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Cloud-Based Course Development: Teaching with a “Safety” Net

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ABSTRACT

This paper makes a case for teaching without a text by employing cloud-based resources. It covers problems commonly associated with the use of texts, outlines a process for developing courses without textbooks, uses the author’s e-commerce course as an example of applying the process to a course, and reports the preliminary results of using this process in terms of both student performance and student reaction to working without a text. Suggestions are made regarding how others may proceed to employ this strategy in their own courses.

Keywords: Textbooks, course design, situational factors, student learning goals, feedback and assessment, teaching and learning activities, integration.

INTRODUCTION

The students in my e-business class never open their textbook. The reason: I have found that the less I use the book, the more they learn—so, in the spring of 2012, we gave up the academic “safety net” for both the teacher and the students and did not use a textbook.

I did not set out to banish the book from my classroom. During my first year of teaching e-business, a period in which I was new to the subject matter and struggling to stay ahead of the students, I based much of my course content primarily on the organization of the textbook. In my middle years, after acquiring subject-matter expertise through industry projects and considering my exposure to the Scholarship of Teaching and Learning (SoTL), I continued to use a text but found that I assigned little reading from it. In class, I focused more on using active learning activities rather than lecture on the content of the text. More recently, I scrapped the use of the text altogether and really have not missed using one. I realized the deficiencies common to most textbooks and substituted active-learning in-class and cloud-based out-of-class curriculum activities for topics that my students needed help in mastering. As I added more predominantly cloud-based activities and resources, I found that students learned far more in terms of their ability to *do* e-commerce when I did not assign the book.

THE PROBLEM WITH TEXTBOOKS

Most of us assign textbooks for what we always assumed were good pedagogical reasons: We wanted students to be able to fill in gaps we do not get to in class, to engage in fact-checking, to read other perspectives, to have easy access to data, to find a framework for some of our more

esoteric departures, and to provide students with a specialized reference guide rather than having them reach for a general topics encyclopedia. Great ideas—except that given our students exposure to technology, most of them do not use books for those purposes anymore! In fact, recent cross-disciplinary research (Clump, Bauer & Bradley, 2004) has indicated that only a small minority of our students (27.4%) actually read the book before class, and on average only 70 percent of our students (between 60% and 90%) even read the material before a test, with a significant difference existing between courses. Another recent study (Pryor et al., 2009) indicated that close to 99 percent of our students use the internet for research or homework.

While some textbooks are truly excellent, most tend to bore my students and therefore frustrate me. Since textbooks are marketed nationally, most attempt to comply with publisher’s standards for both minimal length and universal content, frequently resulting in heavy tomes that cover, at best, all topics superficially. Some textbooks do a fabulous job of making their content relevant, but others insult students' intelligence by oversimplifying and fragmenting the subject matter so much that it becomes virtually incomprehensible. Still others explore only a few topics instead of an ever-evolving standard content set. Many texts promulgate misconceptions or even outright errors. They present ideas didactically as discrete facts to be accepted and memorized, rather than as clues of principles to be discovered and explored. In addition, consistent with Steven Colbert’s concept of “truthiness” (Colbert & Hoskinson, 2005), our students believe that if it is in the text, then it must be true.

Many of today’s professors feel that most of today’s texts are simply too expensive, usually too long, and frequently too dense to be of much practical use. I freely admit that it was the first of these reasons that first led me to eschew a text in my course. I decided to stop using a text when the \$75 paperback I was using shot up to closer to \$200 and I simply could not justify the price, given how little I teach from a text. I have found that little generates more student complaints than professors requiring books from which reading assignments are not required.

Without a textbook, one can create a curriculum that engages students by relating e-business to their everyday lives. Lessons become clearer when the topic is linked to an issue that affects them personally. For example, most if not all of my students are daily Facebook users, and I can use Facebook as a teaching tool to explore topics/concepts such as privacy and security of customer information, the influence of social networking on purchasing decisions, and how social software is transforming typical business models to sustain a competitive advantage in a particular industry. A little creativity is all that is needed to apply Facebook or other current social software tools to practically any discipline. Other student-related examples common to most university environments include all of the typical “hot-button” student issues such as on-campus housing, food service, prices and availability of texts in the bookstore, campus parking and transportation, and course registration.

