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ABSTRACT
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write and think critically about social studies education. Through online
reflective journals, electronic mail, a class listserv, a newsgroup, and the
Internet, students incorporated technology into their research, writing,
reflecting, and reacting to social studies in the elementary school.
Technology supported a forum for open communication between students and
instructors, and enriched the learning environment. This paper describes the
design of the course, technology-related assignments, ways that each
technological application enhanced the course, and challenges encountered by
preservice teachers when technology-based instruction is employed in the
classroom. (Author/DLS)

Technology: Creating a Community of Thinkers

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ED 423 822

Abstract

Building a community of thinkers is a goal for education. In a world in which technology provides a means to communicate quickly and efficiently, educators need to develop models for the use of technology as an integral part of building an environment for teachers to thinking critically and creatively.

Technology was used to help create a community of thinkers in the Social Studies in the Elementary School course at the University of Missouri-Columbia. During the preservice course, students used technology to write and think critically about social studies education. Through on-line reflective journals, electronic mail, a class listerv, a newsgroup, and the Internet, students incorporated technology into their research, writing, reflecting and reacting to social studies in the elementary school. Technology supported a forum for open communication between students and instructors and enriched the learning environment. By building technology into the pedagogy of the course, it provided a means for building a community of thinkers.

To create a community of thinkers in the classroom everyone should be responsible of creating ideas and sharing knowledge. Students were the best advocated for promoting the integration of technology into learning process and they can be held responsible to the group for participating in the thinking, writing and technology. It was the instructor's responsibility to determine when the quality of the task would be enhanced with the use of technology. The integration of technology into the classroom provided the students with more time for quality reflection and made better use of classtime.

Technology: Creating a Community of Thinkers

A challenge of colleges and universities for the 21st century is the integration of technology into the learning environment (Barksdale 1996, Jonassen 1995, Snadell, Stewart & Stewart 1996). By incorporating technology into the college classroom the students expand their technological literacy and expand the learning environment beyond the classroom walls. Technology is not only a tool for receiving and disseminating ideas, technology can be a means for articulating ideas, support for differing viewpoints, and responding in thoughtful and creative ways. The use of telecommunication bonds the participants in interdependence, congruence of the task and provides a forum for reflection (Thomas, Clift, & Sugimoto 1996)

Technology must be a integral part of the pedagogy of teaching and learning environment. A meaningful learning environment includes the following seven qualities active, constructive, collaborative, conversational, intentional, contextualized, and reflective (Jonassen 1995) and technology can be a partner in meaningful learning. Educators need to find ways to promote a constructivist learning environment and a community of learners, in which students are active in selecting what to learn, processing new knowledge, and assessing his/her progress and using technology as a means to support the environment

The paper will include how the social studies in the elementary school course developed a community of learners and incorporated technology. Several methods for using technology to facilitate thinking in the social studies education course were (1) listserv, (2) electronic mail, (3) a newsgroup, (4) on-line reflective journals, (5) in class on-line assignments, and (6) implementation of technology into elementary schools lessons.

Setting

Since the 1996 fall semester, there have been over 180 students in the Social Studies in the Elementary School course. For course assignments, most of the students used the Macintosh or PC computers in the Reflector, the College of Education computer laboratory. As students of the university, they have free access to electronic mail, the Internet, course newsgroup and a class listserv. The instructors provided an introduction to the use of each of the forms of communication that is used in the course. We provide the e-mail address of each individual in the course, the class newsgroup and listserv addresses, and the home page for course.

2

Social Studies in the Elementary School is a required three semester hour course for the undergraduate elementary teacher education students at the University of Missouri-Columbia. All course information is posted on the course home page: http://www.coe.missouri.edu/~esse. The course is technology based and meets the university's writing intensive requirements. Within the writing assignments for the course, students are required to write drafts of their work, revise and resubmit work, incorporate critical thinking into writing and write more than 20 pages during the term. The course is scheduled for 50 minutes on Monday, Wednesday and Friday and the Friday sessions are conducted in a computer laboratory.

Technology Related Assignments

Assignments	Technology
In-class Group Work	Listserv
Internet Exploration	Internet
Software Review	CD Roms
Discussion Groups on Issues	Listserv
Reflective Journals	On-line form
Field Experiences	Varied
Article Review	Newsgroup
Concept Maps	PIVIT
Graphic Design	Photo Shop

*Excluding word processing for writing.

