeting the Challenges of PBHI (MCP) and Developing Expertise in PBHI (DEP). Each category includes several video cases presenting how the specific strategies are applied in actual classrooms.

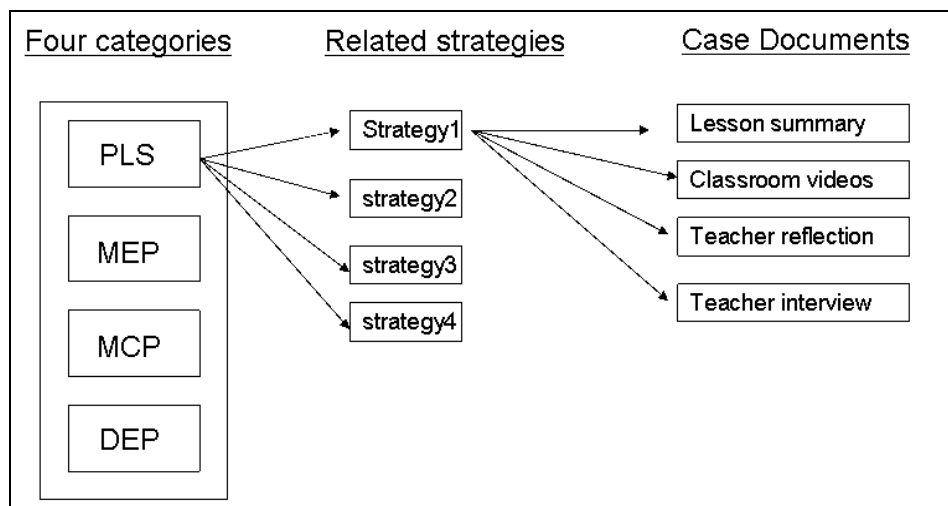


Figure 1. Organization of video cases.

*Multi-modal information.* Each case includes a variety of resources designed to assist pre-service teachers understand lesson ideas, standards, classroom conditions, and teacher's instructional decisions. Pre-service teachers have opportunities to examine the overall structure and flow of the lesson, view video of lesson implementation, view reflections of the lesson implementation by the classroom teacher, and access all lesson materials and artifacts used by the teacher.

*Multi-framed interface.* We designed a multi-frame based interface that enables pre-service teachers to access the necessary artifacts within one webpage. The general design of the interface includes (See Figure 2):

- Top frame: Includes introductory information such as the lesson topic, grade level, and focus inquiry question for the lesson.

- Left bottom frame: Area that displays lesson summary and lesson narrative of the given case, and descriptions of each artifact included in the case.
- Right bottom frame: Area that displays all video clips associated with the case, and any other multimedia artifacts (e.g., images, photographs).

The screenshot displays a web-based interface for a video case. At the top, a yellow-bordered box labeled "Top frame" contains the following metadata:

- **Topic** : Civil Rights: Interactive Slide Lecture
- **Persistent Issue** : When, and in what ways, are people justified in seeking social change?
- **Central Question** : What strategies should civil rights participants use to achieve greater social justice in 1968?
- **Grade Level** : 10
- **Case Type** : Interactive Lecture

Below this is a breadcrumb trail: "Main Menu > Powerful Learning Strategies > Civil Rights: Interactive Slide Lecture". A red arrow labeled "bread crumbs" points to this trail.

The "Case Documents" section contains two buttons: "Printable Version" and "Case Documents". A red arrow points from the "Case Documents" button to the "Classroom video" section.

The "Classroom video" section, labeled "Left frame", lists the following resources:

- Introduction to the Lesson
- Little Rock: Asking Questions of the Witnesses
- Sit-Ins - Historical Empathy: Interpreting the Image
- Sit-Ins - Historical Empathy: Exploring Perspectives
- Sit-Ins: Contextualizing the Image
- Black Panthers: Interpreting the Images
- Black Panthers: Interpreting the Message - Closure on Three Strategies

Below this list is a "Teacher reflections" section. A red arrow labeled "Grouping resources" points to the video list.

The "Right frame" contains a video player with a yellow background. The title is "Powerful Learning Strategies & Meeting the Challenges of PBHI". It features the PIHNet logo (scales of justice) and a video thumbnail showing a classroom. The text "Civil Rights: Interactive Slide Lecture" is displayed at the bottom of the video player.

Figure 2. Frame structure and relevant functions of video case interface.

*Integral design.* The PIH-LVFE has been designed as an integral component of an overall web-based environment designed to support PBHI. This environment, known as the Persistent Issues in History Network (or PIHNet), provides teachers with tools and resources to facilitate the creation of PBHI units and activities (for more information on PIHNet, please refer to Brush et al. (2005b), and Saye and Brush (2005)). Existing tools available within PIHNet have been modified to allow access to the PIH-LVFE video

cases. For example, the “activity creator”, an existing PIHNet tool that allows teacher educators to access, annotate, and sequence virtually any web-based resources into a more structured learning activity, also can be used with any element of a PIH-LVFE video case to allow teacher educators to focus pre-service teachers’ attention on particular segments of a video case that may best exemplify a specific teaching strategy (See Figure 3).

