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Evaluation of the Wikitext Instructional Process at Old Dominion University

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Abstract

Due to concerns about time delays in publishing, rising cost of required texts, and overall dissatisfaction with the quality of information contained in available texts, traditional textbooks are no longer viewed by students and teachers as being the primary and most ideal source of information for college courses. Researchers at Old Dominion University have created a project-based learning program in which undergraduate education students developed the course "textbook" through the Wikibook medium, an online resource on which student authors can post text that is easily edited and revised. The program incorporates a student-centered pedagogy and allows students more control over their own education. This study is an evaluation of that program. Researchers used quantitative and qualitative data to determine the effectiveness of incorporating twenty-first century skills into the development of curricular material, focusing on student perceptions throughout the program and academic achievement results.

Key Search Terms

Student-centered learning, collaborative learning environments, textbook creation, constructivist instructional strategies

Introduction

Textbooks have traditionally been considered the primary source of information for classroom learning. Access to information, however, is no longer limited to print media. Availability of information via technological resources such as the internet has allowed educators and students broader and more immediate retrieval of reliable sources. In contrast, information found in some printed textbooks, depending on the discipline, is often considered passé due to inevitable time delays in the print publishing industry (editing, publishing, marketing, distributing).

In addition to the timeliness issue of printed textbooks, students have voiced concern over the quality of information found in available texts. Over 40% of education students surveyed in spring 2006 at Old Dominion University (ODU) expressed dissatisfaction with the primary course text, citing that they did not view the text as a valuable resource. Additionally, ODU education students were surveyed in summer 2006 as part of a post-course survey, and 50% stated that they had neither read the course textbook nor consulted it as a resource.

These two issues, combined with the alarming prices of traditional college textbooks, have led researchers to conclude that traditional textbooks are no longer the ideal source of primary information for college courses.

The purpose of this study was to evaluate the newly introduced, innovative Wikitext Instructional Process (WTIP) to determine the effectiveness of student involvement in the development of course curricular material, specifically the textbook, through the Wikibook medium, an online source on which authors can post information that is easily edited and revised by either themselves or others.

Using mixed methods, researchers focused on student perceptions of this twenty-first

century teaching and learning strategy. Researchers also compared academic achievement results from this project-based learning program with scores from students who completed the course using a traditional textbook. In addition, participants were surveyed to determine levels of engagement in the WTIP compared with amount of time and effort devoted to traditional courses. Researchers gained insight, both positive and negative, into the potential uses of the WTIP in university courses and hope to apply this insight across the disciplines.

The course was also studied for its rhetorical effectiveness, especially through online media. To evaluate the course's rhetoricity, the arguments the instructors made—e.g., "the course material is important", "I have the authority to teach this material", "my course policies and my evaluation of your work is fair", "I care about your success" — and how they made these arguments were examined. Students responses to these arguments were accounted for.

Theoretical Framework

The Wikitext Instructional Process (WTIP) is a twenty-first century creation in which a unique team of researchers, comprised of professors, recent Ph.D. graduates, and current doctoral and masters' level students, worked collaboratively to design and implement a student-centered, project-based learning project. The WTIP is an instructional strategy which follows constructivist educational principles (Henson, 2006); students enrolled in the course were directly involved in the development of curricular material, specifically the textbook used by the class. Unlike traditional textbooks, the use of the Wikibooks website allowed students to evaluate and edit content posted by themselves and others throughout the learning process. The resulting product was therefore created and utilized by each student in the course. Actively involving students in the learning process continues to be a dominant theme in education, and has been particularly challenging in an on-line environment. Course designers and instructors

believed that student involvement in the development of curricular resources would improve motivation and encourage engagement, increasing student learning.

Literature Review

Though printed textbooks have long been considered the primary source of information in a college course, instructors are beginning to agree with Vernon (2006) that printed textbooks by design can provide only static information, while the internet is able to provide material that is more current, revisable, topical, and reliable. In this information age, relying on outdated material is unnecessary and even at times unacceptable. If textbook-quality information could be presented within a wiki, a website that allows collaborative, continual creation and revision, then "the role of wikis in classroom settings…do appear endless" (Oatman, 2005).