The environment of the course is established with the focus on developing a community of thinkers. An environment that incorporates computers needs to have a pedagogical style which utilities the instructor as a facilitator and a collaborative style of instruction (Goodson & Mangan 1991). The instructor is a facilitator for learning and the students work as a community of learners by completing the assignments as a team of preservice teachers. The class meets in a traditional classroom, a computer laboratory and in student selected locations.

In on-line reflective journals the students have made comments and reactions to the course design and the role of technology in the development of preservice teachers.

I keep plugging away. At least now I don't find it scary, I find it challenging.

I'm glad we had a chance to do this--it was learning through discovery!

Electronic Mail

Electronic mail (e-mail) is defined as an electronic communication system that enables users to share information about topics of common interest (Vockell and Brown 1992). A subject of joint interest to all students are class assignments. Using e-mail, the instructor possesses the ability to inform all students of upcoming class events.

A typical collegiate class possesses many academic deadlines. Assignment are due at a certain time and student stress rates elevate as completion dates draw near. When the students are feeling anxious about their work the instructor must assume the role of a motivator. Students received these messages:

You should be very proud of your work on the clusters this term. I hope you can take advantage of your work when you student teach.

E-mail is a form of communication in which we can learn from each other.

Electronic mail allows students "to send messages to individual colleagues, groups" (Buckley 1995) or the entire class at one time. One student wrote to the collective group of elementary social studies students:

My group's cluster project is going all right. We are doing endangered species, and it is proving an easy topic to find information about. Good luck to anyone that is presenting their project in the next week.

The implementing of technology, in a class curriculum, can cause fear for many students. E-mail can be used to ease these feelings of inadequacy. By employing e-mail students "vented" their frustrations concerning technology usage.

I didn't know how to use the Internet before this class. I was almost terrified when it came to using computers.

The one thing I would like to mention is that I'm not afraid of technology and I am confident that I can learn.

As the students gained confidence in their ability to use technology as a communication tool, e-mail responses reflected the students new found confidence:

As an elementary social studies teacher I will bring technology into my classroom by making it available to students and using it in planning and carrying out lessons.

I use e-mail a lot more often than I used to. I also gained great ideas from classmates because of the listserv.

It was very beneficial to use technology in order to get used to it before stepping into the classroom. It has prepared me to use technology in the future and I will be more able to apply my skills.

Electronic mail enhances the instructor's ability to form a community of learners. Electronic mail encourages opportunities for meaningful reflection and allows the student and instructor to observe the thinking and construction of the meaning (McIntrye and Tlusty 1995). When students have the motivation to use and the knowledge to operate e-mail, a classroom of strangers becomes a grouping colleagues. In this scenario, SHARED information is the power that builds professional unity.

Discussion Lists

Establishing a community of learners was accomplished in the implementing of a class listserv. The listserv, designed as a virtual forum (Wild 1996) for class participation, facilitated the transfer of ideas between students and instructors. Involvement in listserv activities was established by the organizational framework of the listserv.

The class subscribed to the listserv following a classroom discussion concerning the educational possibilities of listserv usage in elementary school social studies classes. Once the class had joined the listserv, the class was divided into thirds. Each student was assigned a number one, two or three. Correspondingly, the three instructors of the class were assigned a number group to cultivate. On a rotating weekly basis an instructor posed a question concerned with some aspect of elementary school social studies or classroom teaching situation. After reading the listserv question the members of the assigned group would respond to the question. All members of the class could respond to the query of the instructor. No limit on response length was determined by the instructors or the students. The students received questions on Monday and were expected to respond to the questions by Friday of that same week. A sample question the students responded to dealt with student relations in the classroom.

You are sitting at your classroom desk. Several students are making belittling comments toward another student. The students feelings are hurt. The student catches your eye and beseeches for help. What course of action do you follow to change this negative classroom situation?

Specific topics discussed on the class listserv varied. In particular, holidays were a popular discussion topic. The celebration of Halloween, Christmas and Easter elicited pointed responses among the students. One student wrote about observing Christmas holiday in public schools:

The only holidays I remember learning about in elementary school are Thanksgiving and Christmas. It didn't bother me that we were learning about them because my family celebrates those holidays. Since there are so many diverse backgrounds in the classroom, teaching holidays can be tricky and touchy.