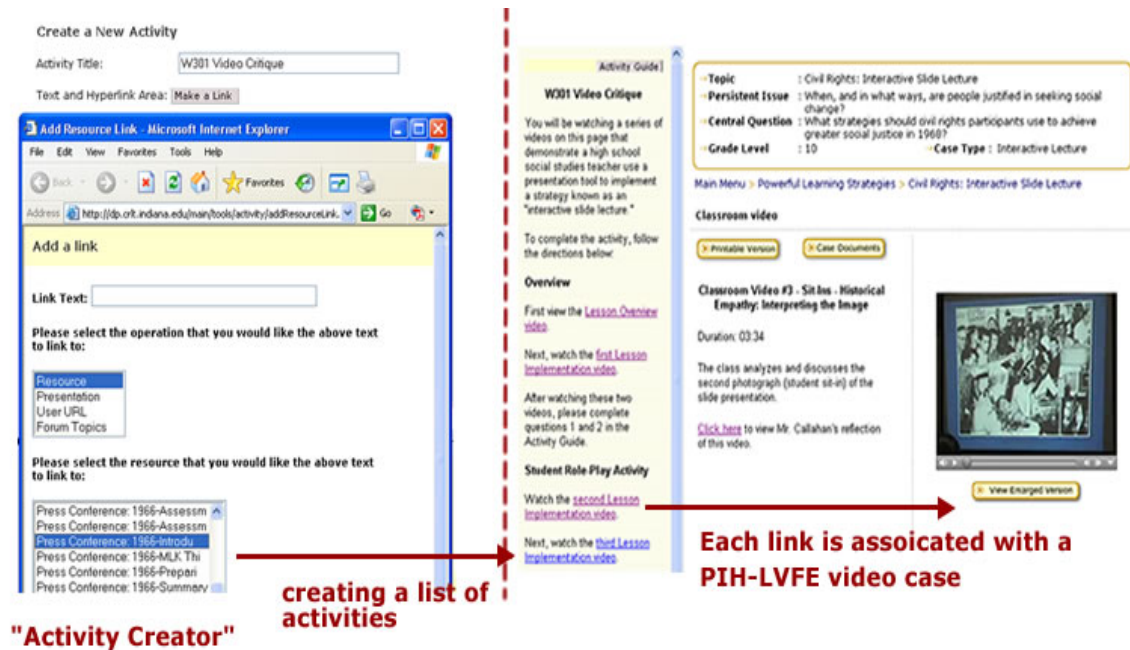


Figure 3. A sample activity created by Activity Creator with a PIH-LVFE video case.

### Purpose of Paper

The purpose of this paper to present the results of two studies designed to provide formative evaluation results from our initial implementations of PIH-LVFE resources with pre-service social studies teachers. In study A, we examined usability issues with regard to the PIH-LVFE interface with a small group of pre-service teachers. In study B, we examined pre-service teachers’ perceptions of the usefulness and benefits of PIH-

LVFE resources when they were integrated into a focused reflection activity utilizing one specific video case.

Method: Study A

Participants

Nine pre-service teachers (1 male, 8 females) enrolled in a teacher education program of a Midwest American university participated in the study. Of all the participants, six were majoring in elementary and three in secondary education. Table 1 below delineates participants’ main computer skills as they indicated on a questionnaire administered prior to the usability testing. A majority of the participants rated their computer skills average or above average.

Table 1. Computer skills of participants.

	<b>Extremely Poor</b>	<b>Below Average</b>	<b>Average</b>	<b>Above Average</b>	<b>Extremely good</b>
Browsing on the web	0 (0%)	0 (0%)	2 (22%)	<b>6</b> <b>(66%)</b>	1 (11%)
Downloading documents from web	0 (0%)	0 (0%)	4 (44%)	<b>4</b> (44%)	1 (11%)
Using Microsoft software programs	0 (0%)	0 (0%)	<b>5</b> <b>(56%)</b>	2 (22%)	2 (22%)
Using webpage development software	0 (0%)	4 (44%)	<b>5</b> <b>(56%)</b>	0 (0%)	0 (0%)
Using graphic/presentation software	0 (0%)	4 (44%)	<b>4</b> <b>(44%)</b>	1 (11%)	0 (0%)

Setting

Each usability test session took place in a special computer lab in the School of Education. There was a computer connected to the Internet that participants used to access the PIH-LVFE online database. A video camera recorded participants’ actions as

they completed tasks using the computer. A semi-transparent wall screen was placed between the participant and the video camera in order to avoid any possible distractions due to the presence of the camera. A digital mixer tool was used to capture the inputs from both the video camera and the computer screen to a mini digital video tape. A TV and a DV tape player were present in the corner of the lab to display the recorded video captured from each session.

### Design

For the current study, we employed two usability testing protocols, concurrent and retrospective think aloud, to capture participants' use of the interface and their suggestions regarding potential improvements to the interface (Henderson, Smith, Podd, & Varelaalvarez, 1995; Van Den Haak, De Jong, & Schellens, 2003). In concurrent think aloud protocol, participants were asked to express their thoughts verbally while completing the given tasks. In retrospective think aloud protocol, participants were asked to reflect on their own performance during the task completion. This post reflective method was used in order to gain more insight on possible problems that were not necessarily expressed by the participants or observed by the researchers during the concurrent think aloud (Van Den Haak et al., 2003).