21st Century Teaching and Learning

Technology integration across the curriculum is currently a major issue in education and is being emphasized at the national, state, and local levels. National technology standards now call for "new models of education that incorporate the use of information and communication technologies as part of the basics of a 21st century education" (Engstrom & Jewett, 2005, p. 12). In addition, state and national standards in education emphasize the necessity for students to obtain skills to "access, evaluate, use, and create information using technology" (Board of Education, 2005, p. 2). For integration across the curriculum to occur, pre-service teachers need to understand how their students will benefit "from using the right technology appropriately integrated into the curriculum" (May, 2003, p. 38). Moreover, educators must first understand the advantages and manners in which technology can promote learning to achieve higher cognitive skills (Morehead & LaBeau, 2005). Technology advocates believe that technology integration can empower students by incorporating 21st century learning skills into course

content. Acquiring such 21st century skills as higher level thinking, stronger communication abilities, and collaborative learning will encourage student engagement, increasing academic achievement (Department of Education, 2002). By design, the WTIP encompasses a student-centered learning process with innovative, technological integration, empowering students by combining course content with 21st century learning skills.

Additionally, if technology is going to change the face of education as is called for in national and state standards, "…it is not enough to ensure that pre-service teachers understand how to use a computer or access the Internet; they must understand how to create and deliver high-quality technology-infused lessons that engage their students and improve learning" (Ertmer, 2003, p. 125; see also Selfe, 1999). Studies show, however, that pre-service teachers, like their in-service counterparts, are more apt to use technology to supplement traditional teaching strategies rather than use technology itself as a learning tool (Adams, Dawson, & Pringle, 2003). If teacher educators demonstrate how to use technology as a learning tool (Adams et al., 2003), modeling the skills desired of education students, then pre-service teachers can achieve the desired goal of having technology integration across the curriculum become an integral part of classroom learning.

Timeliness and Reliability

The philosophy of a wiki is that its content will be "significantly changed by participants," (Wikibooks, 2006) and the WTIP strictly adheres to that philosophy. Wikibooks are designed to evolve as contributors edit, revise, and build upon existing information in real time. In comparison, information in printed textbooks is considered by many to be outdated due to the unavoidable delay in editing, printing, distributing, and marketing a printed textbook. Though textbook publishers are attempting to provide the latest information by editing and

revising current versions of texts more often, printed textbooks cannot compete with the accessibility and immediacy of information found on the internet (Pekow, 2005).

Benefits of using wikis in the classroom are described by Oatman (2005), who states that using wikis also provides an opportunity for teachers to enforce the concept of reliability of sources and to teach students the importance of critical analysis of sources and information. Though concerns about the trustworthiness of information found in wikis are valid and understandable, classroom projects using wikis have been successful because of their collaborative nature, allowing users to determine the validity of information posted by their peers and edit such information as necessary (Evans, 2006). Bud Hunt from Olde Columbine High School in Longmont, Colorado, agrees that the quality of writing in student-community wikis is greater because students "knew others were looking" (Oatman, 2005).

Rising Costs of Textbooks

The issue of textbook cost is not a new concern, though students' complaints have fallen on deaf ears for decades. "The cost of textbooks has been accelerating much faster than the rate of inflation in the last 20 years – even more than the cost of tuition" (Pekow, 2005). Adding insult to the injury incurred by the rapidly rising costs is the increased revision of existing volumes by publishers, which means that students are not able to buy or sell used books. Furthermore, Evans (2006) explains another advantage in that "the collaboratively written textbook has been a wonderful teaching tool; rather than accepting information passively from a standard textbook, students learned the material more thoroughly and with more enthusiasm by creating their own" (p. 30). This challenges print media proponents' assertions that reliable information comes only at a cost, and not an inexpensive one (Shareski and Winkler, 2005).

Conclusion

In addition to offering 21st century learning skills, timeliness and reliability of information, and cost reduction to students, Wikibooks can also provide easily accessible supplemental information in the form of links to other quality, trustworthy sites (Vernon, 2006). WTIP innovators hope that by changing the scope of instruction to allow collaboration and shared knowledge, the focus of classroom teaching and learning will also evolve (Ferris & Wilder, 2006). The intended result of this educational reform effort is to enhance learning by increasing student involvement in course content.

