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A Case Study of the Process and Problems of Incorporating Web-Based Technology into Traditional Campus Courses

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Abstract: A small liberal arts college instituted a project to integrate use of web-based course tools into campus classes because of their potential for enhancing intellectual interaction and community. Despite considerable effort, there was minimal impact. Data from a survey of students led to recommendations for encouraging more effective incorporation.

Computer technology has opened new possibilities in education at every level. Students can participate in a virtual educational environment as well as, or instead of, a real-world one. There has been much talk about how important it is for those in higher education to incorporate the use of technology into their teaching to enhance student learning and prepare students for using technology in their lives later. Web-based applications have allowed all aspects of post-secondary education, including lectures, student/student interactions, teacher/student exchanges, and assessment to be provided on-line. [1] While this has helped develop virtual educational environments where distance learning becomes a viable alternative to classroom courses, the applications have not been seen as limited to this purpose. [2] Rather, web-based programs have been advocated by some as valuable, if not crucial, additions to the traditional campus course structure. The question has become how to get current faculty to incorporate web-based technology into their courses and encourage students to take advantage of the expanded possibilities provided by these tools.

When this question arose at Pacific University, the approach suggested was a model where successive cadres are trained and immersed in the web-based technology until everyone is
proficient. The initial target would be the First Year Seminar (FYS) because it involved 15 faculty members and all the students in the freshman class. The decision to focus first on the FYS was logical because it would affect an entire class of students and help to develop the technological capabilities of faculty who could then continue to introduce subsequent classes to these important tools. Moreover, as the first students moved through their years at the institution, they would be supportive of efforts by other faculty to incorporate the technology into different types of courses. Over four years there could be a substantial shift in the use of technology on campus.

Targeting the FYS was also beneficial because there is compatibility between the advantages touted for web-based tools and the goals of this course. The four-semester hour, first-term course focuses on active engagement with texts and peers to help entering students hone necessary academic skills, skills such as critical thinking, effective writing, and thoughtful exchange of ideas. It is meant to begin to move the students toward the curricular goals of the College of Arts and Sciences which include “a command of the basic tools of thought and language” and preparation for “a life of educated engagement”. [3] The individual syllabi for the different sections point more specifically to increasing students’ ability to understand texts, to communicate ideas, to participate in intellectual discussion, to think deeply, to probe one’s own values, to understand others’ perspectives, and to defend reasoned positions.

When considering how best to achieve such academic goals, there has been thoughtful work in the recent past that examined undergraduate education and recommend practices to enhance its effectiveness. In 1987, the American Association for Higher Education published 7 principles based on research about good teaching and learning in higher education.

“Good practice in undergraduate education:

1. encourages contact between students and faculty
2. develops reciprocity and cooperation among students,
3. encourages active learning,
4. gives prompt feedback,
5. emphasizes time on task,
6. communicates high expectations, and
7. respects diverse talents and ways of learning.” [4]

More recently, Arthur Chickering and Stephen Ehrmann have examined the role of technology in encouraging these practices, pointing particularly to the enhanced ease of communication between students and faculty. [5] Instructors are able to provide information about course assignments that can be easily accessed whenever and from wherever the student chooses. Students are able to submit questions and assignments to receive timely feedback from the faculty. Computer-based tools can provide expanded opportunities for intellectual interaction, between students and with the instructor, especially for those students who have difficulty sharing their thoughts in face-to-face situations. Moreover, asynchronous on-line conversations can deepen inquiry into a topic, with time to think through and compose a response in a way
that is not possible in classroom discussion. In other words, technology can provide valuable support for effective teaching of undergraduates.

Given the goals and structure of the First Year Seminar at Pacific University, use of web-based course tools would seem particularly appropriate for supporting good practice. Therefore, seminar faculty were asked whether they would incorporate WebCT (the web-based course management application licensed on campus) into their sections, with the incentive that they would be given a new PC or MAC laptop computer to replace their current office desktop machine if they made a good faith effort at the minimal level. Unfortunately, even with this incentive, only eight out of the 15 faculty were willing to participate.