### Data Sources

*Pre-questionnaire.* Prior to each the usability session, each participant completed an 11-item pre-questionnaire regarding basic computer skills and internet use as well as demographics. Specifically, the questions asked participants their gender, major program, year in the program, amount of time they spend using the computer and the Internet on a

daily basis, whether they had Internet access at home, and their comfort level regarding specific computer skills.

*Videotaped sessions.* Participants' actions during each session were recorded through a video camera in order to identify usability problems and observed navigation patterns during their task completion.

*Observation notes.* Two researchers—one who directed participants to complete the usability tasks and one who controlled the video recording tools - took notes during each session. These included participants' navigational problems, reactions toward information presented, and verbal expressions during their experience.

*Post-reflections* Participants watched their videotaped performances after their usability testing sessions. They were encouraged to mention any problems that they did not verbally express during the session. They were also asked their overall experience as well as suggestions they may have. Researchers took notes during participants' post reflections.

### Procedure

A total of nine usability testing sessions took place within two weeks. There were two researchers and one participant present in each session. At the beginning of each session, the participant was asked to fill out the demographic/computer skills questionnaire. After completion of the questionnaire, one of the researchers directed the participant to carry out a list of general and specific tasks related to the use of the online database while the other researcher controlled recording tools and took notes.

For the purposes of the usability test, each participant was directed to the same video case in the database after a period of initial exploration. The video case focused on

the topic of the Cold War, and specifically addressed the issues surrounding President Truman's decisions regarding the Berlin Airlift. Refer to Table 2 below for a detailed description of the usability testing procedures.

Table 2. List and duration of participant usability tasks.

<p><b>Initial Exploration (1-3 minutes):</b> Participants were directed to explore the database starting from its homepage. They were encouraged to express their thoughts and actions verbally while navigating within the site as if they were talking to themselves. They were asked the following questions as they started exploring:</p> <ul style="list-style-type: none"><li>○ What do you think this website is about?</li><li>○ Where would you choose to go after this and why?</li></ul>
<p><b>Looking for Teaching Ideas in General (5-10 minutes):</b> Participants were asked to look for any information regarding teaching ideas and strategies in history. They were told to navigate within the site as they wish. They were again encouraged to express their thoughts and actions verbally during their search.</p>
<p><b>Looking for Teaching Ideas Related to the Cold War (5-10 minutes):</b> Participants were directed to search the site for any information regarding various teaching strategies related to the Cold War. This topic was chosen because of the high amount of information the relevant developed video case includes. Participants were again asked to think aloud as they searched.</p>
<p><b>Looking for Video Clips (specific task) in the Cold War Video Case (1-2 minutes):</b> Participants were asked to locate and view video clips within the Cold War video case. This time, they were not asked to think aloud though they were free to speak if they wished.</p>
<p><b>Looking for other lesson artifacts in the Cold War Video Case (1-2 minutes for each artifact):</b> Participants were directed to locate other lesson artifacts in the Cold War topic (i.e., the summary/narrative of the lesson, lesson materials, one video clip of the teacher's reflections on the lesson, one video clip of a pre-interview with the teacher, one video clip of a post-interview with the teacher, and one case background document).</p>

After each participant completed all of the tasks, they were given a five-minute break. After the break, they were seated in front of the TV to watch their recorded sessions. They were asked to further reflect on their performance and express their

thoughts as a part of retrospective think aloud protocol. The researchers took notes during the participants' reflection. Each reflection session lasted approximately 30 minutes.

### Data Analysis

Immediately after each usability session, the videotaped data as well as observation and post reflection notes were examined in order to identify usability problems and observed navigational patterns. The post reflection data were utilized to identify other possible problems that we were not able to observe otherwise during the sessions. Researchers exchanged their notes and summarized the findings for each session. Then, for each session they prepared a combined report that described major usability issues encountered, positive and negative reactions observed, and participants' overall experiences with the website. The report of each session was continuously compared with the previous ones in order to identify common and individual issues with regards to the use of the website. After the completion of the last usability session, researchers examined all the reports and summarized the key findings.

## Results: Study A

### Results – Interface

*Locating video clips.* When asked to locate and view the classroom video clips related to the case they were viewing, seven of the nine participants could not find the videos without assistance from the researcher. Although most of the participants were able to navigate from the PIH-LVFE's main page to the specific Cold War case, they did not notice the link on the page that connected to the index of lesson artifacts and classroom videos. Eight participants stated that the label used for the link - "Case

Documents” - was so vague that they did not think that the classroom videos would be accessed through this link.

*Scrolling function.* Each classroom case in the database uses a multi-frame based interface. While this interface allows for displaying necessary artifacts within one webpage, it requires users to scroll down and up when reading the introductory information such as the lesson summary and the lesson narrative. None of the participants appeared to encounter problems scrolling to read the lesson summary and lesson narrative of the Cold War case. When asked about their experience with reading the scrollable text, six participants stated that they were generally not distracted by scrolling to read the text. However, they also mentioned that they would prefer to read the text in a larger window that would allow for less scrolling. One participant added that she found the scrollable text in the frame discouraging for her to read the entire lesson summary and lesson narrative.

