

Results of an Experiment Evaluating the Use of Video Cases to Help Pre-Service Teachers Become Better Teachers of Literacy

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Abstract: In this paper, we describe a video- and case-based software designed to help pre-service teachers become skilled teachers of literacy, and how this software was used in one pre-service education course. We present the results of one evaluation study that seeks to understand the extent to which video-case experiences helped pre-service teachers to acquire knowledge, analyze classroom situations, and develop these skills within the context of actual classrooms. We introduce methodology that has participants talk about literacy practices they see in target video clips as a means of assessing their knowledge and analytic skills. Using case studies of pre-service teachers who used the video-case software, and those who did not, we show that our video rich, case-based approach shows promise for the professional development of pre-service literacy teachers.

Case-based approaches have been used in the fields of business, medicine, law, and education to bridge the gap between theory and practice throughout the last century (Shulman 1986; Williams 1992). There have been many advantages suggested for the case-method for teacher education, including increased opportunities to critically think and reflect about teaching (Merseth 1999), produce reasoning like actual teachers (Lampert & Ball 1998), and present a broader range of knowledge that teachers need to practice their craft (Shulman 1986).

Traditionally, cases have been text narratives about hypothetical and real situations that allow pre-service teachers to reflect upon the pedagogy of teaching. More recently, video has been explored as a means for enhancing the effectiveness of case-based approaches because video seems to offer a more realistic and authentic context for exploring teaching practices (Brophy 2004; Lundeborg, Levin & Harrington 1999). In short, seeing a video classroom is more like “being there” than reading a written account of a classroom or some text book description of general principles (Koehler 2002; Lampert & Ball 1998). Furthermore, researchers have pointed to the potential of video to be a more motivating format that may facilitate remembering (CGTV 1990; Petrosino & Koehler in press).

Over the past few years, a small group of faculty at Michigan State University have collaborated in the design of the Interactive Video Analysis Neighborhood (IVAN), a piece of software developed by Charles Ruggiero. IVAN was designed as a general-purpose set of tools to provide support to faculty’s developing interest in conducting video- and case-based research and classroom usage. Within this context, we have worked to design, implement and study a case-based approach to pre-service teachers’ education in literacy that uses video “anchors” (CGTV 1990; Petrosino & Koehler in press) to provide the context for students’ development of theoretical knowledge, analytical skills and reflective practices.

A screen shot of the software that was used throughout the semester for one of the literacy methods courses for this study is shown in Figure 1. In the upper panel, the library displays the list of videos to be used in the case analysis. Students are able to select clips, browse forward and back, and to become familiar with all the materials in the case. Each clip has an associated text with background information regarding the literacy practices seen in the video in the form of expert commentary. Students can drag and drop portions of the clip onto the Timeline (the lower part of the screen with the video) to make their edited movie from the larger library segments. Students can use the text-box (labeled “Work Area”) at the bottom of the screen to write text – including any analyses that the course instructor might ask for. Any work the student does may be easily exported as html files for the web, so that instructors (and fellow students) may evaluate their work.