Although the potential impact of the project had been substantially reduced already, it still seemed important to carry it through. The interested faculty were given a workshop by a consultant from Marylhurst College that provided an overview of the tools available in WebCT. They were paid for attendance at each session; two were required and one was optional. At the end of the workshop, just as the school year was beginning, they received their new computers. As the term started, the incoming students were assigned to different sections of the FYS, without reference to their interest or skill in computer use. Each section had an upper-class mentor to assist in the course but none of these was involved in the WebCT workshop or was assigned to a WebCT section based on extent of knowledge of the Web.

In response to a request from some of the faculty, the information services on campus provided a session on WebCT for the mentors, to which four came, and an in-class introduction to WebCT for four of the sections during the first days of the term. Additional sessions were available to students at lunch and in late afternoon almost every day during the first week of school, yet only two students came to any of these. Unfortunately, while students may have become comfortable with the technology, the campus server was overloaded during much of this first term with the increased demand, making access more difficult for everyone on campus. That meant WebCT could not be easily used even if there were good intentions to do so.

As the term progressed, I was asked to develop an exit questionnaire for all the students about their FYS experience in an effort to compare the responses of students in classes that had used WebCT with those from the other classes. Such a comparison would provide important information about whether the technology did indeed enhance students’ reported engagement in the course and their development of intellectual skills. An additional set of questions was included for those in the WebCT sections to ascertain directly students’ perception of the value of the technology for achieving the goals of the FYS. Unfortunately, there was a strong negative response to this assessment for a variety of reasons, the most salient that many of the faculty who supposedly were in WebCT classes had actually done little with the technology, making any comparison based on use and non-use moot. It would appear that the attempt to begin the incorporation of web-based technologies into campus courses had had very little success.

However, before discussing some of the lessons from this attempt, it is worth presenting the data
from students in four sections, two using WebCT and two not, who did fill out the questionnaires. Most important for the issue of the role of technology in an on-campus course such as this is that there was no significant difference in the mean responses between those in WebCT classes and those in non-WebCT classes on any of the general survey questions, except for the one on knowledge about the use of electronic learning resources where the WebCT classes were significantly higher as would be expected (See Table 1). The use of technology was not the crucial variable determining student responses to the course. In addition, examination of responses by individual sections revealed that the two classes within each type varied considerably, often with the mean from one high while the other was low, therefore washing out any coherent pattern of differences based on the presence or absence of the technology. And, while one of the WebCT classes used the technology significantly more than the other, that did not systematically related to responding more positively (or negatively) about other aspects of the class.

Table 1: Comparison of mean responses for students using or not using WebCT
(Students responded to each question on a Likert type scale where 1 represented none or not at all, 3 somewhat and 5 very much)

<table>
<thead>
<tr>
<th>Question</th>
<th>Non-WebCT</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebCT</td>
<td></td>
<td>(n=39)</td>
</tr>
<tr>
<td>How deeply did you understand the text and issues of this class?</td>
<td>3.73</td>
<td>3.56</td>
</tr>
<tr>
<td>To what extent did you have a sense of community with your classmates?</td>
<td>3.86</td>
<td>3.84</td>
</tr>
<tr>
<td>How would you evaluate the quality of the discussion in your section?</td>
<td>3.89</td>
<td>3.85</td>
</tr>
<tr>
<td>How much did you participate in the discussion?</td>
<td>3.40</td>
<td>3.08</td>
</tr>
<tr>
<td>How easy was it to participate?</td>
<td>3.54</td>
<td>3.57</td>
</tr>
<tr>
<td>How much did you enjoy your interaction with fellow students?</td>
<td>3.95</td>
<td>3.67</td>
</tr>
<tr>
<td>To what extent did the FYS challenge you to think?</td>
<td>4.21</td>
<td>4.11</td>
</tr>
<tr>
<td>To what extent do you think FYS prepared you for your subsequent college experience?</td>
<td>3.89</td>
<td>3.26</td>
</tr>
<tr>
<td>To what extent did the course provide you with knowledge about use of electronic learning resources?</td>
<td>1.61</td>
<td>2.57*</td>
</tr>
<tr>
<td>How confident are you at this point in your ability to use electronic resources?</td>
<td>3.85</td>
<td>3.92</td>
</tr>
<tr>
<td>Overall, how satisfied are you with the FYS as a learning experience?</td>
<td>3.96</td>
<td>3.69</td>
</tr>
</tbody>
</table>

