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Integrating Technology Into an Intermediate Literacy Methods Course

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In recent years, the definition of literacy has evolved to include not only print materials, but visual sign systems and symbols that are easily represented with technology (Harris & Hodges, 1995; Leu & Kinzer, 1999; Valmont, 2003). With this changing definition of literacy comes the challenge of teaching literacy using technology as a tool for student engagement and meaningful learning. As preservice teachers take literacy methods courses, it seems essential that they have experiences using technology for content knowledge development and for application to school settings. This article describes and illustrates how three instructors infuse technology throughout an intermediate literacy methods course.

Description of the Literacy Methods Course

Elementary education majors in the Department of Curriculum and Instruction at Iowa State University are required to complete two, four-credit literacy methods courses, one course for primary grade level instruction (PreK-3) and the other for intermediate grade level instruction (4-6).

This article describes approaches faculty members have used to integrate technology into the intermediate literacy methods course (C I 378, The Teaching and Reading of Language Arts in the Intermediate Grades; see <http://www.educ.iastate.edu/ci/prspstud/desc/CI378.htm>).

During the semester, preservice teachers meet on campus for 2 1/2 hours Tuesdays and Thursdays during weeks 1-5 and weeks 11-16 of the semester. At the same time, preservice teachers are enrolled in a three-credit science methods class, and during weeks 6-10 of the semester they rotate into a Tuesday/Thursday all-day literacy/science field experience in upper elementary grade classrooms. Prior to this literacy/science block, the preservice teachers have completed a three-credit introductory instructional technology course.

Although the preservice teachers have completed the required instructional technology course, they enter C I 378 with varying levels of technology comfort and expertise. These students are accustomed to learning environments where sharing technology expertise with each other is expected and encouraged. However, there are several structures in place in the department and college to provide additional support for students as they use technology to complete course assignments.

The Center for Technology in Learning and Teaching (CTLT; <http://www.cltl.iastate.edu/>), located in the same building as the C & I department, provides preservice teachers with access to technology and is staffed with personnel available to assist users with assignments and projects. In addition, laptops and other computer-related technologies are available for extended checkout in the CTLT. A peer-assistance structure also exists within the course itself. "Tech-support" committees are formed in each class section to offer additional technical support when needed.

Faculty members who teach C I 378 emphasize the English Language Arts Standard 8, which acknowledges the importance of the use of technology in learning: "Students use a variety of technological and informational resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge" (National Council of Teachers of English & International Reading Association, 1996, p. 39). The instructional focus in this course is on using technology to manage resources for communication and learning and to promote active student involvement by using technology as a literacy tool. As faculty members redesigned C I 378, the emphasis was to infuse technology experiences that would accompany existing modules of study and to avoid the impulse to develop additional, isolated activities that simply use technology.

Integration Activities in a Literacy Methods Course

This section describes a variety of literacy activities and projects that infuse technology to support the instructional goals of this literacy methods course. These examples illustrate how selected course experiences were redesigned to involve preservice teachers in meaningful learning tasks that utilize technology to teach literacy concepts. The examples are from three instructors, so students enrolled in different sections of the course would not necessarily complete all of the projects described.

It is important to note that each instructor approaches technology integration differently. Students in any one section experienced only some of the examples described, and the projects are assigned periodically throughout the semester. Thus, the examples illustrate how different instructors teaching similar content can use a variety of technology tools to facilitate learning in a literacy classroom.

The purpose of the technology integration activities was two-fold: (a) to help manage course resources and materials using technology and (b) to involve preservice teachers in meaningful learning tasks that utilized technology to teach literacy concepts. A summary of each activity is provided, and additional information about each can be accessed using the hyperlink provided.

Managing Resources for Communication and Learning

The following examples illustrate how technology was used in this literacy methods course to help manage course resources and materials using technology.

Course CDs (<http://techco.educ.iastate.edu/page/62>). At the beginning of the semester, each student received a CD that contained a "To Do Folder" (assignments, scoring rubrics, and sample projects) and a "Web Sites Folder" that included categorized literacy Web sites that were linked and annotated. These resources were for the students' professional and classroom use. At the end of the semester each student received an additional CD that included the semester's collection of colleagues' units, lesson plans, and other projects completed in the course.