A student's ability to express personal beliefs and thoughts, with anonymity, is one of the positive aspects of the listserv. When asked to give input upon "everyday" classroom situations, e-mail allowed the college students to express their feelings and supply feedback to the instructor.

On Divorce: The topic of divorce is one that is very important to me, being a child in a single parent home. I remember in elementary school we had an hour or two a month where children of divorce could go and talk about their needs and concerns.

On Death in the Family: When dealing with the death of a parent I would first invite that student to let me know how he or she is feeling. I would share the story of when my mother died and how I felt and still do.

On Medical Problems: As someone with a medical problem I can share my experience on how it was for me. I was diagnosed with a heart condition at a very early age. I was never able to participate in activities that my classmates did and they never told me why.

The disadvantages of constructing a listserv for the class were few. The largest concern was the sheer bulk of correspondence (Pearson 1996). Typically an instructor or a student could respond to one hundred and fifty e-mail messages during the semester. The advantages the listserv presents for a class outweighs the concerns a listserv presents for instructors and students. Long and complex conversations develop on listservs, as students explore their developing understandings of both content and pedagogy (Piburn & Middleton 1997). Pearson (1996) states listservs establish the framework for networking and scholarly cooperation, knowledge acquisition a sense of communion and an opportunity to keep pace with innovation. Most important, students find that listservs are fun; and they participate in them with enthusiasm (Pearson 1996).

The Newsgroup

Newsgroups can be more than a place to receive and disseminate information. Students can select what messages are worthy of their response. The responses can be a dialogue of diverse points of view and creative and critical responses.

During the first week of the semester, the students subscribe to a class newsgroup where messages are posted. The newsgroup is attached to the university electronic communication lines so a student can receive e-mail and newsgroup messages on the same system.

Each student selects two exemplary articles on current issues in elementary school social studies such as religion, integration, law related education, holidays, the environment, or economics. The student should review journals such as Social Education, The Social Studies or Social Studies & the Young Learner. The article review consist of an APA reference for article, a paragraph summary of the article and a reaction to the article with discussion questions and the students name. The students are given two weeks to submit each article review on a separate message to the newsgroup.

After everyone has submitted the articles reviews on-line, each student selects two article to read, review and respond to on-line. The response should include the name of the article, the students name and responses to the questions, new ideas, or a continuation of the review. The students reply to the message and latest responses become the last messages on the newsgroup list. The students have two weeks to complete their article responses.

This assignment was designed to incorporate the qualities of meaningful learning (Jonassen 1995) and technology was used to support experiences that engage students in purposeful learning. The newsgroup provided a learning environment for students to be actively engaged, communicate and collaborate with peers, construct knowledge and reflect on ideas and issues in social studies education. The assignment required the students to construct new knowledge from the information found in professional social studies journals and to actively communication their ideas and reactions on the article to their peers. The article reactions and responses allowed students to communicate ideas to the group and reflect on the topic. By having the article reviews on the newsgroup, the students read and reflected on a wide range of current journal article and topics that due to time could not be

discussed during classtime or distributed in paper form. One student said: "I really liked having things posted in the newsgroup and on the e-mail. I could check them anytime of the day or night."

On-line Reflective Journals

Electronic journal writing models behavior that engages the computer as a intellectual partner in facilitating a specific task (Anders & Brooks 1994). The task can be to write about the topics for the course, the assignments, issues in the field, concerns about the course, reflect on the past and make connections to the future. By writing in the journals the students are thinking critically, reflecting and reacting. The students use the reflective journal to actively construct new knowledge.

The students complete a weekly on-line weekly reflective journal http://www.coe.missouri.edu/~esse/reflective.html. The purpose of the journal is to reflect on an aspect of social studies education or the content of the course during the week. The students select the topic and focus of the reflective journal entries. Each week the students write a response to five open ended statements.

- What I learned...........
- What I would like to learn............
- How will I use what I have learned in my future classroom.......
- Goals for the future ....
- Comments/suggestions............