*Professional look and clear organization.* Six of the participants stated that they found the database very professional and well organized. As one participant mentioned, “...it looked very professional and everything was very organized that I never felt like questioning its accuracy [of the information].” Four participants stated that they were also able to navigate most of the time because of the well-organized information presentation. For instance, participants found the tables use to organize the cases (e.g., Powerful Learning Strategies) and the information presented in the tables useful to easily look for relevant teaching ideas and information. Seven participants successfully located the Cold War case through the information presented in the tables.

*Bread crumbs.* Each case includes navigational bread crumbs designed to enable users to recognize where they were located within the database and to assist them in navigating between cases. Half of the participants did not use bread crumbs. Instead, they preferred using the back and forward buttons of the browser for their navigation. One participant stated that she became confused when using the bread crumbs to navigate within the video case. She stated that the bread crumbs moved her back to the index of video cases, when she thought that the breadcrumbs were designed to assist with navigation within the specific case.

Another participant also found the location of the bread crumbs confusing. She mentioned that she initially did not notice the information on the top frame (above the bread crumbs), which included introductory information for the case (e.g., lesson topic, grade level, instructional strategy). She stated that she generally assumed most of the information above navigational bread crumbs in a typical website would be either banners or advertisement. Thus, she never thought the top frame information was related to the case she was exploring.

### Results – Teaching

*Presentation of cases.* When visited, the default page of any classroom case presents the lesson summary and narrative as scrollable text in the left frame of the interface. Five participants mentioned that they would prefer to see different information in the first default page instead of the lesson summary and narrative. For example, two participants stated that they would be interested in viewing lesson standards first as they might need them for a possible lesson plan they would be developing in history. Two participants preferred to have access to the classroom video clips first since they would

be more interesting and engaging. As one participant stated, “I’d like to watch videos first instead of reading [the lesson summary]....then, I may choose to read about the lesson if I find the videos interesting.” Another participant stated that she preferred more visual information as opposed to textual information regarding the case. She stated that she would choose to first watch the teacher’s reflections of their implementation of the lesson as opposed to the actual classroom videos as they may provide useful information about the lesson from the teacher’s point of view. One participant suggested that the index of all materials associated with the video case (lesson summary, artifacts, classroom videos, teacher reflections) should be the default page of each case. According to her, this would provide more choice regarding what information to access within the case.

*Labels of organizational tables.* As stated earlier, classroom cases in the PIH-LVFE are grouped into four main tables: Powerful Learning Strategies, Models of Exemplary Performance, Meeting the Challenges of PBHI, and Developing Expertise in PBHI. Video cases in each category present how specific strategies are applied in actual classrooms. Five participants mentioned that they did not understand the differences among the categories. These individuals chose to explore only the “Powerful Learning Strategies” table since it was the first in the main category list and seemed to have the most amount of information. One participant said the word “Powerful” sounded like effective learning strategies, thus, she chose to examine the cases in this table. She added that she was not sure of the meanings of the labels for the other three tables, thus she did not explore any of the cases in those tables.

## Method: Study B

As stated earlier, the purpose of the second study was to examine student reactions to a specific video case activity integrated into a pre-service methods course. In this study, an activity focusing on a teacher's use of a specific teaching strategy (known as an "interactive slide lecture") was designed using the activity creation tools. As opposed to having students browse the entire video case, the activity was designed in order to focus attention on several components of the video case. Specifically, the activity focused student attention on the overview of the lesson provided by the teacher, the classroom video segments dealing with the lesson implementation, and the teacher's reflection regarding the effectiveness of the particular teaching strategy exemplified in the video case. As students watched each video clip, they were asked to answer several questions designed to focus their attention on various aspects of the case and/or comments made by the classroom teacher. Figure 4 provides a screenshot of the activity.

Decision Point - W301 Video Critique

Activity Guide

### W301 Video Critique

You will be watching a series of videos on this page that demonstrate a high school social studies teacher use a presentation tool to implement a strategy known as an "interactive slide lecture."

To complete the activity, follow the directions below:

**Overview**

First view the [Lesson Overview video](#).

Next, watch the [first Lesson Implementation video](#).

After watching these two videos, please complete questions 1 and 2 in the Activity Guide.

**Student Role-Play Activity**

Watch the [second Lesson Implementation video](#).

Next, watch the [third Lesson Implementation video](#).

After watching these two videos, please complete question 3 in the Activity Guide.

**Challenges/Use of Technology**

Watch the [fourth Lesson Implementation video](#).

**Topic** : Civil Rights: Interactive Slide Lecture

**Persistent Issue** : When, and in what ways, are people justified in seeking social change?

**Central Question** : What strategies should civil rights participants use to achieve greater social justice in 1968?

**Grade Level** : 10 **Case Type** : Interactive Lecture

Main Menu > Powerful Learning Strategies > Civil Rights: Interactive Slide Lecture

**Pre-interview**

[Printable Version](#) [Case Documents](#)

**Pre-Interview Question #3 - Curricular Context**

Duration: 01:52

Mr. Callahan discusses how this particular lesson fits within his overall curriculum.