Course WebCT site (<http://techco.educ.iastate.edu/page/62>). Students used the course WebCT site to access course materials and to participate in discussion groups related to course topics. Throughout the semester student-created activities and lesson plans were posted on the site for colleagues to access.

Literature databases

(<http://www.educ.iastate.edu/ci/treg/tea/scidata/index.html>). One instructor had students add records to two databases, one devoted to science and poetry and the other devoted to science and literature. Using a template, students entered information into their own record and then reviewed and sorted records

entered by other students. For the science and literature database, students entered a record for a science activity linked to a young adult novel for a group-created literacy unit.

Promoting Active Student Involvement

The examples in this section explain how selected course experiences were redesigned to involve preservice teachers in meaningful learning tasks that utilized technology to teach literacy concepts. The first three activities promoted communication and reflection between communities of learners over time and distance. These projects lasted the entire semester. The remaining examples illustrate how preservice teachers can become engaged while learning literacy concepts and strategies and in the process of using technology.

WebCT discussion groups (<http://techco.educ.iastate.edu/page/61>). Throughout the semester students utilized the asynchronous features of WebCT to enhance the communication, sharing, and reflection activities embedded in the course. The web-based discussion forums were especially helpful in maintaining contact during the students' field experience, weeks 6-10 of the semester. For example, the following tasks were posted for a threaded discussion topic: (a) Describe how your field experience classroom is arranged/organized in order to promote literacy activities; (b) Describe the reading and writing materials used by children in your field experience classroom; and (c) Administer an interview and interest survey to one child. Post a summary of the results and include a reflection on the experience for classmates' reactions.

Literature circles across the miles (<http://techco.educ.iastate.edu/page/76>). The WebCT environment became the vehicle for communication as a methods class in another state conversed with one instructor's class in a long distance version of literature circles. Literature circles, a procedure taught in all sections of C I 378, provided an organizational strategy to promote response to literature and to deepen comprehension in the process (for a description of literature circles, see Farris, Fuhler, & Walther, 2004). This project began after reading an article about electronic collaboration between classroom teachers and librarians as they discussed children's literature (Johnson, 1999). How could this be adapted to work with college students?

First, digital pictures were scanned into the Participants section of the course Web CT site so that preservice teachers could meet their long distance classmates. A short written introduction was included with the pictures. Both classes from each institution read the award-winning *Because of Winn-Dixie* (DiCamillo, 2000). Each class was divided into five literature circles that read the same group of chapters, performed their varying roles to prepare for discussions, and then spent about a half an hour in class in literature circle discussion.

Before the next class and literature circle discussion time, students extended their discussions across the miles with their partner group using the Discussion area of

the WebCT environment (Camborne, 2001; Grisham, 1997). In addition, classroom activities on our campus were videotaped. Short iMovies were created from three different class sessions. The iMovies were posted on the WebCT site for the partner class to view in an effort to make them more a part of the literature circle process.



A voice from the trenches (<http://techco.educ.iastate.edu/page/55>). Throughout the entire semester, one instructor used electronic mail and a video conferencing system to connect the preservice teachers with a veteran sixth-grade reading/language arts teacher located in another part of the state. Each week, the "Voice" would compose and send an email message that described her past week in the trenches of a sixth-grade classroom. These messages contained a thoughtful collection of the Voice's perception of what it meant to be a teacher as she openly shared her personal observations, ideas, challenges and reflections with students in the class.

Topics covered in each message varied from her personal recollection of her first day of teaching to the steps she took to resolve a conflict between herself and a parent. At times, the Voice even shared pieces of her own writing to illustrate how she encouraged her own students to share and write for an outside audience. The preservice teachers were always encouraged to respond directly to the Voice if they had any questions or comments.

Periodically throughout the semester, the Voice would make a personal appearance in the literacy methods course using a video conferencing system. Several class sessions actually started with the Voice sharing her agenda for that school day. This would be followed by a quick question and answer session between the Voice and the preservice teachers. These video conferencing sessions were also opportunities for sixth graders to share their published writing projects with the preservice teachers. Some of the sixth graders, with signed permission from their parents, presented their writing pieces from their classroom while the preservice teachers listened and evaluated the students' writing sitting in a classroom on the Iowa State campus.

