Using multimedia and hypermedia to promote intercultural education and an appreciation for pedagogical and student diversity

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Abstract

Intercultural communication and education are important topics that are gaining prominence in many fields of study. In this article, a multimedia and hypermedia tool is presented that has demonstrated important successes in promoting intercultural education and an appreciation for pedagogical and student diversity. The article begins with an introduction to the need for this type of research with overview questions provided from a reading of Clifford Geertz. The technological tool is then presented and research data is provided to support its integration. The article ends with a call for more research.

Introduction

There is a growing awareness of the importance of intercultural education and intercultural communication (Davis, Brown, & Ferdig, 2005). There are educational, economic, financial, moral, and ethical reasons for this imperative (Martin & Nakayama, 2000). On December 10, 1948, the General Assembly of the United Nations adopted the *Universal Declaration of Human Rights*. Article 26, paragraph 2 of that document, specifically relates to the need for intercultural education (Batelaan & Coomans, 1999). It states:

> "Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace."

The fact that technology continues to link diverse cultures by reducing temporal and spatial separation makes the timing for this imperative even more crucial (Martin & Nakayama, 2000). The challenge, however, is that intercultural education is comprised of those with broad interdisciplinary interests. Hammer (1989), drawing on an oasis metaphor first described by Schramm (1982), talked about how multiple participants from various disciplines and fields come together to study and promote these new ideas. Those interested in intercultural issues come from numerous fields of study, including psychology, anthropology, sociology, economics, business, international relations, communication, and—of course—education. All come to the oasis to partake in the discussion, but most return to their home fields. Therefore, although intercultural education is important, the responsibility of how it happens and by whom is less clear.

This issue becomes even more complex when it includes technology. It is possible that technology may be used to bridge intercultural gaps (Raybourn, McGrath, Munro, Stubblefield, 2000). However, it is also possible that technology can disempower and even destroy a culture or society (Sharp, 1952).

We have previously argued that the work of Clifford Geertz provides important insight into the relationship between technology and intercultural education (Ferdig & Dawson, in press). In the next section, two seminal readings by Clifford Geertz will be briefly discussed to summarize this perspective. Work will then be presented that demonstrates how technology can be used to promote intercultural understanding and an appreciation for pedagogical and student diversity.

Deep Play & Thick Description

In an article entitled, "Deep Play", anthropologist Clifford Geertz describes the cultural experience of cockfighting that he and his wife observed as anthropologists in Bali in 1958 (1973b). In Geertz's exploration, he discovers that cockfighting is such an intense portrait of Bali life that Balinese compare heaven to the mood of a man whose cock has just won and hell as the metaphysical and social suicide of the loser (p. 421). Geertz argues that cockfighting is "a Balinese reading of Balinese experience; a story they tell themselves about themselves" (p. 448).

Geertz tells us the story of the Balinese and their cockfights, in part, to suggest that culture is really an ensemble of texts, texts which are themselves ensembles (p. 452). He proposes that whatever level we decide to read these texts, societies and lives contain interpretations that one has to learn how to get access to.

In a second essay entitled, "Thick Description: Toward an Interpretive Theory of Culture", Geertz describes how to get access to those texts (1973a). He argues that there is a *context* (p. 14) that must be thickly described in order to be read. This thick description provides a way for us to expose a *culture's normalcy without reducing its particularity* (p. 14).

Both essays are seminal and provide important insight into multiple fields and areas including intercultural education. For instance, these essays support that notion that the goal of intercultural education need not be answering the deepest and most philosophical of questions. Rather, it is to "make available to us answers that others…have given, and thus to include them in the consultable record of what (people have) said" (p. 30). They also provide an important and timely reminder of the importance of a multi-methodological approach to explore, appreciate, and tell the stories and texts of multiple cultures.

Perhaps most important for this discussion, the work of Geertz provides guidance and important questions about the relationship between technology and intercultural education. Most notably:

1. How can we use technology to provide entrance to the various communities of practice, giving readers access to the ensemble of texts that exist within those communities?

2. How can we use technology to help students appreciate the existence of multiple texts, and in doing so help strengthen respect for human rights, fundamental freedoms, and tolerance for other perspectives?

It is possible to draw on a multimedia example from technology and literacy teacher education to attempt to answer these questions. Much has been done in intercultural education and technology & teacher education (e.g. Merryfield, 2003). Work has also been done on technology, teacher education, and literacy (e.g. CTELL- Kinzer, Labbo, Leu, Teale, 2002). Therefore, the purpose of this activity is not to summarize broad theories of intercultural education nor provide a literature review of the field. Rather, the multimedia example is used to demonstrate the possibilities of technology and intercultural education and in doing so provide some answers to the two questions just posed.