Figure 4. Video case activity assigned to students.

### Participants and Setting

Participants included pre-service teachers (N = 75) from four sections of a secondary social studies methods class specifically focusing on technology integration issues in the social studies classroom. The class met face-to-face for one hour each week throughout the semester. Two of the classes were taught in the Spring semester of 2006, and two of the classes were taught during the Fall semester of 2006. Both classes were taught at the same major Midwestern university in which the usability tests were

performed. For purposes of the study, one of the researchers led the classes specifically focusing on the discussion of the video cases for all four sections of the methods class.

### Data Sources

*Video case critique* – each participant completed a written critique of both the teaching methods used by teachers in the cases, and the overall usability of the video case interface using an “activity guide” designed by one of the researchers. The activity guide aligned questions with components of the video case students were assigned to view.

Specifically, the activity guide asked the following questions:

1. Think about what kind of preparations that teacher might need to make to implement this lesson. What would the teacher need to think about, both from a technological standpoint and a pedagogical standpoint?
2. What social studies skills would a lecture/discussion like this allow you to foster in your students?
3. What challenges did the teacher face when implementing this lesson?
4. How did the technology used add to this lesson?
5. Do you believe that the technology makes the lesson more “seamless” and “engaging?” Why or why not?
6. Using the Indiana Standards, what social studies standards might this lesson address?
7. What strategies would you use to assess student performance in this lesson?
8. Please take a moment to comment on the quality of the media used in the video cases. Were the videos easy to load and view? How was the sound quality of the videos?

9. Comment on the overall video case interface. Was it easy to navigate to each video? Did you have any problems completing the activity online?
10. Overall, what did you like best about this video case activity? What did you find most useful?
11. What did you like least about this video case activity? What suggestions do you have for improving this activity?

### Procedures

During the 2006 Spring semester, one of the researchers provided an overview of the PIH-LVFE interface to participants as part of a whole-class activity. The instructor completed a document analysis activity with participants during class. At the end of class, the instructor debriefed the activity with participants, focusing specifically on the benefits and challenges of implementing this type of activity with high school students. At the beginning of the next class, the instructor presented several videos from the PIH-LVFE database in which a teacher was implementing a similar document analysis activity with students. After watching the videos, the instructor led the class in a discussion regarding the strategies the teacher in the video used to successfully implement the activity with his students.

Participants were then asked to complete a video critique activity individually. Participants were provided with a hard copy of activity guide, and told that the guide was also available online. They were provided with access to a second video case in which a teacher implemented an inquiry strategy known as an “interactive slide lecture” to a group of students. Participants were asked to complete the activity guide as they reviewed

the video case, and to bring the completed template to class with them. Participants were given two weeks to complete the video critique activity.

After completing the activity, the researcher conducted a class debrief with participants, once again focusing on the usefulness of the strategy exemplified in the video case, and how the teacher in the video successfully implemented the strategy with his class. The instructor then collected all of the completed activity guides from participants.

A similar procedure was followed for methods classes conducted in the Fall 2006 semester.

### Data Analysis

For purposes of this formative evaluation, data analysis focused on participant responses to the items on the activity guide dealing with the usefulness and quality of the video case (items 8 – 11). Both descriptive statistics and content analysis procedures were used to analyze the data. From a usability standpoint, all of the completed video critiques were analyzed in order to determine strengths and weaknesses of both the video case interface, and the video critique activity in general. From a teaching perspective, completed video critiques were analyzed in order to participants' general reactions to the video case activities, and the portions of the vide case that participants found most useful.

## Results: Study B

### Results - Usability

*Quality of the media.* Overall, students were pleased with the quality of the media available in the video case they examined. In terms of the video, 80% of participants

stated that the media quality was good and that the videos were easy to load. The most common concern had to do with “starting” and “stopping” of the videos due to a slow Internet connection. Students who completed the video case assignment using the campus network had no problems – however, students using external connections from home (e.g., modem connections, some dsl connections) expressed frustration with the long download times.

The major concern expressed by participants dealt with the quality of the sound. Thirty-five percent of participants stated that they had difficulty with the audio – particularly with the student dialogue in the video case.

*Quality of the interface.* Participants were overwhelmingly positive about the video case interface. Eighty-five percent of participants stated that they found the interface easy to use and that they had no problems completing the activity. As one participant stated, “This was extremely easy to use and that says a lot coming from a technology illiterate person like me.” Another participant stated, “I have used several of these types of interfaces before, and this is the first one that has actually been fully functioning and easy to use!” Similarly, one participant stated: “This was pretty user friendly and easy. I liked doing this assignment and I always dread going to sites that my teachers ask us to visit. Something always goes wrong.”

Another participant commented specifically on the structure of the activity: “I thought the side navigation area was very helpful and went in chronological order. The questions corresponded to each video.” The only issue repeated by several participants was difficulties logging in to the site in order to access the video cases.