Methods

The WTIP was implemented in an introductory education course at a mid-Atlantic university during the fall 2006 semester. Two-hundred twenty-seven students, 82 on-campus and 145 on-line, enrolled in the course and became subjects of this study. The course was subsequently offered in a revised format in the spring 2007 semester. One-hundred eighty-two students, 101 on-campus and 81 on-line, participated in the spring course. Participant anonymity was strictly enforced and maintained throughout the different studies.

Course designers and researchers compiled a list of topics covered in similar introductory education courses. The number of topics totaled approximately 80; up to three articles could be written (by individual students) for each topic. Students were also given the option to choose a wildcard topic, which some students chose to do. Each student was instructed to choose a topic about which to write a 1,000-word expository article. Students were provided with an introduction to the topic along with several key search terms to assist research. Along with the article, students were responsible for creating five multiple-choice questions, one essay question, and a sidebar to complete the assignment. The sidebar could consist of any relevant data (quote,

news piece, video clip, graphic, etc.) that supported and/or supplemented the information in the article. Once complete, the article, accompanying sidebar, and questions were posted on the Wikibooks site.

Once the articles were posted, each article was read and evaluated, or "rated," by students. To reduce the amount of reading for each student while ensuring each article was read and rated, students were placed in groups and assigned specific articles to read and rate. Approximately seventy students read and ranked each article. The students were asked to assign a rating on the quality of content for each article based on a three point scale: outstanding, satisfactory, or unsatisfactory. The article that received the highest ranking for each topic was chosen as the article to be incorporated in the final "textbook." A static version of the textbook article was placed on the course's Blackboard site to alleviate any concerns about further editing. Students were responsible only for knowing the content in each selected article for quizzes and exams. Students were also encouraged by course instructors to edit articles written by classmates.

The requirements for writing and posting the articles remained consistent during both the fall and spring courses, though other aspects of the course changed. One of the changes was the topic choice for the articles. For students enrolled in the fall course, the topic list was chosen before the course began by course designers and instructors; "wildcard" choices were available for any student who chose a topic other than those previously listed. In the spring, the course designers created a new topic list, which consisted of topics which had not been covered in the fall course along with new topics suggested by education students, instructors, and other consultants on the process. In the fall course, each article was given an initial grade by a grading team comprised of graduate assistants. Students were informed of the initial grades and were

given an opportunity to edit and revise their articles to improve the grade. Final grades on the articles were assigned by the grading team one week before the article was to be ranked by class members. While students were required by course guidelines to read and rate articles, the rating process was not tracked by instructors. Students were also not required (though they were strongly encouraged) to edit or revise articles written by others in the fall course.

In the spring course, the students rated the articles on three criteria: importance of topic, article interest level, and credibility of article content. Each criterion had a five-point rating scale, 1 being lowest and 5 being highest. The results of the ratings entered by students were averaged and became the final grade for the article. Four instructors also read and rated each article to allow for comparison of student-assigned versus instructor-assigned grades. Because of the impact of the ratings in this course, students were required to provide their university identification number each time they rated an article; this allowed instructors to ensure that each student was performing the required task.

Students in the spring course were also required to edit content posted by their classmates, whereas this task was optional in the fall course. Editions to content were classified as being a “major” edit, which consisted of a substantial addition or contribution to an existing article (approximately 300 words), and a “minor” edit, which was essentially a supplement to an article (approximately 150 words). Students were required to make at least one major and one minor edit to any article written by another students; edits to one’s own article were acceptable but did not qualify as completion of the task.

Quantitative data comparing student achievement in these courses versus that of students who completed the course using a traditional textbook were obtained from students’ final grades. Quantitative and qualitative data describing student attitudes and perceptions on the WTIP were

collected from pre-, mid-, and post-course surveys. For each of the course quizzes, students were awarded extra credit for answering one of eight open-ended questions, selected at random, about the WTIP. Other qualitative data was obtained from student evaluations, which solicited compliments and criticisms/suggestions for improvement of the process. Data about the course's rhetoricity was qualitatively collected through interviews with the instructors, open-ended surveys with the students, and a collection of correspondences between the instructors and students. Although WTIP was not this research's focus, data about WTIP emerged from this study.

Multiple researchers participated in collecting and analyzing this data. All measures were evaluated to ensure validity and reliability.