The Reading Classroom Explorer

Pre-service literacy instructors have the difficulty of providing teacher candidates with field experiences in classrooms where the teacher demonstrates pedagogical practices that are foci of university preparation programs (Ferdig, Roehler & Pearson, 2002). Some teacher candidates quickly sense this and report frustration with the tension they see between field experiences and the reform-oriented instructional techniques from their methodology classes (Hughes, Packard, & Pearson, 1998). They also express concern about the conventional pedagogy of their methods classes that is "limited to articles, books and lectures about methods of teaching reading and writing" (Ferdig, Hughes, Packard, & Pearson, 1998, p. 30).

Even when the field experiences are strong, there is no guarantee that teacher candidates possess the ability to transform observations and practice into instances of deep reflection

and ways of acting (see Dunkin, Precians, & Nettle, 1993; Feiman-Nemser & Buchman, 1986; Goodman & Fish, 1997). Moreover, granting access to strong apprenticeships does not guarantee meaningful experiences (Kinzer & Risko, 1998), access to diverse approaches to language and literacy instruction, or an introduction to diverse student perspectives (intellectually, ethnically, or culturally). Some teacher candidates face the danger of being in a field experience that will not prepare them for the pedagogical or student diversity they will experience in their teaching positions; others face the danger of not being prepared to take advantage of being in a model apprenticeship.

The Reading Classroom Explorer or RCE, available online at http://www.eliteracy.org/rce, is a hypermedia and multimedia environment that was created to address these issues. RCE is a web- and database-based learning environment that provides video models of exemplary literacy instruction. In its early stages, RCE was CD-based; it was later moved to a hypermedia format in order to build a community of learners and to support communication between classrooms, pre-service instructors and teacher candidates using RCE (Ferdig, Roehler & Pearson, 1992).

One main purpose of using RCE is to view video models of exemplary practice; as such, when teacher candidates log-in, there are five different ways to search for video clips. These search mechanisms were provided and developed to demonstrate not only the complexity of teaching, but also the pedagogical and student diversity inherent in education. The first mechanism is to search for clips by *school*. There are currently over 200 video clips from ten different schools in the RCE database; six of these schools come from the original literacy videos published by the *Center for the Study of Reading* at the University of Illinois at Urbana/Champaign; the remaining clips come from the production and research efforts of the *Reading Classroom Explorer Team* at Michigan State University. These schools range in geographical diversity from Hawaii to Harlem, and from San Antonio to Lansing, Michigan. A teacher candidate begins to understand diversity in instruction by seeing both the pedagogical and student differences in viewing a clip from one school vs. another. Selecting to view a clip by school allows the teacher candidate to follow the literacy curriculum of one instructor. It is at this search screen that a teacher educator or teacher candidate could watch the entire video instead of segmented clips.

A teacher candidate can also view clips by searching the themes. We consider the themes to be similar to a table of contents at the beginning of a book. There are 27 themes, and they are categorized under Schwab's (1978) notions of *teachers, students, curriculum, and context*. Examples of themes include "Linguistically diverse readers and writers" and "Special needs readers and writers." A third search mechanism is to search by keywords. If the themes are considered the table of contents, the keywords are likened to the index at the back of the book. There are over 200 keywords; examples of keywords include: "culture", "meaning-making", and "socioeconomic status."

Both of these search strategies also afford the teacher candidate an opportunity to explore pedagogical and student diversity. Clicking on a theme or keyword returns a list of all of the videos related to this topic in addition to the school that the video is from. As such,

the student can watch one topic across multiple classrooms with varied pedagogical strategies and a diverse student population.

Each video is accompanied by a transcript, and searching by transcript is the fourth search mechanism in RCE. Teacher candidates can use this tool if they hear something interesting in one video and want to see if it appears elsewhere. The final search mechanism is for the RCE user to view clips they have yet to see.

RCE uses video-streaming technology as provided by *Real Player*. Thus, within a few seconds of clicking on a movie title, regardless of the length of the clip, the video begins playing while the rest of the footage is being downloaded in the background. One of the concerns with any technology is understanding who has access to it. Video streaming allows us to use video technologies with anyone who has connectivity to the Internet, but it does not force them to have high speed access.

In addition to the clip being played, as mentioned earlier in the fourth search mechanism, a transcript is provided next to the movie. It is often difficult to hear and understand voices in classroom videos, particularly of elementary school-aged children. This transcript provides textual feedback in combination with the visual and audio modes. An additional benefit of the transcript is that each user has a notebook to record their thoughts about the clips they have viewed. Having a transcript on the page allows teacher candidates to copy and paste text to use as documentation for their opinions or argumentation. This notepad is available to students at any time, and they can also make their notebooks available to others to see.