Teaching without a textbook means more preparation time, especially in the first few times through a course. It means amassing and adapting curriculum from a wide variety of sources, including journals, lab books, web sites, packaged curricula, and even other teachers. It means mapping this collection of resources to the course content standards and student/course learning objectives of your course.

Additionally, from a more practical standpoint, teaching without a text can mean proactively engaging and persuading the university administration, the department faculty, and the students that suspending the use of the textbook is in the students' best interests. This effort, however, can be well worth the time. My students are now more engaged in the course than they were with a text; they understand more of the content because they actively immerse themselves both in and out of the classroom, and because they are actively engaged, they develop a deeper comprehension of the subject matter.

DESIGNING THE COURSE

Teaching without a text forces me to adopt a much more academically sound approach to course development. I confess that in the past I reviewed various texts for courses, selected one with which I was most comfortable or (if it were a course I was teaching for the first time) from which I thought that I might learn the most, and constructed my course syllabus and outline around the structure of the text. Student learning objectives were at best an afterthought, usually written at the time of creating the syllabus and constructed primarily from the viewpoint of the text or national model curricula. The result of designing courses, therefore, with student learning objectives, at best an afterthought, left much to be desired.

Fink (2003) has proposed a five-step process for designing learner-centered courses that he purports will result in significant learning for our students. While many such design paradigms exist, and those of us in information systems education can indeed choose to fall back on the systems development life cycle (SDLC) as a familiar problem-solving tool, to choose to simply employ the familiar can prevent us from taking full advantage of those researchers who have gone before us in developing and using sound educational procedures that have withstood the test of time. To quote one of my numerous early-career mentors, “The good can frequently be the enemy of the best.” Indeed, Fink’s paradigm builds on the work of those who have gone before, most significantly the seminal works of Barr & Tagg (1995), Chickering and Gamson (1987), and Weimer (2002). Subsequent to Fink’s work several studies have served to enhance the effective use of learner-centered course development both in general (Bain, 2004; Brookfield, 2006; Doyle, 2008; Richlin, 2006) and particular to the field of information systems (Landry, Saulnier, Wagner & Longenecker, 2008; Saulnier, Landry, Longenecker & Wagner, 2008; Wagner, Longenecker, Landry, Lusk & Saulnier, 2008).

Fink’s backward course design process asks us to consider sequentially the following five course-design factors:

Situational factors. Focus on the special institutional challenges associated with this course. For example, how many students are in the course, what kind of prior knowledge do the students bring to the course about this subject, and how does this course fit into the larger curricular context? Additionally, consider stakeholders’ expectations (students, the department, the institution, the profession, and society).

Student learning goals. Focus on what we want our students to be able to do upon completion of the course. The focus here should be on both (1) the short-term student learning goals

particular to the course that the students should be able to do immediately upon completing the course and (2) the longer term program educational objectives such as what we believe to be important for students to have learned and be able to do two to three years after the course is over. We should be thinking expansively, beyond simply understanding and remembering. Particular areas of consideration at this stage include what types of thinking or application abilities we want students to develop, and how do we want them to keep learning after the course is over.

Feedback and assessment. The basic question here is “What will students have to do to demonstrate that they have achieved the learning goals we set for the course?” This will usually involve some paper/pencil tests to demonstrate the knowledge comprehension, but we will probably need to include other activities as well. The advantage of working on the feedback and assessment at this early stage of course development is that when we become clear about what constitutes successful student performance, it is much easier to develop effective teaching/learning activities. Our thinking should not be limited to just summative assessments, but also formative assessment activities during which we can provide students feedback on low-stakes items such that they can improve their performance prior to summative assessment activities taking place. Thinking of assessment at this stage allows us to not just develop activities that will help students learn, but also provides a basis for developing rubrics as a framework for issuing both individual assignment grades and course grades.