### Results - Teaching

*Student comments and suggestions from video critiques.* When asked what they liked best about the video critique activity, two general themes emerged. Forty-one percent of participants stated that they liked seeing how the teacher actually taught the lesson, “being a fly on the wall...” and “outside the classroom bubble.” One participant stated, “I think this website is a great idea and a good tool. Seeing a good teacher teach is always going to be beneficial.” Another participant stated, “This is a great example of good social studies teaching, instead of having our professors tell us about good teaching, I could see it for myself. Good videos and they allowed me to observe without traveling an hour to a high school to observe.”

Participants also discussed the benefits of being able to view a teaching strategy that they could potentially incorporate into their own classrooms. One participant stated, “It [the video case] gave me an example of what I could do in my classroom in the future.” Similarly, another participant stated, “I love watching other teaching strategies. I like to see different techniques so I am able to use those techniques in my own classroom.”

Twenty-six percent of participants stated that they liked being able to get “behind the scenes” through the pre- and post-interviews with the teacher. Participants specifically stated that they liked being able to see how the teacher planned for the lesson and how he reflected about the lesson after its implementation. One participant specifically stated, “I liked seeing the pre-planning of the lesson.” Another participant said, “I thought it was actually worthwhile and I’m glad I watched [the videos].”

## Discussion

The purpose of this paper was to present the findings of two studies designed to provide formative data regarding the Persistent Issues in History Laboratory for Virtual Field Experience (PIH-LVFE), a video case database of classroom teaching strategies focusing on problem-based historical inquiry. The two studies were devised in order to determine the potential usefulness of the PIH-LVFE as both an open-ended resource for pre-service and in-service teachers to be able to browse and examine various strategies, and as a more focused resource for teacher educators to develop structured activities that could be integrated into teacher education courses or other teaching methodology experiences.

As a tool for teacher educators, the combination of the PIH-LVFE with activity creation tools already available in the overall PIHNet environment demonstrates promise. Results of the study in which a specific video case activity was developed and implemented in a pre-service methods class (Study B) suggest that pre-service teachers find the use of video case activities such as the one designed for this study useful for analyzing specific teaching strategies understanding the process a teacher goes through in developing and implementing a specific teaching strategy. In addition, responses from students participating in the study also suggest that video case activities can have a positive impact on strategies pre-service teachers may be willing to implement in their teaching. One of the themes that emerged from analysis of data from Study B was that participants believed watching the video case provided them with insight into how they might incorporate the techniques exemplified in the case in their teaching in the future.

Based on these results, additional research more closely examining the impact video case activities such as these can have on future teaching practices may be warranted.

Somewhat in contrast to Study A, data from Study B indicated that participants found the video case activity created using the PIHNet activity creation tool easy to navigate and complete, and the overall activity very useful. When asked for suggestions for improvement, surprisingly, over 25% of participants stated that they had no suggestions and enjoyed the activity. These data may imply that the PIH-LVFE is most useful when specific components of a video case are selected and integrated into an activity – particularly when using the PIH-LVFE with pre-service teachers.

As a stand-alone resource for examining a variety of different teaching strategies, results of our initial usability test (Study A) suggest that several modifications to the overall PIH-LVFE interface are needed in order to make this resource more intuitive and user-friendly. These suggestions are discussed below. Refer to Figure 5 for the proposed redesign of the PIH-LVFE interface.

*Eliminate “Case Documents” link.* A majority of participants did not understand the function and purpose of the “Case Documents” link. Because of this, many participants had difficulty actually locating the videos associated with each video case (since it was necessary to click on the “Case Documents” link to gain access to the list of video clips). Based on these results, we plan to eliminate the “Case Documents” link and develop a new method for users to navigate to various artifacts within a video case. This method is described in more detail below.

*Modify the method of navigating through video case artifacts.* Several participants stated that they would prefer to see different information – particularly the classroom

video clips – as opposed to the lesson summary and narrative, when they initially access a video case. While we believe that displaying the lesson summary and narrative as the introduction to each video case has important advantages from an instructional perspective, modifying the interface to allow users to access other components of the case (such as the classroom videos) quickly and easily regardless of where they are located within a video case is desired by users. Thus, we plan to provide a menu of all video case artifacts on the left side of the screen. This menu will be available whenever a user is exploring a specific video case.

*Widen the text area in the left frame.* Participants suggested enlarging the frame used to display textual information within a case. Currently, we have one consistent design for all case artifacts – a left frame that displays textual information, and a right frame that displays multimedia (such as videos and images). However, many of the “text-heavy” artifacts such as the lesson summary/narrative do not have any associated media. Our current strategy is to display a default image in the right frame for these types of artifacts. To provide additional space, we plan to eliminate the right frame for artifacts that have no associated media. Thus, we will double the size of the area available for text.

*Relocate the breadcrumbs.* Several participants found the location of the breadcrumbs confusing. Participants viewed the breadcrumbs as a method for navigating among artifacts within each video case. In fact, the breadcrumbs were designed to allow an easy method for users to navigate *between* different video cases. In addition, the location of the breadcrumbs made some participants believe that the lesson summary information (located directly above the breadcrumbs) was not related to the video case

they were currently exploring. We believe that relocating the breadcrumbs to the top of the screen (above the lesson summary information) will alleviate these issues.

