Creating a Website with Dreamweaver using a Problem-based Learning Activity

by
Bonnie Drumwright
Kathryn Odell
Jan Valine

iMET 3
Fall 2001
Introduction

Although schools, have been given technology funding, teachers are not effectively using this technology (Kleiman, 2000). Some of the reasons teachers are not integrating technology into the curriculum include the following:

- Inadequacies in training
- Limited time for preparation
- Limited access to computer hardware/software
- Lack of technology support

(Shelton, 1996)

We would like to add to this list by including resistance to change. It is our observation that teachers are reluctant to integrate technology because they fear that doing so will require a major expenditure of energy and time. On a personal level, we note that local Sacramento and neighboring county school districts have pushed to integrate technology but fall short of their goals in many schools.

One school district in Fort Worth, Texas surveyed their teachers to determine what affected the use of technology in the classroom (Shelton, 1996). The Fort Worth school district found four factors—the four T's: time, training, technology (lack of hardware/software) and teacher-type tasks. They implemented a comprehensive technology plan that focused on training teachers to use technology at different levels. They actually reversed the process of “cart before the horse” concept (Kleiman, 2000). That is, once a teacher came out of a “novice boot camp” in computer training, the participating teachers would receive a computer package (hardware and software). After the initial training program, there were varying levels of support and training, on site and off. Many other school districts in the nation have purchased the hardware but do not provide training and many times do not provide software or even support.

In discussions with fellow iMET3 participants, the following concerns have been voiced: schools have no computer labs on site, hardware and software is outdated, connection to the Internet is lacking, and technical support is not available. Several students have echoed they are the “lone” computer user/expert at their schools and have expressed frustration in their attempts to assist other teachers in integrating technology into their curriculum.

Our team decided to design a project to address these issues. We focused on the instructional strategy of “problem-based learning” (PBL) to train teachers to use technology in their classrooms. As we define PBL, we will convey reasons that support how it is an effective approach for encouraging and training teachers to integrate technology into their curriculum.
Review of Literature

According to (Yildirim, 2000), research supports the idea that the biggest obstacle to teachers using technology in their classrooms is the lack of adequate teacher training. It is that as few as 3% of teachers feel competent in using technology (Albion, 2000)). It has been suggested that technology training is crucial in teacher preparation programs (Yildirim, 2000).

Problem-based learning is a strategy that promotes active learning. PBL is any environment in which the problem drives the learning (Woods, 2001). That is, before students learn some knowledge, they are given a problem. The problem is posed so that the students discover that they need to learn some knowledge before they can solve the problem. PBL develops problem-solving skills by placing students in the active role of problem solvers confronted with an “ill-structured” problem that reflects real life situations (Stepien, 1993). Students are given a problem before they receive any instruction. Originally, PBL was a strategy used by medical schools in the 1960’s (Williams, 1997). Soon other professional training institutions, such as engineering, law and business, began using this strategy. In recent years it has become more of a trend for K-12 or higher education programs to use PBL (Albion, 2000).

According to Albion and Gibson (2000), PBL strategies focus on the presentation of authentic problems as the starting point for learning and result in a measurable increase in the motivation of students. Other characteristics of PBL are that it is student-centered, learning occurs in small groups, and new information is acquired through self-directed learning (University, 2000).

The process of PBL begins when students confront a problem. One of the key elements in PBL is the practice of group work (Williams, 1997). In groups, students organize prior knowledge and attempt to identify the nature of the problem (Problem-based learning, 2001). At the same time, students ask questions like, “What do I need to know?” They proceed to devise a plan to solve their problem and identify the resources they may need (Problem-based learning, 2001). Students begin to put information together as they work to solve the problem. The objectives of the problem-based learning are to learn problem-solving skills that later can foster self-directed learning (Problem-based learning, 2001). Some important outcomes of PBL for students are proactive communication skills, leadership abilities, teamwork, problem solving and critical thinking skills and the ability to find and use appropriate resources (What is problem-based learning, 2000).

Another important facet of problem-based learning is the change in the teacher’s role in the classroom. The teacher takes on the role as coach, facilitator or guide (IMSA.edu). They model and pose questions to the group. As they do this, they tend to fade in the background while groups discuss and brainstorm ideas concerning their problem. Teachers monitor learning by wandering from group to
group, probing and asking students questions, making adjustments when necessary, keeping students actively involved and maintaining group dynamics in a nurturing, supportive way (Stepien, 1993).

But why use problem-based learning as a strategy to encourage and train teachers to integrate technology? Research supports that teachers value opportunities to share the experience of colleagues who have succeeded with computers (Albion, 2000). According to Williams and Williams (1997), there are similarities between PBL and the design process of technology education. Companies in Japan and other nations have used the design process of technology by using work groups to solve problems and complete projects. Both strategies start with an identified problem or situation that directs the students’ context of study or focus area. Both strategies have reliance on work groups, which is a basic principle, and both encourage collaboration.

In the early stages of the process of problem solving, brainstorming becomes an important tool. Brainstorming is more effective in a group environment than when attempted individually. Group work fosters positive collaboration, increases effectiveness and decreases the level of fear of failure. Equally important, is the group’s reflection on the process and its effectiveness. Reflection helps teachers to think about what they may need to improve and what changes are needed in the future steps (Williams, 1997).

Our group decided to gear our simulation of PBL by training teachers to create a classroom website. As more and more schools become active in the Internet community, pressure will be placed upon individual teachers to become active in this environment. At least one, if not more iMET cohorts, has been asked by their school administrator to teach their site colleagues how to create a web page for their classrooms. School or classroom websites can be a rewarding and challenging experience for teachers. According to McKenzie (1997), school or classroom websites achieve four basic goals: introduce visitors to the school, provide resources on the web that relates to their curriculum, provide opportunities to display student work or achievements, and show a calendar of events that are taking place.