These experiences demonstrated how easily technology can be used to connect educators and classrooms at all levels for meaningful discussion and shared

insights. Educators need not be isolated from each other when technology can be used to connect them.

Introduction project (<http://techco.educ.iastate.edu/page/57>). Utilizing the software options practiced during their introductory technology course (e.g., HyperStudio, PowerPoint, Kid Pix), the instructors required students to combine visuals and text to create a substantive, appealing, informative self-introduction for use in their field experience classroom. Contents needed to address a fourth-through sixth-grade audience and include, but not be limited to, the student's family, hometown, hobbies and activities, friends, vacations, favorite quotes, and favorite authors. Projects varied in format. Initially, the projects were shared in class with colleagues and then with children during their field experience.

Later, students used WebCT asynchronous discussion postings during their field experience to summarize elementary students' reactions to their creation. Many of these reactions suggested how their Introduction Project might be strengthened or modified for use during student teaching and/or during the interview process.

Internet scavenger hunt (<http://techco.educ.iastate.edu/page/77>). The assignment created by one instructor was prompted by a practical reason to have preservice teachers search the Web for quality literacy sites for children to use. At the same time, preservice teachers were encouraged to think of creative ways in which to use technology to extend and enrich their literacy curriculum (Valmont, 2003). From a starter set of Web sites, students broadened their search to include sites that would help teach a reading or writing skill or strategy.

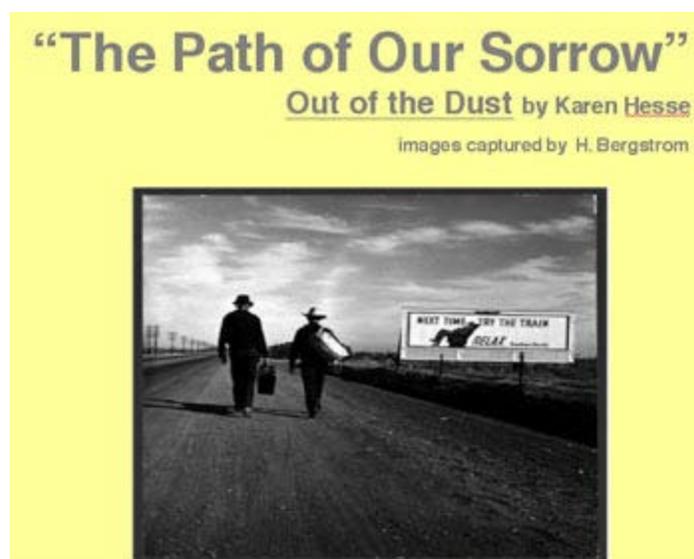
To provide practice in collaboration, scavenger hunts were developed by learning teams (http://www.education-world.com/a_curr/curr113.shmtl). The five-member teams picked their strategy and developed a logically progressing scavenger hunt. To share the learning, completed hunts were presented in class. Each one was loaded onto a laptop computer, and teams rotated around the room exploring the hunts and reviewing a literacy strategy at the same time. Hunts were posted on the WebCT course site for downloading in one class section and burned onto CDs for students in the second section.

A WebQuest on literature WebQuests (<http://techco.educ.iastate.edu/page/60>). In another section one instructor had students examine WebQuests as a way of using Internet resources in an inquiry-oriented manner. Because C I 378 students had studied, evaluated, and created WebQuests in their required technology course, they could easily apply WebQuest experiences to literature in this course.

Students read *Sarah Plain and Tall* (MacLachlan, 1985), while studying and practicing the whole-class literature study approach, and student teams completed an instructor-created WebQuest on Literature WebQuests for *Sarah Plain and Tall*. Special emphasis was given to the "tasks" portion of the WebQuest as the group formulated a science-related WebQuest task for *Sarah*

Plain and Tall, and as the group located an additional literature WebQuest to recommend to colleagues.