Due to the aforementioned research on providing teacher candidates with tools and skills to observe classrooms, we were deeply concerned in the development to provide multiple opportunities to learn from each clip. Therefore, if teacher candidates view the exemplary practice and are not sure what they are supposed to be paying attention to, guiding questions are provided on each video page. These guiding questions help teacher candidates focus on particular events within the video clip. If they are still unsure of what to think about the video clip, they can click on a button that returns the notes of anonymous others who have agreed to share their thoughts on that clip. If they are still unsure what to think, they can go to one of two discussion forums. One discussion forum is for every RCE user, the second is just for their class (if they are enrolled in a class that happens to be using RCE). If they are still unsure what to think, or they want more evidence for what is in the clip, they can either click on the keywords or themes associated with that clip to find other similar videos. Finally, if they want more evidence for what they just saw, we provide references to article (many of them online) so that they can read about why the practice they just saw is research-based.

A final tool that needs to be mentioned is the paper submission tool. Teacher candidates using RCE in a class can write a paper on what they have learned and then share that with their teacher, their colleagues, or RCE users in general. This tool features the opportunity for students to select and input RCE clips as video evidence to support their claims. In

addition, because these papers are online, they begin to see how others view literacy acquisition and instruction.

RCE and Diversity

RCE allows pre-service teachers to get behind the scenes of a classroom, to understand context, teacher's goals, student reactions, and to more deeply understand the teaching of reading and writing. It brings the 'real' classroom into the university while scaffolding the novice by providing teacher candidates with classroom teachers' comments on their teaching, as well as other students' reactions to video environment. In other words, the development of RCE is an attempt to provide exposure to diverse teaching environments for teacher candidates while helping them develop tools to analyze and understand what they are observing. The environment broadens teacher candidates' knowledge of teaching reading and expands the repertoire of experiences from which they form a teaching philosophy.

Over the course of the past five years, we have worked with hundreds of teacher candidates and their respective pre-service instructors across five states (Ferdig, Hughes, Packard, & Pearson, 1998; Ferdig, Love, Boling, & Fang, 2002; Ferdig, Roehler, & Pearson, 2002; Boling, 2003; Ferdig & Roehler, 2003; Ferdig, Roehler, Boling, Knezek, Pearson, & Yadav, 2004). This research has provided promising results. For instance, early work demonstrated that teacher candidates gained both a depth of understanding of teaching and learning as well as an appreciation for intertextuality after using RCE (Ferdig, Roehler & Pearson, 1992). Teacher candidates who used RCE were challenged in their prior assumptions about learning (Boling, 2003). Finally, teacher educators who used RCE were able to demonstrate teaching dilemmas that they encountered while teaching their courses (Boling, 2003).

However, we return to our original questions from Geertz. We have used this technology to provide teacher educators with access to their intended community of practice (Lave & Wenger, 1991). Providing multiple texts, providing multiple mechanisms to examine those texts, and then providing thick descriptions within those texts have helped teacher candidates explore the complexity of teaching (Ferdig & Roehler, 2003). This is the *how* of the first question from Geertz. However, this does not necessarily address the appreciation for those diverse, multiple texts. Can such a tool be used to promote an appreciation for diversity?

In order to address this question, we developed a survey to examine three main areas: a) teacher candidates' comfort with technology; b) teacher candidates' understanding of important literacy teaching and learning strategies (pedagogical diversity); and c) teacher candidates' understanding of student diversity (Suh, Pearson, Oliver, & Park, 2002). 185 teacher candidates from four universities were selected to participate in this study. The pre-service teachers came from seven different classrooms within those four institutions, with four classrooms being chosen as experimental classes (106 teacher candidates) and three as control classes (76 teacher candidates).

Teacher candidates at each of the institutions were enrolled in a pre-service literacy methodology course. The researchers in this study provided introductory RCE lessons and support to the individual instructors, but each individual instructor was allowed to use RCE in whatever way fit into their existing curriculum. Students were given the survey as a pre-test in the beginning of the semester, and then again as a post-test at the end of the semester.

Data analyses revealed that 15 of the items on the survey exhibited significant differences between the control and experimental groups in the final post-test (see Table 1).

