The Online Resource-Based Computer Literacy Class

Sha Li, Shirley King, Edward Jones, and Chris Odionu[1]
School of Education
Alabama A & M University
Normal, AL 35762

Abstract

The computer literacy class is considered a versatile skill class. It trains students in the area of multimedia production skills for instructional purposes. The resource-aided computer literacy class transforms the traditional computer literacy class into a constructivist class which is rich with learning resources, project models, and scaffoldings anytime and anywhere. In this class, students not only successfully acquire skills to make projects for teaching, but also develop an awareness of how Internet resources effectively facilitate project-based learning.

Introduction

The Information Age has revolutionized the nature of how we manage information resources. Digital technology provides better ways for resources to be created, managed, transferred, retrieved, and presented to learners via the Internet. To increase the quality of education, teachers need to combine pedagogical reform with the integration of information technology into our daily instruction (Hannafin, 2001). When the traditional project-based learning is strengthened with the innovative strategies of integrating online learning resources, its effectiveness will be improved (Savey & Duffy, 1985; Bransford, et al., 1991). The resource-based computer literacy class (RBCLC), FED 529 Computer-Based Instructional Technology, uses an innovative approach where learning is enhanced by rich online learning resources. During the FED 529 resource-based computer literacy class, learning activities are guided, modeled, supported, and provided with just-in-time help through both class instruction and online learning resources. This computer literacy class is viewed as innovated project-based learning, in which knowledge, problem-solving skills, and information skills are fostered while the learner's project skills are developed (Moursund, 2003). The teacher of the FED 529 class prepares many learning resources online to facilitate the course. When the digital resources are uploaded online, their multimedia features are activated, thus making the sample and student projects present as fully functional in the web browser; that is, all the text, color, animation, sound, graphics and videos function to their full potential. This is best for project-based learning where students need to understand multimedia capabilities. Their learning experiences are enriched with both new content and meaning. This value added approach is a reinforcer that helps enhance the quality and effectiveness of the project-based learning (McIntosh & Magnet, 2005). Meanwhile, the resource-based computer literacy class becomes a model itself of how to effectively integrate Internet technology into instruction, a lesson which impacts the teacher/students in the long term.

Method

FED 529 Computer-Based Instructional Technology is an introductory computer literacy class for graduate-level teacher education students. It is a project-based hands-on learning class. The usual project-based computer literacy class focuses on creating one project after another. The students follow the teacher's procedures to produce their projects step by step. Their opportunity to learn and to solve problems is limited to the classroom resources only. With the online learning resources added to project-based learning, the computer literacy class provides students with more multimedia resources, varieties of project samples, and effective scaffolding as a supplement to the traditional computer literacy class. Students' vision on integrating technology for education is broadened, their learning is better supported, and their experiences are richer.

FED 529 tries to shift from the traditional way of teaching a computer project-based class to an Internet resource-aided computer project class. The instructor continuously collects useful resources and creates a course website (http://stuinfo.aamu.edu/shali/home) to facilitate this class. The uniqueness of this resource is in that the website contains the project samples or models (MODELS page), the facilitation resources (RESOURCE page), and tutorials in text format and video format (SCHEDULE & FAQ page), all of which are anchored in course content. Even though this class is taught in a face-to-face traditional classroom, these online learning resources constitute a powerful supporting supplement to the learning process.

Students' interest and motivation to learn needs to be stimulated (Woolfolk, 2004). To ensure interest in class, many previous students' sample projects are placed on the class website as models (on MODEL page) so as to expose students to the diversi-

[1]Emails: sha.li@email.aamu.edu; shirley.king@email.aamu.edu; edward.jones@email.aamu.edu; chris.odionu@email.aamu.edu, respectively; P.O. Box 937

fied project design outcomes. When each class starts, students view the model projects to become cognitively engaged and emotionally involved in the display of the multimedia projectsmany of which show them the nature of the multimedia project presentations and how to teach with those features. (A sample project site could be viewed at http://stuinfo.aamu.edu/shali/home/powerpoint.htm). What students glean from the previous students' sample projects are creative project designs, vivid animation, melodious music, and powerful instructional impact on them. This helps students understand project expectations and initiates consideration of their plans for learning with their own projects. The majority of the students who view the sample projects at the beginning of the class trust that what other people can do is what they should be able to achieve.