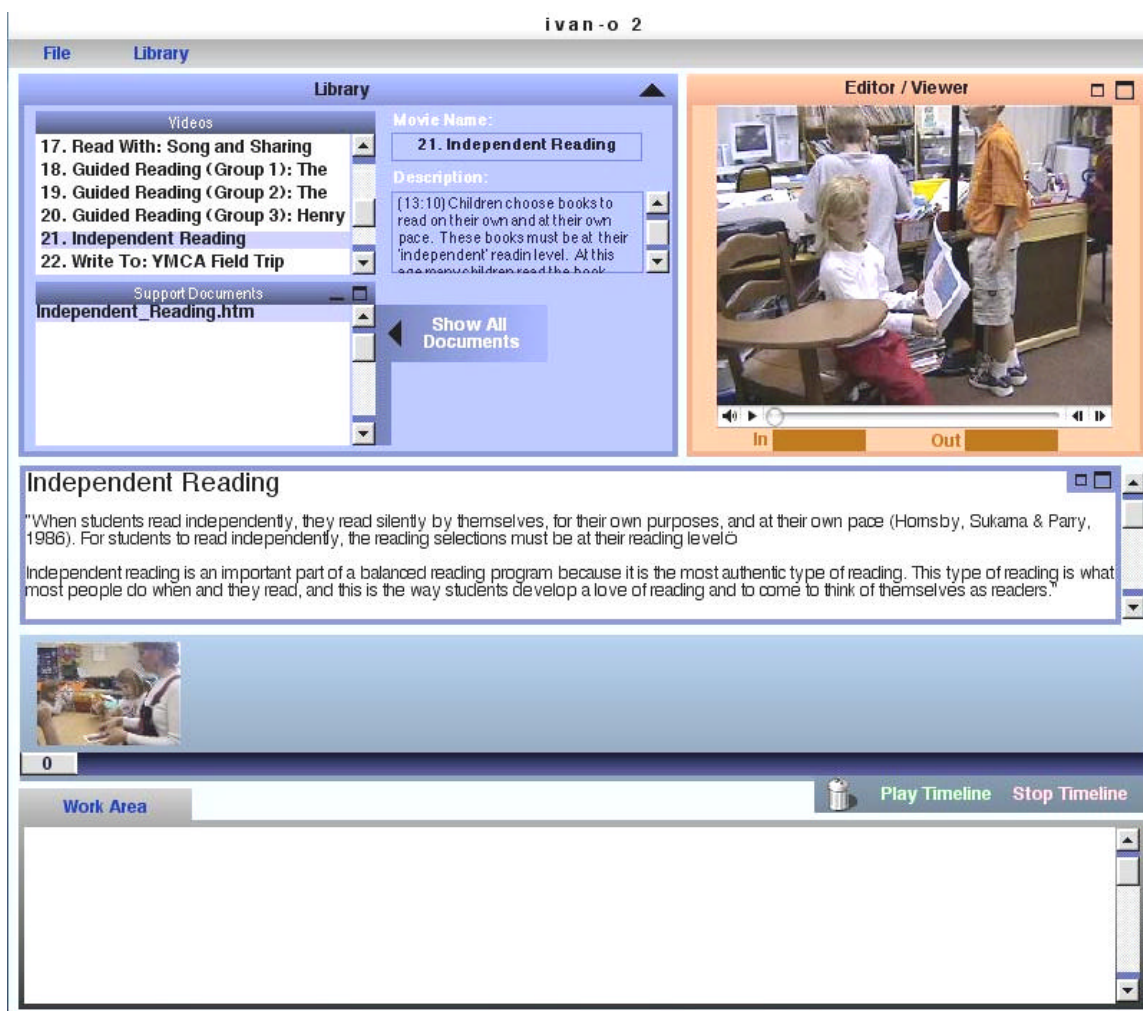


Figure 1: A screen shot of an IVAN case study.

As part of the teacher education program at Michigan State University, seniors are required to take two methods courses – the first course, TE 401, focuses on literacy and mathematics and the second, TE 402, focuses on science and social studies. During these two courses, students are given limited opportunity to visit and observe field placement classrooms a couple of hours a week. Prior to this point in the program, teacher education students have even less opportunity to visit actual classrooms. The focus of the literacy portion of the TE 401 course is to introduce students to teaching and learning in English language arts (reading, writing, speaking, listening, viewing, and literature). Traditionally, a textbook is used to introduce many of the core concepts to students, and teacher education faculty have individually been creative in devising curriculum that connects the students with course content and their field placements. It is within this context that we collaborated with the 5th author to devise

activities that would utilize IVAN video cases to bridge the gap between the conceptual knowledge introduced by the textbook, and the practical knowledge of actual classrooms.

As part of a wider study and evaluation of our approach, we report the results from one analysis that targeted the development of the analytic skills of pre-service teachers using the IVAN software and our case-based approach. In this study, we had students view three video clips at differing times throughout the semester to see what they noticed about literacy instruction (more details in the sections to follow). Our goal was to find out – to what extent the IVAN experiences changed the experimental groups’ ability to see, notice, reflect, or analyze video clips in our study. We report our results as case-studies of two groups, one who used our case-based IVAN software and a control-participant who did not.

Method

Participants

A total of 18 pre-service teachers (all female), nine from the experimental group and nine from the control, were recruited from two senior level elementary-education literacy methods courses (one experimental, one control classroom) in a college of education at a large-sized Midwestern university. The participants were compensated monetarily for their time.

Materials and Procedure

Participants attended a total of five sessions that were held outside of the students’ scheduled class time (see Tab. 1 below). The first and second sessions were pre-post sessions centered on the first use of the IVAN software that was used in the experimental group’s classroom. The experimental group first used the IVAN software at approximately the sixth week of class and again towards the end of the semester. The pre-session for all participants happened a day or two before participants in the experimental group used IVAN in their classroom. All post sessions happened within one week after the use of the software by the experimental group. The participants in the control classroom completed the measures at the same time, but did not use the IVAN software or case-based methods in their course. The third and fourth sessions were pre-post sessions for a later use of the IVAN software in the target experimental classroom. The fifth session was used as a semi-structured interview.