Results

Student engagement levels with course content, most specifically the course textbook, rose significantly from the summer 2006 course (control) to the fall 2006 course (experimental). Seventy-eight percent of students in the summer course stated they were passively involved or not involved at all with the textbook content, while 61% of the WTIP process students stated they were actively or very actively involved with the textbook content. While 50% of the summer students stated they had learned very little or nothing from the course text, almost 84% of the fall students felt they had learned a great deal or a fair amount from the text; less than 12% felt they had learned very little. Additionally, 100% of the respondents in the summer course stated they spent less than 2 hours a week reading the course text, while 32% of fall respondents spent more than 3 hours a week interacting with the course text. While we recognize the disparity may result from the concentrated time allotted for summer courses, we believe these numbers are comparable because of the larger course load many students take during the

extended semesters. Sixty-one percent of the respondents in the fall course stated that the WTIP contributed to the increase in involvement with course content.

Although over 74% of the fall respondents stated in the pre-course survey that they worried that the WTIP would not be a successful learning tool, post-course survey results showed a dramatic increase in higher-level thinking skills. In fact, 69% of post-course survey respondents stated that they were satisfied with their total learning experience using the WTIP. Fifty-four percent of respondents stated that they felt the WTIP helped them develop critical thinking skills, and over 54% stated that the WTIP improved their higher-level thinking skills, which were defined on the survey as being the "ability to apply, evaluate, analyze, and synthesize information."

Qualitative data concerning the WTIP as an instructional method included comments stating that the WTIP "greatly enhanced my learning potential for this course;" others felt that they were "learning a lot from peers." One respondent even felt that the process was "perhaps the most inspiring undertaking of educational revamping" he had ever experienced. One student spoke of the evolution of perception about the process through the duration of the course: "initially…I felt that peer-written articles would be received with less enthusiasm." This sentiment resonated with the data collected about the course's rhetorical nature. More importantly, it was clear these future instructors understood the assignment's social and pedagogical purposes when they made statements like, "We don't always recognize that our peers have valuable experiences, thoughts, and ideas to share…" and "It is obvious that many students have put a lot of thought, time, and research into their articles. Now that we have witnessed the process in action, I'm sure most, if not all, of us are starting to feel that peer-written articles can be just as good (as those written by text authors)." As to be expected, there

were also some students who were displeased with WTIP; they did not believe their course readings should be written by “their idiot peers” or that they should be “doing the instructor’s work for him.” While we do not discount these perceptions, we also recognize that they reflect a philosophy of education that positions the instructor as the sole purveyor of course knowledge; these students do not seem to value the constructivist educational principles that the WTIP helps realize.

Students’ perceptions about the quality of content in their textbook were also encouraging. Over 79% of students in the fall course felt that the currency of information in the textbook they wrote in the WTIP was higher or much higher. Forty-seven percent judged the quality of the content in their textbook as higher or much higher. When asked to rate the credibility of content in the student-written textbook, 35% felt the credibility was higher or much higher, with another 46% stating the credibility was about the same. Finally, over 75% of respondents stated that they felt the overall quality of their textbook was better or much better than other textbooks they have read.

Most encouraging were the results which showed that over 62% of respondents in the fall course would like to see the WTIP used in other courses, and 71% stated that they would apply the skills learned in the WTIP course to their practice as an education professional.

Conclusions and Recommendations

Researchers concluded that the students in these courses gained positive educational experiences by participating in the WTIP. Though much of the data collected were self-reports of attitudes and perceptions, including the statistically significant increase in engagement levels, the increase in academic achievement for participants in the experimental group (WTIP students) offers support for the findings in this study. Further studies which will focus on quality of

student articles (chapters) compared to traditional textbook material are underway and will explore quality and credibility of content and writing. No results are yet available from these studies.

Results and implications from this study are significant given the innovative design of the course; no published research currently exists on using a student-written textbook as a primary source of information in a college course. Students' changes in perceptions through the duration of the course also indicated their willingness to accept the rapid prototyping model utilized in this course, primarily in the fall semester. Course designers, instructors, and evaluators believe they have changed the dynamics of classroom and distance learning by changing textbook format and creation, broadening the classroom setting via the internet to increase student-centered learning.

The researchers recommend that this process be applied to other disciplines to determine if similar results are obtained. Researchers also recommend that results from this study be used to help inform educators of the significance of technology-integration and collaborative learning environments for other instructional contexts. Researchers believe that this process can further drive curriculum and educational reform efforts and practices across content areas.

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