The RESOURCE page is a place where the instructor produces and collects useful project resources such as sound, music, graphics, animated graphics, photos, videos, paper writing guidance, etc. These resources are ready on the website for downloading anytime and anywhere to meet the students' immediate needs during their project creation. The FAQ on the website is a tutorial system designed to guide the students through the new technical features in each project. Some students like to read the tutorials in text format, others like to view the tutorials in video format. The FAQ page provides both formats of tutorials to let students follow their own preferred way of receiving scaffolding.

Students in FED 529 need to undergo a format adaptation period. At the beginning of the semester, some things students expected in a usual class were not available, such as a hard copy syllabus and guidelines. However, when they were guided to the course website (See Figure 1) they saw more things than they expected. Students need to become familiar with the course website and the downloadable learning resources before they can successfully finish this class. They also need to know how to use search engines to search other online resources for their learning purposes. During their learning process they frequently access the course website to retrieve items like the syllabus, guidelines, clip art, sound effect clips, music clips, videos, and photos. They also must retrieve the online paper writing guidelines, research method samples, and sample papers to enhance their ability to fulfill their writing tasks. Their learning experience also couples with collaborative team work. The teams work together to learn the designed project skills and also to acquire the capability to manipulate Internet technology for instruction in this class environment. This is a "hidden curriculum" (Wikipedia, N.D.) component in this new class environment. The visible benefits of using course-based online learning resources emerge and convince the students that technology is beneficial for a teacher to increase instructional effectiveness.

Table 1. The Learning Phases of the Resource-Based Computer Literacy Class

Phase 1 – Introduce the class to the new environment This module introduces students to the RBCLC environment where face-to-face instruction and online learning resources are both available. An understanding of the environment, the rules and requirements are essential for the learners to be involved in the activities, especially the resources such as models, FAQ tutorials, and resources provided solely for them to make projects.
Phase 2 – Browse the syllabus and the online learning resources provided Resources provided should be familiar to the learners, but the learners should develop a habit of searching for the available resources during their learning process. This habit is taught and developed by the teacher's procedure of intentional guidance.
Phase 3 – View models and samples made by previous students Understanding a variety of projects, multimedia functions, and design options gives students an opportunity to broaden their vision on project potential and their own capabilities. It opens more tracks and options for the students to follow, and it helps them set up higher expectations for their own design and plan.
Phase 4 – Hands-on learning with resource support Resources such as photos, clip art, music clips, video clips and writing guides are ready on the course website. The class has teacher support and team support in a face-to-face learning paradigm. The online tutorial is another option which is effective for learning support both in class and out of class (off campus).
Phase 5 – Peer Evaluation to learn from each other For each multimedia-driven project, there is a showcase time when students present their projects to the whole class for peer evaluation. Students can critique each other's work and also learn from each others' strengths to improve their own projects.
Phase 6 – Discussion as reflection The discussion is conducted in class and on the Discussion Board of the Blackboard. Students exchange ideas and share their discoveries and experiences. They critique their project development and sharpen their ideas as well as their skills.
Phase 7 – Reward Uploading the students' projects to the course website as new models is a reward for the students' achievement. Student's self image of ability to excel with technology is improved and strengthened.