(*t-test p<.05)

Interestingly, some of the relationships that underlie the encouragement of the use of such technology as WebCT were apparent here. The more students participated in the discussions, the greater their sense of understanding of the texts and issues (r = .34, p<.01), although that depth of understanding was not related significantly to their evaluation of the quality of the discussion in their section. Those who said they found it easy to participate participated more (r = .51, p<.0001), and those who enjoyed the interaction in the class also reported participating more (r = .27, p<.05) and experiencing a higher quality of discussion (r = .32, p<.01). A sense of community was also strongly tied to enjoying the interaction in the class (r = .60, p<.0001), although it was not associated with ease of participation.

It is noteworthy, given the assumption behind this project, that the extent to which FYS was
perceived to provide students with knowledge about use of electronic resources was not correlated with confidence in being able to use such resources. Even in the non-WebCT classes, only eight students did not express at least some confidence in their ability to use technology. Students may be getting sufficient opportunities to try various tools so that most feel they can pick up whatever they need. In other words, specifically incorporating technology tools into on-campus coursework may not be so crucial for students’ success during and after their undergraduate years.

The additional questions for just the WebCT classes focused on how the students felt the use of WebCT in their FYS section affected a series of positive goals. Each allowed responses of 1 Strongly Negative, 2 Negative, 3 Not at all, 4 Positive, and 5 Strongly Positive. There was only one negative response to any of the questions. The highest means were for WebCT affecting interaction with the instructor (mean = 3.97) and understanding of others’ perspective (mean = 4.0). The most interesting information, though, is the number of students in the one class that used WebCT the most (n = 19) who indicated that use of WebCT affected their classroom experience Not at All, Positively, or Strongly Positively. The percentages appear in Table 2 with the questions that formed the second part of the questionnaire. At least with this one class, students generally tended to perceive the incorporation of WebCT as having a positive effect on their attaining the goals of the class. It appears the technology can have the impact on enhancing on-campus education as is claimed.

Table 2: Percent of students with neutral or positive response to WebCT

<table>
<thead>
<tr>
<th>How do you feel that the use of WebCT in your FYS class affected:</th>
<th>“Not at all”</th>
<th>“Positive”</th>
<th>“Strongly Positive”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your comfort level with use of computers?</td>
<td>42%</td>
<td>47%</td>
<td>11%</td>
</tr>
<tr>
<td>The sense of community within the class?</td>
<td>21%</td>
<td>53%</td>
<td>26%</td>
</tr>
<tr>
<td>Your interaction with your peers?</td>
<td>16%</td>
<td>64%</td>
<td>16%</td>
</tr>
<tr>
<td>Your interaction with your instructor?</td>
<td>16%</td>
<td>53%</td>
<td>31%</td>
</tr>
<tr>
<td>Your willingness to participate in discussion?</td>
<td>42%</td>
<td>47%</td>
<td>11%</td>
</tr>
<tr>
<td>Your ability to comprehend the texts?</td>
<td>26%</td>
<td>58%</td>
<td>16%</td>
</tr>
<tr>
<td>The amount that you learned?</td>
<td>33%</td>
<td>61%</td>
<td>6%</td>
</tr>
<tr>
<td>The depth of your understanding?</td>
<td>28%</td>
<td>61%</td>
<td>11%</td>
</tr>
<tr>
<td>Your ability to analyze the issues critically?</td>
<td>55%</td>
<td>25%</td>
<td>15%</td>
</tr>
<tr>
<td>Your probing of your own values?</td>
<td>50%</td>
<td>25%</td>
<td>20%</td>
</tr>
<tr>
<td>Your understanding of others’ perspectives?</td>
<td>10%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>Your ability to defend your own ideas?</td>
<td>45%</td>
<td>45%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Finally, the written comments of these students, both negative and positive, are useful for focusing future efforts.