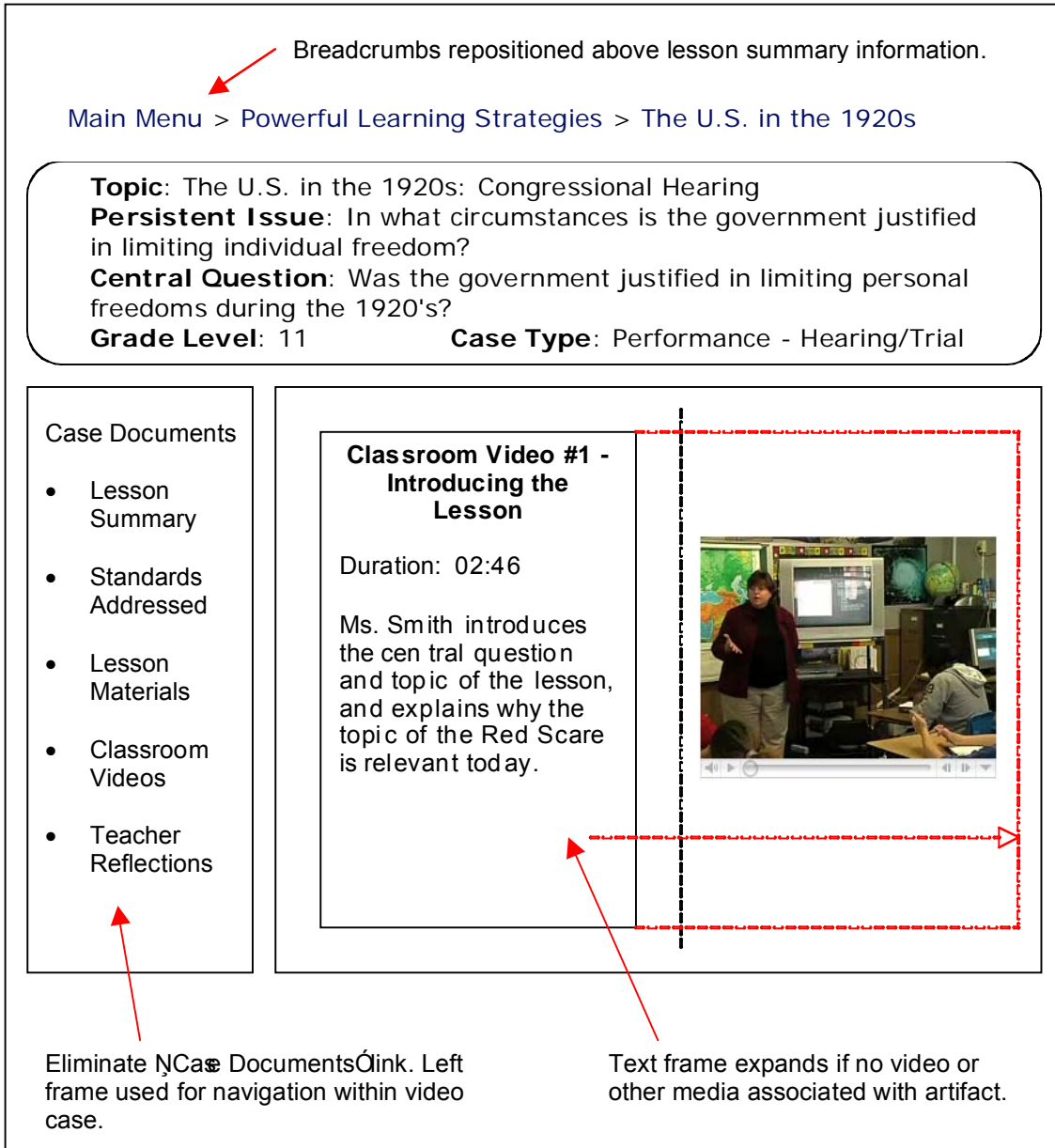


Figure 5. Proposed redesign of PIH-LVFE interface.

Conclusion and Future Directions

Our plan is to use the data obtained from this initial iteration of usability testing and formative evaluation to refine and enhance the PIH-LVFE interface and tools as we continue to both integrate additional PIH-LVFE resources into teacher education methods courses, and provide additional cases for use by teacher educators and in-service teachers. In addition, we plan to examine and analyze results of additional PIH-LVFE activities utilized by methods faculty in order to develop and refine models that will engage pre-service teachers in more meaningful applications of the video case resources promoting PBHI teaching practices.

Our ultimate goal is to continue to refine effective models for preparing pre-service teachers to implement PBHI practices in their future classrooms, and share those models with the professional community. We believe that simply providing teacher educators with a collection of online video cases does not guarantee that these resources will actually be used. If teacher education faculty lack appropriate tools and models to integrate the PIH-LVFE resources into their existing methods classes, there is little chance that the resources will be utilized to their fullest potential. We view the PIH-LVFE as a tool for facilitating the development of a “community of practitioners” who will both learn from each other and share expertise with each other. As teacher education faculty continue to integrate PIH-LVFE into their courses and programs, they will be able to share their own strategies for disseminating PBHI practice to pre-service teachers, as well as collaborate on the development of additional PBHI activities and resources.