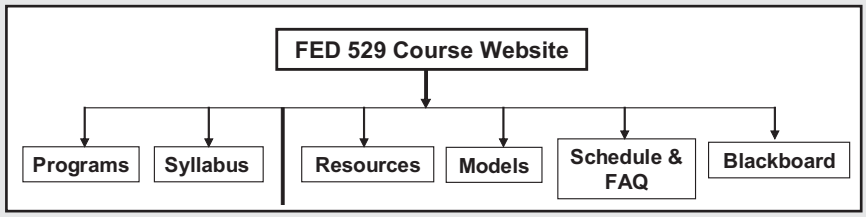

Figure 1. FED 529 course website main resources

The RBCLC follows a series of learning activity phases through which students develop their ability to be a tech-skilled teacher. These phases are summarized in Table 1.

The RBCLC enables the students' ability to use information technology to create computer-based projects increase rapidly because there

are resources to interest them and support them. These online resources are usable anytime and anywhere, and they are multimedia activated. For example, the printout of a PowerPoint project has only text, color, and still graphics, but PowerPoint projects on a computer can display additional features such as animation, sound, video, transition, and narration. These combined features engage the learners more effectively, and they motivate them to learn more consciously. Without these digital online resources, students could not visualize, cogitate, and create to the extent that they do with the resources. In addition, the students who need extra support could resort to the alternative online scaffolding conveniently available.

The perceived advantages of FED 529 with the integration of the online learning resources over the traditional project-based learning without the facilitation of the online learning resources are listed in Table 2.

After one semester of study, the students' understanding of the role of online learning resources on project-based learning is increased positively. They now have technological skills for daily instruction in the classroom as teachers. Many students reported that a similar website would facilitate their own class in the public schools. Examples of the students' verbal feedback follow:

• This class was very interesting, fun, and informative. I have learned MORE than I expected to learn in doing projects. It was excellent with so much support online and good projects like PowerPoint ready at a click. I will recommend it to others.

• This class is interesting because we are given the liberty to be creative with our projects. The strengths of this class come in the form of the instructor. He gives us guided instruction where he explains the various applications to us through his carefully designed online learning resources which helped us to retain them. His strategies helped organize the students working together and taking the leadership and ownership in hands-on work, which boosted understanding and succeeding.

• This class was indeed beneficial for me. I now use many features that I did not know before this course. I also thought that building a website was a hard thing. As a result of this course, I know it is not at all that hard. It takes more creativity than anything else.

• The strength of this class is that I have learned to make the projects like PowerPoint, web page design, graphics design, flyers, etc. as a strategy to help and motivate my students in class. They will too, like us, work in groups or on individual activities. If I got lost, I am able to go back to the online tutorials to refresh what was taught in class. They make me able to work at my own pace and the website provides me several choices of project models to work on.

Table 3 presents survey responses from the students. Sixty-four students of FED 529 in the fall semester of 2005 participated in the survey. They expressed their

Table 2. The Comparison of the Advantages of a Resource-based Project-Based Learning over Traditional Project-Based Learning in a Computer Literacy Class

Traditional PBL	Resource-Aided PBL
Students view the teacher's one sample only. Their vision of the project variety is limited.	Students view not only the teacher's sample project, but also a variety of previous students' excellent sample/model projects; their vision is broadened.
Students follow the teacher step by step to learn the new skills to create a project in class.	Students can not only follow the teacher's demonstration step by step to learn the new skills in class, but also are able to follow the FAQs out of class, anytime and anywhere.
In printout sample projects, limited multimedia features are presented.	Online sample projects have varieties of multimedia features presented when students explore the MODEL web page through computers.
Printout samples use excessive paper, and are easy to lose.	Online digital samples save tons of paper, are easy to download onto a portable disk, and are easily protected.
Lower levels of curiosity, interest and motivation aroused.	Higher levels of curiosity, interest and motivation aroused.
Support and scaffolding are limited in one-on-one style and in class only presentation.	Support and scaffolding are both in class and outside of class and online in text format and video format to meet learners' various needs.
Less options for both advanced students and lower level students.	Advanced students have more tracks to follow, and lower level students can get more support and scaffolding either in class or online.
Teacher-centered learning. Learners follow the teacher structured procedure to learn.	Learner-centered learning. Learners have the learning ownership and control. They also have the option to decide which way to learn and which way to do.
Outcomes are almost a clone of the teacher's sample, with limited creativity.	Outcomes show greater variety, diversity, multiple formats, and more creativity.
Impact on students' learning to create a project only.	Impact on students not only to learn to create projects, but also to experience the way to integrate technology into instruction and learning.