**Action Research Plan**

**Area of Focus:**

The purpose of this study is to explore whether providing teachers with a simple format of training to create a class website will impact upon their utilization of technology in the classroom. Specifically, we want to determine the effect of using a strategy of training- Problem-based Learning and a user-friendly tool – Dreamweaver, on teacher’s integration of technology into classroom activities.
Variables:

Independent variables

- Training in website development
- Problem-based Learning strategy
- Dreamweaver web authoring software

Dependent variables

- Range of use of technology in the classroom from; “I use a computer” to “I integrate the use of computer-based technologies into my classroom learning activities”.

Hypothesis:

The provision of basic training to create a website using a PBL format and Dreamweaver web authoring software will increase teacher utilization of technology in the classroom.

Research Questions:

- What impact will instruction in website creation have upon teacher utilization of technology in the classroom?
- What is the effect of instruction in website creation using a PBL training strategy?
- How does the use of Dreamweaver software effect teacher utilization of technology in the classroom?

Intervention:

We developed a basic training lesson in website creation using Dreamweaver software. Following the lesson, the training participants will be asked to complete an activity that uses a problem-based learning format. Specifically, participants will be assigned to groups by class level and asked to develop a classroom website.

Negotiations:

We hope to utilize teachers employed by the Sacramento County Office of Education (SCOE). Prior to proceeding with this qualitative research project, we will need to obtain approval from SCOE to conduct this training. We hope to use the lab at SCOE for the training sessions.
If approval is obtained, we will utilize a group of teachers who volunteer for training and are employed by SCOE. SCOE teachers represent schools in the following categories: ROP, Special Education, Court and Community Schools, Juvenile Hall and Boy's Ranch. Given approval from SCOE, we will utilize their mailing list to send a letter to all teachers to request volunteers for the training program. If response is sufficient, we will select participants, notify them by mail and proceed with training.

**Timeline:**

The following is a tentative timeline for our project:

**Phase 1: December 2001**

- Obtain permission from SCOE for project
- Draft letter to recruit participants
- Finalize pre and post survey form
- Complete training lessons and tentative schedule

**Phase 2: January 2002**

- Contact SCOE to obtain mailing list for teachers
- Send letter to teachers inviting them to training
- Follow-up with teachers if response is limited

**Phase 3: February – March 2002**

- Review responses from teachers
- Select training participants from respondents if there are more than 25 (Criteria for selection would include making sure all schools are represented and selecting individuals with sufficient computer skills)
- Draft letter to participants informing them of their selection and the dates, times and location of the training
- Send letter to participants requesting RSVP by March 30, 2001
- Develop survey drafts and obtain feedback on them

**Phase 4: April – May 2002**

- Conduct training sessions
- Administer pre- and post-training surveys
- Develop methods to assess training effectiveness on a session by session basis

**Phase 5: June 2002**

- Review results of survey
• Analyze data
• Reflect on outcome
• Develop conclusions concerning further refinement of training strategies
• Revise 6-month survey as necessary

Phase 6: November 2002

• Administer 6-month follow-up survey to teachers to assess use of technology in the classroom
• Perform in-depth interviews with 3 teachers to discuss how the training impacted upon their use of technology in the classroom

Phase 7: December 2002

• Analyze data from 6-month follow-up survey
• Analyze data from in-depth interviews
• Reflect on Findings

Resources:

• Computer lab at SCOE
• Macromedia Dreamweaver Software
• Lessons on website creation

Data Collection:

• Pre- and post-training surveys
• 6-month post-training survey
• In-depth interviews

Expected Results

We believe that providing teachers with a simple method for learning website creation will impact upon their use of technology in the classroom. For example, we hope to see an increase in the use of various software programs, the creation of classroom websites and increased integration of computer-based technologies into classroom learning activities. As teachers discover how easy it is to create a website and how this enhances home-school communication, we believe this will have a "ripple effect" upon their utilization of technology in the classroom.

We believe that the Problem-Based Learning strategy will be an effective method to instruct teachers in website creation. PBL engages the learner in the solution of a "real-world" problem and guides them in obtaining the information necessary to solve the problem. Researchers have suggested that teachers prefer "teacher type tasks" in technology training (Shelton, 1996). With the training topic
"Creating a Class Website," the applicability of the task to the teachers is immediately apparent.

Finally, we expect that our selection of the training tool, Dreamweaver, as the web authoring software program will have a positive impact upon teacher utilization of technology in the classroom. Once the teachers experience the ease of creating a web page using a program that doesn’t require understanding of HTML, we believe that this will have a ripple effect on their willingness to utilize other technology in the classroom.

Summary and Conclusions

Although state and federal money has been flowing into school districts to fund technology purchases, teacher training has not kept pace. Often computers sit unused, or are simply utilized for “drill and kill” type programs. Teachers feel unprepared to utilize existing technology to enhance the educational program.

Teacher technology training is necessary to ensure that teachers have the knowledge to effectively integrate technology into the curriculum. However, the training must be designed to meet the needs of teachers. Teachers want relevant training with hands-on experience, “teacher-type tasks”, and time to practice what they have learned. Problem-based learning, with its emphasis on real life problems, hands on activities, and group learning seems ideally suited for teacher training in technology. Using Dreamweaver as a software tool allows teachers to create a web page without learning HTML. Teachers can apply their knowledge of word processors to create a web page with Dreamweaver. This task is further simplified by the existence of class website templates which are freely available from Macromedia.

In conclusion, the key to effective technology use in the classroom must include not only the necessary hardware and software, but also effective training for the teachers who are expected to integrate technology into the curriculum. We will provide relevant hands on training to a group of teachers and hope that our intervention leads to increased integration of computer-based technology in the classroom.
References