## References

- Allen, M. Eight questions of teacher preparation. What does the research say?  
Eric Document Reproduction Service # ED479051.
- Brush, T., Glazewski, K., Rutowski, K., and others. (2003). Integrating technology into a pre-service teacher training program. The PT3@ASU project. Educational Technology Research and Development, 51(1), 57-72.
- Brush, T., Saye, J., and the PIHNet Development Team. (2005, October). Modeling problem-based inquiry in social studies. The Persistent Issues in History Laboratory for Virtual Field Experience. Paper presented at the annual meeting of the Association for Educational Communications and Technology, Orlando, FL.
- Brush, T., Saye, J., and the PIHNet Development Team. (2005b, March). Tools to promote problem-based inquiry in social studies: The Persistent Issues in History Network. Paper presented at the annual meeting of the Society for Information Technology and Teacher Education, Phoenix, AZ.
- Chaney-Cullen, T., & Duffy, T. (1998). Strategic teaching frameworks: Multimedia to support teacher change. Journal of the Learning Sciences, 8, 1-40.
- Darling-Hammond, L., & Sykes, G. (Eds.). (1999). Teaching as the learning profession: Handbook of policy and practice. San Francisco: Jossey-Bass.
- Darling-Hammond, L. & Youngs, P. (2002). Defining “Highly Qualified Teachers”: What does “Scientifically-Based Research” actually tell us? Educational Researcher, 31(9), 13-33.
- Goldstein, L. & Lake, V. (2003). The impact of field experience on pre-service teachers’ understandings of caring. Teacher Education Quarterly, 30(3), 115-132.

Henderson, R. D., Smith, M. C., Podd, J. & Varelaalvarez, H. (1995). A comparison of the four prominent user-based methods for evaluating the usability of computer software. Ergonomics, 38, 2030-2044.

Hung, D. (2002). Learning through video-based narratives within the cultural zone of proximal development. International Journal of Instructional Media, 29(1), 125-140.

Posner, G. J. (1996). Field experience: a guide to reflective teaching. White Plains, NY: Longman Publishers USA.

Savenye, W., Brush, T., Middleton, J., and others. (2002, April). Improving teaching with technology: The “Best Practices” video database project. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.

Saye, J.W. & Brush, T. (2005). The persistent issues in history network: Using technology to support historical inquiry and civic reasoning. Social Education, 69(4), 168-171.

Saye, J.W. & Brush, T. (2004). Promoting civic competence through problem-based history learning experiments. In G.E. Hamot, J.J. Patrick, & R.S. Leming (Eds.), Civic Learning in Teacher Education, Vol. 3. Bloomington, IN: The Social Studies Development Center.

Saye, J. & Brush, T. (1999). Student engagement with social issues in a multimedia-supported learning environment. Theory and Research in Social Education, 27(4), 472-504.

Schrader, P., Leu, Jr., D., Kinzer, C., Ataya, R., Teale, W., Labbo, L., & Cammack, D. (2003). Using Internet delivered video cases to support pre-service teachers' understanding of effective early literacy instruction: An exploratory study. Instructional Science, 31, 317-340.

Smoot, S.L. (2003). Evaluating field-based placements for preservice teachers: Measuring the mentoring qualities of the host teachers, student satisfaction with placement, and gathering program evaluation data for N.C.A.T.E. reaccreditation. Eric Document Reproduction Service # ED478496.

Soares, L.M. & Soares, A.T. (2002, April). Immersion: The core of teacher education. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Spiro, R., Collins, B., & Thota, J. (2003). Cognitive flexibility theory: Hypermedia for complex learning, adaptive knowledge application, and experience acceleration. Educational Technology, 43(5), 5-10.

Spiro, R. J. & Jeng, J. C. (1990). Cognitive flexibility and hypertext: Theory and technology for the nonlinear and multidimensional traversal of complex subject matter. In D. Nix & R. Spiro (Eds.) Cognition, education, and multimedia (pp. 163-205). Hillsdale, NJ, Erlbaum.

Stirling, D., Williams, M., & Padgett, H. (2004, March). Investigating the effectiveness of video case use in teacher education. Paper presented at the annual meeting of the Society for Information Technology and Teacher Education, Atlanta, GA.

Taylor, P.M. (2002). Implementing the standards: Keys to establishing positive professional inertia in preservice mathematics teachers. School Science and Mathematics, 102(3), 137-142.

Teale, W., Leu, Jr., D., Labbo, L., & Kinzer, C. (2002). Exploring literacy on the Internet. The Reading Teacher, 55(7), 654-659.

Van Den Haak, M., De Jong, M. D. T., & Schellens, P. J. (2003). Retrospective vs concurrent think-aloud protocols: testing the usability of an online library catalogue. Behaviour & Information Technology, 22(5), 339-351.

Watzke, J.L. (2003). Longitudinal study of stages of beginning teacher development in a field-based teacher education program. The Teacher Educator, 38(3), 209-229.

Wilson, S.M. & Floden, R.E. (2003). Creating effective teachers: Concise answers to hard questions. An addendum to the report "Teacher Preparation Research: Current Knowledge, Gaps, and Recommendations." Eric Document Reproduction Service # ED476366.