Table 3. Students' Feedback on their Use of the Resources for FED 529 Class

Survey Statement	Agree (N=64)
The FED 529 course website is an effective enhancement to class.	93%
The resources on the course website meet most of my needs.	91%
The online models motivate me and involve me in making my projects.	100%
The online FAQ, either in text or in video, is a helpful tool to learners.	87%
I feel comfortable to learn in this class where face-to-face instruction and online learning resources are both available.	100%
Overall, I evaluate this class as effective for my learning.	93%

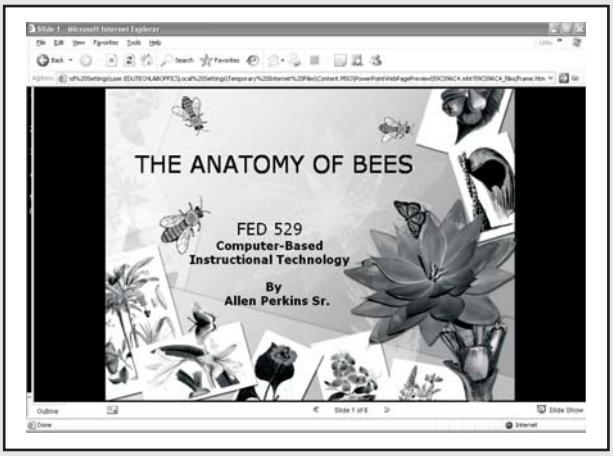

Figure 2. A PowerPoint model project on Internet Explorer browser is shown to the class.

opinions and perspectives on their experience regarding the effectiveness of their using learning resources.

Challenges

Even though integrating online learning resources into a computer literacy class is effective, it still presents several challenges. The instructor has to spend a lot of time and effort designing resources, creating a website, planning how to integrate the resources into the learning process, updating the website, collecting the students' model projects and modifying their projects to enrich the online resources. This is time consuming and demands skills in web design. The school technology infrastructure should be able to provide necessary service for the instructor to integrate this approach. The Information Technology Service Office (ITS) should be able to give sufficient website space for the faculty to create a desirable website which could hold a lot of large multimedia files (e.g., photos, videos, animation and sound files). Often, the instructor has to spend time negotiating with the ITS Office about technical support and virus problems. The possibility of conflict between the instructor and the ITS Office should also be taken into account.

The large multimedia files also take a longer time to download. Many students use dialup Internet connections at home and this may slow the download capabilities. Some students are not patient enough to wait, so they choose to skip using the available resources, turning in unsatisfactory assignments. Each semester, we could find that a few students do not tend to work hard to use the course resources. No matter what resources the class has provided, the students are reluctant to go to the Internet to look for them. So training the students to develop a good habit of using available resources is necessary. Sometimes the instructor has to strongly encourage them to use the available resources; incorporating online resources as a requirement into graded assignments is one way to approach this.

Conclusion

Hands-on learning courses like the computer literacy course used to be considered only effective in the traditional classroom where the teacher could teach/tutor the learner face-to-face and step-by-step. The resource-based computer literacy class redefines the concept of facilitating the project-based class with one more option. The facilitation via a resource online is effective both in the classroom as a teaching tool and out of classroom, or say, anytime and anywhere. This pedagogy takes advantage of digital technology which makes the digital files and portfolios accessible on the Internet. With rapidly developing technology, Internet speed will become much faster and, at that time, large files will be accessible anywhere through any lines. The RBCLC can be more easily adopted by instructors and learners when viewed as an additional resource to facilitate learning, not as a replacement for teaching. This paper calls for research to focus on the RBCLC approach in different disciplines in K-12 schools as well as in colleges.

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