Upon completing the form, the student submits his/her response. The entries for each student are filled in an on-line data base that contained a running log of his/her weekly responses. The journal entries can be reviewed by the instructor or the students to reflect on the course. The instructor read the journals on a weekly bases and responded to individuals by e-mail, or to the group as a listserv message or as an in class announcement. The students can review weekly journals entries.

TABLE 1 Sample Summary of Reflective Journals for Fall 1997		
Date	Focus	Summary/Example
Sept. 16-20	Procedural	Internet
Oct. 7-11	Pedagogy	Field Experience
Oct. 21-25	Pedagogy	CD ROMs
Nov. 4-8	Diverse	Unit Project
Dec. 2-6	Pedagogy	Semester Closure

We found several positive aspects of using an on-line reflective journal to support a meaningful environment and reflective learning. For reflection, the journals provide the students with an opportunity to articulate what they learned and reflect on their knowledge and skills. Because the reflective journal was on-line, the students select where and when to complete the journal, the students use as much time as needed to complete the journal and extend the time and effort spend on the reflection. The on-line communication allows individuals that are reserved to express ideas and students to take risk more than he/she might in class.

The students submit the weekly forms and at the end of the term submit a three questions about the use of technology in the course. In the future we will have students write a summative reflective paper in which the student has the opportunity to review the weekly reflective journals and summarize their progress during the term and set goals for the future.

In Class On-line Assignments

Throughout the semester, the students develop a list of goals and objectives for what is taught in social studies at each grade level. The students use the National Council for the Social Studies Standards (1994), the Missouri Show Me Standards, the Columbia School guidelines, college and elementary school textbooks to research what is included in the elementary social studies curriculum. These documents and others are used to develop the list of grade level guidelines. As the term progresses, the students use the list of goals and objectives for developing lessons and units.

In the second week of the semester, the students form a committee of four to research the scope and sequence for social studies at a specific grade level. During a class period, the groups develop the initial list of ideas and submit their ideas to the listserv. The list of ideas is the brainstorming of concepts and skills at a grade level.

The students reflect and react to the list throughout the semester and the listserv message for a grade level is revised and updated as new ideas are discussed or presented. The list of goals becomes more defined and specific as the students learn new concepts.

By having technology integrated into this assignment the students can research, write, and reflect on the grade level objectives throughout the term. It is an opportunity for students to construct new knowledge as needed and to share the knowledge in printed form to their peers as soon as it is completed. The resources for the assignment are the current materials that they will need to use as teachers. The assignment is student focused and the list of ideas is distributed by the students and retrieved as needed by the students. The value of this assignment is that the ideas are generated by students.

By using the listserv to share the brainstorming of small groups, technology allows students to receive the ideas from their peers in a quick and efficient manner. Messages in a listserv can be revised and new ideas can be added as time passes. The instructor doesn't have to develop a new handout or present new information. It is exciting when learning about a topic can be expanded over time and new messages submitted to the listserv can include thoughtful and creative reflections and reactions. A copy of work during class can be provided to each student instead of being left on chart paper or the chalk board to be destroyed.

I continue to look for methods to use technology during class time for share information during small group work. I am considering using technology to brainstorm a topic, discussion an issue or peer reviews of papers. It is exciting to consider the options of how students can be given a task on the listserv, work in small groups with materials on reserve in a resource center, and disseminate the information. The instructor becomes the facilitator. This is a small scale example of distant learning in a traditional setting.

Technology in Elementary Schools

Preservice teachers encounter many challenges when technology based instruction is employed the classroom. How the preservice teacher responds to these obstacles determines if technology is an integral part of classroom instruction.

A major concern, for the preservice teacher, is the existence of a positive technological culture in the school. For successful technology based instruction in schools, a positive (technological) culture in the school community (Lee 1996) needs to exist. Intensive technological inservice programs and sufficient technical support is needed to provide technology based instruction. Teaching in a supportive technological environment is important but basic educational needs must be addressed in the formation of a positive technological school culture.

How many computers are available for classroom instruction is important to the preservice teacher. The preservice teacher must know how many computers are available for instruction. Will classroom technological instruction be possible or will planned excursions to a computer lab be needed?

Another challenge for preservice teachers is knowing what technology is available for classroom instruction. Are CD-ROMS available at the school's media center? Does the school possess the capability for internal school communication and, thus, increase professional dialogue among teachers (Buckley 1995) and students (e-mail)? Is the school connected to the World Wide Web (Internet)?