	Session 1 (1 st Pre)	Classroom Use	Session 2 (1 st Post)		Session 3 (2 nd Pre)	Classroom Use	Session 4 (2 nd Post)		Session 5
Experimental Group	Video 1 Questions Video 2 Questions Video 3 Questions	IVAN used in methods course	Video 1 Questions Video 2 Questions Video 3 Questions		Video 1 Questions Video 4 Questions Video 3 Questions	IVAN used in methods course	Video 1 Questions Video 4 Questions Video 3 Questions		Semi- structured Interview
Control Group	Video 1 Questions Video 2 Questions Video 3 Questions		Video 1 Questions Video 2 Questions Video 3 Questions		Video 1 Questions Video 4 Questions Video 3 Questions		Video 1 Questions Video 4 Questions Video 3 Questions		Semi- structured Interview

Table 1: Design of Study

All pre-post sessions used three videos that were approximately 3-4 minutes in length (presented in QuickTime format via a webpage). The first and third videos remained the same in each session (see Tab. 1 above) and were not part of the IVAN video library. However, the second and fourth videos were part of the IVAN software and were changed from sessions 1 and 2 to sessions 3 and 4 to be consistent with the video being used in the experimental group’s class at that point in the semester. After every single video, the participants were asked the following questions:

1. What did you notice about literacy teaching and/or learning as you were watching the video?

2. What specific instructional practices did you see this teacher employing and explain why you think she chose those approaches?
3. What goals do you think the teacher had for this activity?
4. What was the teacher doing in the video that highlights important features of literacy instruction?
5. Was there anything the teacher did that you thought was problematic?
6. What else could the teacher do in this example to further develop her students' literacy?
7. If you could talk with this teacher, what questions would you ask her?
8. If you were this teacher, what would the next day's instruction look like?

The script was repeated for each of the three videos during all pre-post sessions.

The 5th session was conducted as a semi-structured interview regarding their opinions about video, IVAN, and their teacher preparation experience. Neither questions nor responses from the 5th session are used in the reporting of this study.

Analyses

Across all participants and sessions, this study generated a lot of data. For the purposes of this paper, we were interested in conducting exploratory analyses into the effects of the IVAN experiences upon participants learning and classroom analysis skills. Accordingly, we decided to focus our analyses for this paper on the first use of IVAN (the first and second sessions). Also we restricted ourselves to looking only at certain video clips and interview questions.

We were interested in looking at the contrast between control and experimental participants for two different types of clips. First, we wanted to contrast their performance at analyzing a video clip that was part of the overall IVAN experience – not a clip that students had explicit instruction about, but a clip that was part of the overall classroom context for the experimental group (the second video used in the first and second sessions). The second type of contrast we wanted to investigate was participants' ability to think about a clip that was *not* part of the IVAN video library, but was similar in content to the IVAN clip that was used as the target clip mentioned above (i.e., both clips use read-along activities)

The logic of the analyses is that, if IVAN was impacting students' ability to learn and analyze classroom contexts, it would most likely show up on clips they had most recently been working with (i.e., the first contrast). Demonstrating that learning was happening in this case would be important. However, it would be interesting to find out if learning was going beyond the specific context of the case being studied, and transferred more broadly to other situations (i.e., the second contrast). In order to explore whether participants noticed particular literacy practices from the two different types of video, we used questions 1, 2 and 4 (from the list above). These questions were chosen because they most directly measured participants' ability to apply literacy concepts to the video analysis and classroom contexts.

We wanted to explore both group trends, and qualities exhibited by individuals. Accordingly, we report the group trends from 10 completed transcripts, 5 control and 5 experimental participants (randomly selected). To focus on the qualities that these trends represent, we selected two representative cases (based on the group trends), for further analyses. Using these cases (one for each condition of the study), participants' responses for each question are reported to illuminate the potential reasoning exhibited in each condition (one with IVAN and one without).

Results

In reviewing the five control participants, we saw that there were three examples of no real change pre-post on the target clip (2nd video clip), one example of small growth, and one example of better performance on the pre-assessment. Consequently, we selected one of the participants who exhibited little or no change, as this best reflects the overall group trend. We hereafter refer to this participant as Connie (a pseudonym for "control").