Reasons students did not use WebCT more:

Most people didn’t use it. I mostly just checked the instructor’s postings.
I didn’t want to post any of my thoughts for people to read.
I didn’t have much to say.
I didn’t think it was very useful
Too lazy.
Getting to a computer was difficult.

Ways WebCT did not add to the learning experience:

Some people wrote really dumb stuff, very negative and not helpful.  
I don’t think it hurt anything but it was only minimally successful in creating discussion between classmates.  
It was sometimes used as just a soapbox to whine about the class. This kind of abuse was annoying.  
I didn’t post anything myself, so I don’t feel it helped me that much.  
I was attacked by classmates on my position on things.  
One more thing I had to keep up with.

Ways WebCT added to the learning experience:

5 people commented on how it helped those who do not like to participate in class.  
4 mentioned it help them know what to expect in class, or to keep up with assignments.  
3 mentioned that it made it easier for the class to communicate, ask questions, compare opinions.

Returning then to the question of how to encourage incorporation of web-based applications into campus courses, the experience reported here holds a few lessons. First is the obvious—this is not an easy process: it takes time, good support, and careful planning. More importantly, the problem of time is complex. For those faculty who are not particularly interested or particularly oriented toward technology, there needs to be sufficient time to get the tools set up, with help.  
An overview of possible tools may increase interest, and in the end encourage gradual incorporation because of some sense of increased confidence that this all is doable. However, such a presentation is overwhelming at first, and perhaps impossible to translate into actual use without assistance to set up one particular tool for one particular situation with continued proactive support for considerable time afterwards.

Then there is the issue of the general allocation of time by students and faculty during an academic term. In this case, the FYS met three times a week for one and a half hours. That allowed for much face-to-face discussion, making time spent outside of class in discussion on-line a questionable addition given the myriad other demands on students and faculty. The same holds for the reading and writing. If the on-line tools are to be used more extensively, the time spent on them must replace rather than add to time involved with the coursework off-line. And unless time spent on-line can provide something better than the off-line process in terms of accomplishing the goals, it will not be useful. To even hope to have that happen, faculty must have the time before a class begins to structure the on-line coursework and the time during the term to monitor or participate in what happens there. In addition, they need to set expectations for student use that seems reasonable, enforceable, and productive. Otherwise, few students will use the tools for exchanges that may not be productive, or in ways that actually inhibit the
contributions of others rather than facilitating discussion. The parameters of the on-line discussion need to be as carefully established as those for face-to-face interaction in the classroom, where specific guidelines on the responsibilities of the group, the listeners, and the speakers are available.

Finally, there is the question of why bother? Faculty must believe that the use of technology will actually enhance student achievement of the course goals, that the time required to incorporate these tools will be acknowledged and appreciated, and that the intention is not to replace them with technology or to force them to use it because it is *au courant*.

References


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ONE THOUGHT ON “A CASE STUDY OF THE PROCESS AND PROBLEMS OF INCORPORATING WEB-BASED TECHNOLOGY INTO TRADITIONAL CAMPUS COURSES”

**Clementina Frago**

**on** January 30, 2014 at 6:17 PM **said:**

Thank you for some other magnificent post. The place else may anybody get that type of info in such an ideal method of writing? I have a presentation next week, and I am at the search for such info.