Developing a community of learners in a teacher education classroom is key to modeling how the preservice student will develop a community of learners in elementary schools (Bell 1995). Preservice teachers need to know and increase their own technological knowledge. To this end, does the school district/building provide inservice training related to technological classroom instruction? Is adequate technical support provided by the school to solve dilemmas which develop in the transmission of technological based instruction? If the Internet "goes down" during an instructional unit, who will place the lesson "on-line"? Though challenges do exist in the implementation of technological based instruction, a developed plan of attack should lessen the anxiety of instituting a curriculum based on technological instruction.

In developing a lesson plan, preservice teachers are introduced to many planning strategies. A commonly used planning scheme starts with searching available databases with search engines. Numerous commercially based search engines are available. Yahoo, Alta Vista and Lycos are three of many search engines used in planning. Information garnered by the search engines is then utilized to search the World Wide Web (Internet). The Internet provides the preservice teacher a multitude of information sites, many of which possess interactive components, that are applicable to classroom instruction. Through class listservs, e-mail and newsgroups preservice teachers share

their Internet discoveries with classmates. This promotes professional discourse among the preservice teachers. Technology available for the presentation of information takes many forms. PowerPoint, photoshop and pagemaker are a few of the vehicles employed to bring technologically based instruction to the classroom. Coupled with informational gathering knowledge, preservice teachers are exposed to the many computer-based methods of teaching.

Simulations and games are frequently used methods of instruction in teaching social studies. Simulations allow students to engage in activities that would otherwise be too expensive, dangerous or impractical to conduct, in the classroom (Berson 1996). An example of a social studies simulation study is Rivertown Simulation. This simulation is concerned with the rebuilding of a city located on a river
(www.emich.edu/public/geo/rtownintro.html). As mentioned earlier, use of the Internet is a popular technological tool in the classroom. In the technological world of the Internet, this tool allows for virtual exploration of numerous topics. The Internet empowers the classroom teacher to transport the learner to the far reaches of the world. Instant visual access with the Internet combined with instant written communication abilities provides the student and the preservice teacher an endless opportunity of knowledge constructing possibilities.

I wish my teachers in elem. school has used integrated themes like we are writing -social studies would have been a lot more fun! I used to hate it and am learning to like it again.

I guess when I think about student teaching, I wonder if I can do all the work that goes into a unit and be teaching at the same time.

Conclusions
Research continues to be lacking on how to use technology as a tool for teaching social studies (Berson 1996). Instructors and preservice students are challenged to develop methods for incorporating technology that facilitates a community of thinkers. As instructors and preservice students make the use of technology an integrated component of their daily life and are proficient user of technology, then educators can discover new methods for combining thinking and technology. To use higher level thinking skills and to use technology take time and require advanced skills, educators must consider if the investment is worth the return.

Each time technology is integrated into the course there are new challenges and successes. Remember that the instructor is not the only teacher in the classroom, students are excellent in providing expertise in technology. Sometimes the simple task can be the most rewarding, such as when students get "empowered" when they learn to cut and paste to other location besides word processing documents. We have learned that it is important to preassess the students skills level in using each form of technology and adjust our instruction on the use of technology accordingly. We recommend the instructor select one class assignment or task each term and determine if technology can be used to enhance the quality of the learning process.

The shift in the pedagogical infusion of technology is key to encouraging problem solving and inquiry driven approaches (Bulter & Clouse 1994). The use of technology in the course begins with the instructor initiated ideas, expectations and assignments. As the semester progressed the students used technology to form a community of learners by establishing common goals, working in groups, sharing resources, and collaborating on projects. When students become vested in the writing and using technology then a community of thinkers is formed and all groups do not reach this level of responsibility. The level of student involvement and ownership in the process varies each term.

One students reflective journal at the end of the fall 1996 term summarized the techniques used in the course for providing preservice social studies teachers with the skills to use technology and create a community of thinkers.

"It has been beneficial to me and I have learned many things including how to research and put together a unit. I felt that I learned a lot about teaching social studies. What I did not learn, I feel I now have the background knowledge to research on my own. I also learned much about technology in the classroom and I hope that I have the resources to use the things I learned in my own classroom."

8

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9

NOTICE

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