Teaching and learning activities. This stage addresses concerns about what would have to happen during the course, both in and out of the classroom, for students to do well on the feedback and assessment activities. During this stage, we engage in a process of thinking creatively for ways of involving students that will support our more expansive learning goals. If we have developed significant higher-ordered learning goals in the prior stage, then it is most likely that we will need to incorporate some kind of active learning into our course classroom activities. Typically, we (1) develop what are usually termed *rich learning experiences* in which students achieve several kinds of learning simultaneously, (2) assemble these activities into an effective *instructional strategy* (that is, an interdependent sequence of learning activities), (3) provide students the opportunity to engage in an *in-depth reflective dialogue* (opportunities for students to reflect on *what* they are learning, *how* they are learning, and the *significance* of what they are learning), and (4) ultimately let the results of actions identified in (1 and 3 above) determine our course structure. Typically these instructional strategies employ activities which involve/require the selection and use of cloud-based resources prior to the class session in which activities are covered relating to a particular learning goal, and reflective activities are constructed to be executed either at the end of the class session or as a homework assignment prior to launching into activities directed at the next course learning objective.

Integration. *Integration* refers to making sure all the components are in alignment and support each other. Are the learning activities consistent with all the learning goals? Are the feedback and assessment activities consistent with the learning goals and the learning activities?

Employing Fink’s five-step process pushes us to employ what Fink refers to as the *backward design course development process*; that is, start at the end of the learning process and works,

moving backward toward the beginning. Thus, classroom activities evolve naturally from the student learning objectives.

THE E-BUSINESS COURSE

In the spring 2012 semester, this approach was used with the e-business course. The result (course design) of employing this approach to the e-business course development is as follows:

Situational Factors

An analysis of the class composition, course placement, and curricular content yielded the following situational factors, which directly affect course delivery:

- Class size—33 (given team projects as a target, class size implies eight 4- to 5-person teams);
- Course placement—second semester sophomore for majors, second course for minors;
- Prerequisite—CIS 101: Introduction to Information Systems (students have minimal web development background, and just superficial treatment of databases);
- Enrollment mix—second semester freshmen (just 101) through second semester senior majors (need to distribute student expertise across teams; therefore cannot let students form their own teams);
- Curricular—conformance to IS 2002 {IS2002.2}(provides learning unit guidance and assessment criteria); and
- Course location—business school (business driven, not technology driven; focus on use of e-business for competitive advantage as opposed to emphasis on web-site development).

Student Learning Goals

In addition to the content learning goals provided by IS2002.2, the following student learning goals were developed consistent with the situational factors developed in the first step:

- Students are to assume responsibility for their own learning and the learning of fellow students, especially the learning of their own team members;
- Team-based activities/projects are the deliverables, but individual accountability is an assessment necessity (address the problem of free riders);
- Continuous practice/development of presentation skills is a course goal along with formative assignment feedback from their peers;
- Peer assessment of project team members (both formative during the semester and summative at end of the semester) is included to provide for individual accountability;
- Each team should produce a business model/plan;
- Each team should produce the front end of the web site to support their business model (no back end requirement due to lack of database knowledge as a course prerequisite).

Feedback and Assessments

In the feedback and assessment development the following guidelines were developed:

- The course will employ authentic assessments; that is, course assessments will focus primarily on real world project development as opposed to a testing emphasis;

- Project teams will produce a preliminary business model for an e-commerce business of their own development;
- Teams will present their preliminary business models to the class acting as a whole in the role of a steering committee;
- The steering committee will provide feedback (formative) on the preliminary business model presentations;
- Project teams will produce revised business models based on feedback from the steering committee;
- Project teams will conduct interim peer/team evaluations (formative);
- Project teams will produce web site design plans to support their business models;
- Project teams will present their web site design plans to the steering committee;
- The steering committee will provide formative feedback on the web site design plans;
- Project teams will produce front-end web sites to support their e-commerce business; and
- Peer/team evaluations (summative) will be conducted at the end of the course.