		Sum of Squares	df	Mean Square	F	Sig.
2A	Between Groups	.200	1	.200	5.608	.019
	Within Groups	6.535	183	3.571E-02		
	Total	6.735	184			
2C	Between Groups	.559	1	.559	5.670	.018
	Within Groups	18.057	183	9.867E-02		
	Total	18.616	184			
2G	Between Groups	13.458	1	13.458	81.295	.000
	Within Groups	30.294	183	.166		
	Total	43.751	184			
4F	Between Groups	1.106	1	1.106	4.314	.039
	Within Groups	46.916	183	.256		
	Total	48.022	184			
5A	Between Groups	7.149	1	7.149	9.509	.002
	Within Groups	137.586	183	.752		
	Total	144.735	184			
5B	Between Groups	3.644	1	3.644	5.017	.026
	Within Groups	132.918	183	.726		
	Total	136.562	184			
6A	Between Groups	4.513	1	4.513	5.181	.024
	Within Groups	159.401	183	.871		
	Total	163.914	184			
7B	Between Groups	4.247	1	4.247	6.646	.011
	Within	116.312	182	.639		

	Groups Total	120.560	183			
8G	Between Groups	4.128	1	4.128	7.458	.007
	Within Groups	100.736	182	.553		
	Total	104.864	183			
10A	Between Groups	1.202	1	1.202	6.028	.015
	Within Groups	36.277	182	.199		
	Total	37.478	183			
	Total	45.109	183			

**Table 1: Significant post-test differences between experimental and control groups.
ANOVA**

Three of those items related to teacher candidates' comfort with technology. The survey results showed that teacher candidates who used RCE in their classroom reported significantly higher comfort in:

- surfing the Web (2A, $p<.05$)
- conducting research on the Web (2C, $p<.05$)
- watching video on the Web (2G, $p<.01$)

These results are consistent with earlier findings on the use of RCE (Ferdig et al., 2004; Ferdig, Roehler & Pearson, 2002). They are not surprising considering the fact that many teacher education classrooms do not yet heavily rely on technology for instruction. As such, teacher candidates in classrooms where RCE was used would all get experience with surfing, research, and watching video on the web—an experience they might not get under different circumstances.

Two of the post-test items revealing significant experimental/control effects related to motivation and children's literature. Teacher candidates who used RCE reported:
- a significantly higher understanding of how to use children's literature (i.e. narrative and/or information texts) in teaching and learning (8G, $p<.01$)
- a significantly higher understanding of the need to develop motivated, independent readers who could enjoy literature (4F, $p<.05$).

These results also back the earlier work done with teacher candidates using RCE in the classroom (Ferdig & Roehler, 2003). What is most relevant for this discussion are the five items on the post-test that exhibit significant differences between control and experimental groups related to teacher candidates' understanding of pedagogical and student diversity.

- Pre-service teachers in experimental classrooms understood more clearly that students' attitudes about reading and writing can vary across grade levels (10A, p<.05).
- They felt more prepared to develop a curriculum that would include the perspectives, experiences, and contributions of groups from different backgrounds and cultures (7B, p<.05).
- Teacher candidates using RCE placed more importance on the home language, new languages (ESL), and/or dialects (6A, p<.05).
- RCE users placed more importance on diversifying their instructional strategies for learning how to write (5B, p<.05).
- RCE users placed more importance on diversifying their instructional strategies for learning reading skills and strategies (5A, p<.01)

Future research on intercultural education & technology

This example of RCE supports the notion that technology can be used to promote intercultural perspectives in literacy pre-service teacher education, referencing the ideas and challenges brought forth from a reading of Geertz. This technology not only provided access to the multiple texts of a community of practice, but it also provided multiple paths through those texts so that students would begin to get an appreciation for the pedagogical and student diversity evident in classrooms.

Although these data and previous research reports have demonstrated progress and promise, it should be noted that we have not ignored the potential perils of using technology for intercultural education. We have tried to develop RCE so that it is accessible to all users. For instance, we chose a video streaming environment that allowed simple means of connectivity. However, accessibility has many different meanings within various webs of significance. For instance, in one study on the use of RCE, we had a teacher in an experimental group who was afraid of technology and did not provide access to her students because she did not know how the system worked (Ferdig, Love, Boling & Fang, 2002). This notion refers back to the idea that if you build it, they will not necessarily use it, even if you have demonstrated success and models of integration. Future research should examine ways to work with teacher educators and how to scaffold their development as instructors.

Related to this idea of webs of significance is voice. We have demonstrated diversity by collecting video exemplars of various classrooms across the United States. However, that means that our exemplars are both Western-based and American-based in terms of teacher education and literacy instruction & acquisition. Data from integration and implementation studies suggest that this tool is successful in helping teacher educators and teacher candidates. But, what does it mean that the voices we have chosen to focus on are the ones that are being heard? Although we have the instant capability of adding more voices with RCE, we have not opened up research to examine what happens when people add their own voice. Future research should examine the intended and unintended

consequences of having the audience add their voice to the multiple layers of texts (the ensemble of voices).

Finally, this work and much of the work being done on pre-service teacher education technologies, focuses on the time spent with the technology in pre-service teacher education. Less work has been done that is longitudinal. We can provide data to suggest that technologies help users learn about intercultural education; we know less about how that impacts their working lives after graduation.

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