Our survey of the five participants in the experimental group showed quite a different result. Three of the participants fell into a category of slight change in favor of the post-assessment for the target clip (2nd clip). Two participants showed larger gains in the post-assessment. We chose one of these two, Emily (A pseudonym for “Experiment”) to be the focus participant in the experimental group because the clarity of her arguments would best summarize the overall trend in the experimental group.

We explore each of these two questions in the sections below, using the cases of Connie and Emily as examples (recall that cases were selected because they represented trends seen in the larger data set).

First Analysis – Do Students Perform Better on IVAN Clips?

The first analysis we conducted examined participants’ responses to the questions for the 2nd video clip – a clip that was part of the IVAN video library and was used as part of the case in the experimental groups’ methods course, even though participants received no explicit instruction about what to say about the clip, or how to think about it. In the clip, students watched the teacher give a read-aloud lesson with the book, “The Very Hungry Caterpillar.” While delivering the lesson, the teacher incorporated questions and predictions, a short phonics lesson, math concepts, and concepts of print (e.g., title page, words read left to right, words relate to pictures, etc.) into the literacy lesson.

In Table 2, we present the complete listing of the ideas and/or constructs Connie (a control participant, who did not use IVAN) generated for the target questions (1, 2 & 4). Throughout the rest of the paper, when participants’ ideas are presented in such a manner, they are re-organized and grouped according to related ideas for presentation purposes. Similar ideas (pre-post) are presented on the same row to show those ideas that did not change.

Pre-assessment	Post-assessment
Using the pointer to point to pictures	
	Picture walk through all the pictures
	If kids would mess up on a word, she would go back and ask questions
Teacher does read-along to class, class reads along	Teacher does read to class, class reads along
Teacher asks students for predictions about what will happen next	Teacher asks students for predictions about what will happen next
Teacher uses a pointer to indicate which words are being referred to	Teacher uses a pointer to indicate which words are being referred to
Class involved beyond just listening	Class involved beyond just listening

Table 2: Connie’s constructs pre-post on the 2nd target clip.

Conceptually, there is not much difference between Connie’s two lists. Two ideas were mentioned in the post-assessment that were not mentioned before (a picture walk, and asking questions if a student messes up a word). These changes could either be the result of instruction, or improvement based upon the practice effect of repeating the measure more than once. Similarly, there is one idea mentioned in the pre-assessment that is not mentioned in the post-assessment (the use of the pointer to point to pictures).

Pre-assessment	Post-assessment
Cuing kids to participate	
	Kids seemed really engaged
Very active class participation	Very interactive
Kids followed along	Kids followed along
Use of pointer so kids could match up words they were supposed to be reading	Use of a pointer so kids could follow along
Teacher used a predictable book with counting and days of the week	Lots of predicting with counting numbers and days of the week

Showing different parts of the book (author, title page)	
Teacher made sure students looked at words to make sure they looked right	
	Encouraging kids to read along with her
	Paying attention to pictures and how the story connects to pictures
	Asking children what comes next and asking them to predict
	Building children's confidence
Helps them to learn basic math facts	Lesson had math elements – counting
	Lesson had math elements – predicting
Teacher modeled how to read	Teacher modeled how to read
	Teacher modeled reading strategies
	Sounding out words
	Showing patterns in a book
Letter three was explained as a count of three, and as the word three	Had some phonics lessons with the number three

Table 3: Emily's constructs pre-post on the 2nd target clip.

For Emily (an experimental participant, who used IVAN), however, we see much larger changes (see Tab. 3), especially in the areas of literacy instructions and strategies mentioned during assessment of the video (highlighted in grey). The constructs mentioned in the pre-assessment, however, are fewer and less central to a conceptual understanding of literacy development (e.g., “looking at words to make sure they look right”). Literacy constructs that Emily mentioned in the post-assessment that were not mentioned in the pre-assessment are important ideas:

- predicting what comes next in a story
- connecting pictures to the story
- the importance of modeling strategies for children
- identifying patterns
- sounding out words
- Building children's confidence

Second Analysis – Does Learning Transfer?

The second analyses we conducted examined participants' responses to the three focal questions (1, 2 & 4) for the 1st video clip – a clip that was *not* part of the video library in the IVAN software. In this clip, the teacher gives a read-aloud on the book “Grumpy Bear.” The read-aloud was followed by the teacher asking the students questions about the story (e.g., plot, main characters, author, etc.) while she completed a story map on the overhead. We compared ideas and/or constructs to see if there were any major differences between pre-post statements in the case where neither Connie nor Emily had any experience with the context provided by the target clip.