Teaching and Learning Activities

The following guiding principles were derived to support both in-class and out-of-class individual and team student learning activities:

- Employ active learning strategies—in-class activities in support of both learning goals and project development;
- In-class rich learning activities—group work in both the content and process domains;
- Out-of-class team learning and in-class presentations—employ structured out-of-class activities to prepare for in-class activities); and
- Students produce ongoing, in-depth reflective dialogue, which involves highly structure examination of both content and learning experiences.

Integration

The integration step was used to test and insure consistency of the situational factors, the learning goals, the feedback and assessment mechanisms, and the class activities (both in and out of the class). Preliminary examination revealed no obvious contradictions or logical conflicts, although subsequent course sections will undergo rigorous improvements to tighten up the individual class sessions.

PRELIMINARY RESULTS

Using informal measures (observation of student performance on individual and team assignments together with assignment grades employing standard rubrics and final course grades) student learning without the use of a text was comparable to student learning in prior semesters in which a text was used according to the criteria established in the student learning goals. From a process standpoint:

1. The lack of a text forced students to assume much more responsibility for both their own learning and the learning of other members of their project team,

2. All students provided formative assessment to the students in other project teams using a student-developed assessment form during in class discussions at the end of team presentations, and
3. The student teams provided both formative assessment to the team members in their group, and summative assessment to their team members at the end of the semester-long projects.

From a content standpoint:

4. Student business models were of high quality, comparable to those developed in prior semesters, and
5. Front-end web sites to support their business models were comparable to web sites developed in prior semesters.

Not surprisingly, overall student reaction to learning without a text was positive. Though students were not informed of the rationale for not using a textbook, on an end-of-semester student feedback form, they were asked whether they would prefer to use a text. More than 95 percent responded in the negative. Although some complained that textbooks were either too heavy or too expensive, many students derided them as boring or difficult to read. As one student put it, "Textbooks are filled with incomprehensible words that just make learning more difficult." Several responses indicated that textbooks are useful only for certain kinds of learning. "You don't learn stuff from textbooks," one student wrote. "You just memorize for a test, and then forget it." Personally, I would not settle for that in my classroom; without a textbook, I do not have to.

CONCLUSIONS AND RECOMMENDATIONS

The transition to a text-free teaching and learning environment was a gradual weaning. I would not recommend that any teacher—particularly a new teacher with multiple classes for which to prepare—try to create a year's curriculum alone or over a single summer. Beginners new to working without textbooks should take careful note of which of their current activities are working and why, and then make adjustments suited to their students individual abilities and needs. For example, students at my university typically have stronger reading and writing skills than mathematics skills, so I integrate a review of basic mathematics and algebra into my work with Excel spreadsheets. The use of Excel recurs throughout my course, but the needed algebra review is not covered in typical textbooks.

Whenever possible, curricular/learning activities were developed that encourage students to draw their own conclusions. My curriculum is also peppered with activities that allow me to gauge the students' understanding and adapt quickly to their needs; such unscripted activities are an anathema to most textbook publishers.

What about all those good reasons that we assigned texts? Most of those reasons are no longer applicable given today's technology. Students tell me that if they need a fact, it's a mouse click away. They also know about online databases the likes of which no textbook can replicate, can locate images to illustrate their papers through a simple Google search, and most have access to every one of their library's specialized reference guides from their laptop.

Are there some students who can benefit from a text? Yes, but why make them shell out \$150 or more for a text. Most fields now have online texts that students can access and read for no cost, as well as outlines that are much more coherent than most texts. One can, as I do, simply place a current text on library reserve. Not surprisingly, students do not seem to resent texts nearly as much when they can consult them when needed and at no cost. My advice to newcomers is to seriously consider teaching without a text and do not worry too much about covering every topic in the prescribed curriculum. In the end, do not be surprised if you receive a hearty “thank you” from your students.

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