Poem picture book (<http://techco.educ.iastate.edu/page/58>). Throughout the course students in all sections of C I 378 were encouraged to consider using poetry in classrooms. They reviewed poetry Web sites and they explored various types of poetry books: comprehensive anthologies with poems arranged by categories, collections of poetry written by a single author or on a single theme, and picture book versions of a single poem (Thompkins, 2002). In one class, discussion on the uses of poem picture books with children (Glazer & Lamme, 1990; Huck, Hepler, Kickman, & Kiefer, 1997) was supplemented by samples of instructor-created and children-created poem picture books. Using multimedia software programs, student-teams collaborated to create a poem picture book for classroom use.



Digital video booktalks (<http://techco.educ.iastate.edu/page/74>). While participating in literature circles, preservice teachers in one section created booktalks about their book using iMovie. After completing their literature circle book, each group wrote a script to storyboard their booktalk. Groups were given a digital video camera and were allowed to go anywhere on campus to tape their booktalk. Next, iMovie was used to edit the tape and produce a booktalk about the literature circle books. These digital video booktalks were posted to a Web site for others to view.

Learning with handhelds (<http://techco.educ.iastate.edu/page/75>). After acquiring a class-set of 30 handhelds, a concerted effort was made by one instructor to model the use of these devices in class. While conducting a whole class literature study on *Sarah Plain and Tall* (MacLachlan, 1985), preservice teachers used handhelds to create a discussion web (Alvermann, 1991) using PiCoMap (<http://goknow.com/Products/PiCoMap/>). The preservice teachers first worked individually and then worked in pairs to discuss the pros and cons of

why Sarah should stay on the prairie. As ideas were brainstormed and discussed, students created a discussion web using PiCoMap to document their responses. Each group shared their selected answer to the discussion web question with the entire class.

Later in the semester, the methods class visited a sixth-grade classroom to observe a learning environment where children had unlimited access to handhelds. Upon arrival, each preservice teacher was paired with a sixth grader to complete a variety of literacy activities using a handheld.

First, the preservice teachers took a weekly spelling test with their sixth-grade partner. After that, the preservice teachers taught PiCoMap while the sixth-graders completed a concept map about themselves. The sixth-grade children were excited to teach and "beam" programs such as Sketchy, miniPiano, and HardBall to their partners. A lively discussion ensued during the trip back to campus as the preservice teachers began to share their experiences and to reflect upon this new paradigm of learning they had experienced.

Virtual reality (<http://techco.educ.iastate.edu/page/53>). Virtual reality (VR) is a computer-based technology that allows users to explore a 360-degree environment and to interact with elements in that environment (Lanier, 1992; Middleton, 1992). Applications in business, medicine, and the military abound, and educational applications are growing in number and sophistication. In one section, VR technology was used in a number of ways. During the introduction to literacy assessment and evaluation, students wrote their impressions while viewing an instructor-created VR of measurement tools. Prior to their field experience, student groups analyzed the literacy features of a classroom after a VR tour of that classroom.

Later, students compared the environment of that VR classroom environment to their field experience classroom. For example, the following task was posted for a WebCT threaded discussion: "Earlier in class we explored a classroom VR. Now describe how your field experience classroom is arranged/organized in order to promote literacy activities."

Additional Internet examples of classroom applications of VR were made available for analysis. At another point in class, an instructor-created VR served as a prompt for a creative writing activity and students examined sample children's writings generated by the VR. Most importantly, student groups analyzed how VR might enhance their own teaching endeavors.

Conclusion

These course examples illustrate how faculty members experienced using the power of technology to enhance learning in a literacy methods course. Since many of the projects resulted in a product for a meaningful audience, students were required to carefully consider the relationship of using both visuals and text

to promote reading and comprehension. Sharing the products with upper elementary children allowed students to further evaluate how their text and visuals communicated a meaningful idea or message.

These diverse projects both exposed and involved students in a wide array of literacy-technology options. In each case students and instructors were learning together, assessing the value of technology as a means to enhance literacy learning. Engaged in the various projects, students were also strengthening their knowledge about literacy, learning literacy with technology, and developing a personal comfort level with technological applications.

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