Pre-assessment	Post-assessment
Teacher asked students what they thought certain words meant and went over the concepts	
	Teacher did a read-aloud
	Teacher planned on re-reading the story
Teacher asked questions before reading, asked kids for predictions based on cover	Teacher previewed before reading, asked kids for predictions before reading book
Used a pointer so students could see and hear the words	Used a pointer so students could see and hear the words
Teacher used character voices when she read to keep kids interested	Teacher was energetic about the story, used character voices when she read to keep kids

	interested
Teacher used a story map – for recognition of authors, main characters, and plot	Teacher used a story map – going over title, author and main characters
Story map used to see if students understood the main points of the book	Story map used to see if students understood the main points of the book

Table 4: Connie’s constructs pre-post on the 1st target clip.

The sets of constructs generated by Connie are displayed in Table 4. Conceptually, there is not much difference between the two lists. Two ideas were mentioned in the post-assessment that were not mentioned before (using a read-aloud and revisiting the story). Similarly, one idea mentioned in the pre-assessment is not mentioned in the post-assessment (going over concepts mentioned in the story). There is a slight difference in the two ideas mentioned in the post-session; both are known strategies for literacy instruction.

Pre-assessment	Post-assessment
Teacher used different voice to make it more interesting for the students	
Students were very involved, actively participating	Students were very involved, actively participating
Modeled to students how to read and write	Modeled to the students how to read
Teacher demonstrated what certain verbs were in the story – yawning	Teacher demonstrated what certain verbs were in the story – yawning
Teacher asked a lot of questions and had them predict what was going to happen next	Teacher asked a lot of questions and had them predict what was going to happen next – opportunity to connect with story
Pointing to the words – let students read-along	Pointing to the words – let students see that you read from left to right
Story Map – Students actively engaged in discussion of the book	
Story Map – Having students participate	
Story Map – Completed for a visual	
Story Map – Helped to become aware of main points of the lesson	Story map – Get students noticing different parts of the story – plot, characters, setting, problems or solution
	Story map – Aiding in comprehension
	Story Map – Pointed on the story map and had them read along with her
	Story Map – Revisiting the story and bringing new things out
	Had students make sense of the story instead of just telling them

Table 5: Emily’s constructs pre-post on the 1st target clip.

For Emily (Tab. 5), we see that there are very similar constructs mentioned in the white portions of the table. Big differences, however, are seen in the rationale for including the story map in the lesson. In the pre-assessment, her reasoning points to very vague, general purpose constructs for the use of a story map: “having students participate,” “become aware of main points of a lesson”, and “students actively engaged.” However, in the post-assessment her rationale for the story map is firmly grounded in a conceptual understanding of literacy, as she brings in ideas’ such as: “noticing plot, characters, and setting”; “Aiding in comprehension”; and “Revisiting the story.”

Discussion and Conclusion

In exploring the potential of video- and case-based approaches to pre-service teachers professional development, we have been most encouraged by the potential of the media to bridge the gap between the theory (e.g., what students are reading in their pre-service methods courses) and practice (i.e., what happens in the classroom). Our own experience in developing IVAN cases and activities, along with working with students using IVAN has been encouraging – students we have interviewed have often spoken of the value of being able to see what they have been reading about.

The results of this study support this claim. When analyzing video clips from the IVAN video library used in the experimental groups course, differences were seen between the pre-post analyses between Emily and Connie (our representative cases) offered in terms of the types of ideas they used to describe and analyze the classroom context depicted in the video clips. Perhaps this is not surprising since Emily arguably had more instruction in this context. But, it is encouraging to note, however, that outside of the course, (in this study) she was able to talk about and independently apply a conceptual understanding of literacy instruction to a classroom situation.

Even more encouraging are the results we see from Emily when the context is shifted to a video context outside of the IVAN experience (i.e., for video 1 in Tab. 5). Even for this video, Emily showed greater conceptual pre-post gains compared to Connie. Although, this gain is not as pronounced as it was for the immediate context provided in the analysis of video 2, this finding suggests that at least for Emily, some learning transferred beyond the immediate context in which it was learned. Obviously, these findings must be interpreted with some caution, as they are subject to the limits of case studies, and further analyses of all the participants, across all clips and sessions is needed to further strengthen this claim.

Our study is an important one for curriculum designers and researchers alike. It highlights the potential of video- and case-based approaches to develop knowledge in pre-service teachers that has the potential to be invoked in applied situations (i.e., thinking about classrooms). More importantly, it points out the need for more research on the design and evaluation of case-based video environments, and their role in the development of teachers.

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