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Web-based instruction: The Importance of Theory in Practice

I. Introduction

A fundamental problem in designing web classes is that of trying to predict which types of classes work within this medium. Attempts to transfer "live" classes to web-based formats[1] that do not consider the properties of the medium before the design phase are more likely than not to fail. In this brief article I would like to discuss some of the more the reasons why I have successfully[2] moved a live class to an online class, why I chose to move this particular class on-line, and what I think some of the contexts and limitations are for on-line classes. Still, and perhaps always because of the many situational factors involved with such classes, web-based classes are experiments in terms of whether they will be "successful" of not (at least as this success may be measured by user satisfaction). Despite this, I think it is possible to increase the odds of success by trying to consider the epistemological, practical, and social contexts for a web-based course.

II. The importance of design in web-based instruction

The importance of design in web-based courses is much more important than with live classes. The reason for this is simple: the instructional medium intrinsically shifts the burden of the class from the instructor to the students registered in the class. This shift means, first, that the instructor is left with a simple choice: clear up the possibilities for misunderstandings in the pedagogical process before the class begins or face a barrage of complaining emails throughout the class. Assuming that the instructor wants to avoid emails from frustrated students on-line, the instructor would be best to design the class well before it starts. Granted that no course can ever be crystal clear enough to satisfy all the nervous students in a course, the course must be as clear and prescriptive as possible, at least in terms of the pedagogical process. Further, if the contents of the course are more task oriented or "skills-based," then the content must be well organized since the prescriptivity of

the content is tightly bound with the pedagogical process in an electronic course. Form and content are simultaneously one in an online course, whereas in a live course the instructor can better mediate the content of the course during the process of learning.

By emphasizing the problem of process, we immediately become aware of the process-oriented and systemic properties of web-based courses. Simply stated, what we encounter with a prescriptivity of instruction and an electronic system is a model of production based on process, steps, and the expectation of efficiency. Electronic systems do not necessarily impose a complete prescriptive process on learning, but they do "flatten" out learning in this way. Electronic systems produce cognitive depth through recursive devices, emphasize "need" as the lure for knowledge, and generally, emphasize durational senses of time in the process of learning. Learning in a web-based environment, in other words, tends to be "informational" rather than reflective. The student wishes to fill in the holes of what is being learned rather than being put in the position of studying and then wondering what will be the instructor's interpretation of the readings in the next day of class. Web-based learning is more like learning to sing a song rather than like trying to connect the dots in a spatial puzzle. It isn't that the latter can't or doesn't take place in e-learning, it is just that it begins with a different temporal basis. It begins with questioning rather than wonder, needs rather than puzzlement.

This different structure of learning beginning with durational needs rather than a long-term puzzlement means that the psychology of learning is that of attention and of demand and supply. Student attention spans and patience are narrower when using electronic systems that quickly reply to individual needs. This "impatience" increases the pressure on the instructor to "come up with the goods" before the learning process begins. Like all electronic mediums, time is flattened out onto a durational horizon and, subsequently, attention is brief and fleeting.

This process can be analyzed from the aspect of the history of rhetoric and pedagogy, as well. Aristotelian rhetoric—that is, a rhetorical form emphasizing presentation—has long held sway in the universities, exemplified in lecture styles of presentation. Since the 1960s, however, what have been called in writing composition studies "Rogerian" modes of composition have not only been emphasized for students of composition, but also have been emphasized as instructional modes. Briefly, these involve greater dialogical relations in the rhetoric of composition and oral presentation. Computer mediated-instruction, however, especially when coupled with the vast resources of the Internet, have more fully shifted the key agency for instruction onto the user. This

decentralization of learning means that though the formal structure of the instruction must be more rigid to avoid learner frustration, the content may be expanded infinitely to better encompass the informational and expressive possibilities of the Internet and the user.[3]

While less prescriptive, more reflective types of studies are definitely possible through web-interfaces, Socratic dialogue and critical intervention and modeling by an instructor are much harder to achieve. The medium can function synchronically, but at least at present it is essentially an asynchronic medium. Functions such as "chat" are not really synchronic in terms of voice dialogue, but are, asynchronic writing functions that mimic voice conversations without any of the physical or tonal contextualizing features of even phone conversations. This asynchronic aspect has definite advantages though, and as an instructor one must decide whether to negate these advantages in an attempt to create a virtual version of a live classroom. Having, in the recent past, taught "virtual" versions of live classes through closed-circuit cable television, it is my experience that students very much prefer asynchronic web-based classes over "live" televised classes. My current students have indicated that they would prefer not to have to meet "live" on the web.

III. What I teach and what I don't teach using web-based instruction

At this point I need to contextualize this discussion by telling the reader whom it is that I teach on-line and what topic it is that they are learning. I teach in a "professional" program—a Masters program in Library and Information Science. Most of my students are older women who are either reentering the job market after raising children or are women, most still with children, who are upgrading their current library positions or hoping to become librarians. (In the United States, generally, librarians must hold Masters degrees from an American Library Association accredited program such as ours at Wayne State University in Detroit, Michigan.) Many of my students not only work full time, but they have children of various ages at home and also have family and housework responsibilities. In addition, our students come from all over Michigan. Many drive from as far as two and a half hours away for classes at Wayne. Given the long (often 6-7 months) and sometimes harsh winter weather in Michigan and given the poor state of the roads in Michigan, such journeys can be not only time-consuming but also dangerous.

The class that I teach by web interface is an introduction to computer technology course. It is a required course that students with sufficient computer technology background can pass out of and advance to higher-level classes. In this class we cover introductory issues from software and hardware to Management Information

Systems and enterprise computing. At the end of the course, students must compose and post on a remote server both an html coded web page and a web page made with an html editor.   I would like to add that in our Library and Information Science Program I also teach intensive seminar courses where reflective knowledge rather than information and skills form the pedagogical basis of the classes. In these seminar courses we do close readings of descriptively theoretical texts and I perform, and model, critical approaches to the history, culture, and philosophy of information studies and the information society. In these classes, I feel that my physical presence and my research interests are central to the class: no one else in the program and even in my profession can teach these classes and the critical assumptions of the students need to be challenged in a Socratic manner in the class. For these reasons I am not willing, at least at this time, to "let go" of the seminar class to a virtual medium. Whereas the prescriptive nature of the introduction class lends itself well—with proper design—to a web interface, I feel that the seminar classes need both my physical and synchronic presence in order both to model critical engagements and also to Socratically challenge assumptions in the field. I would not suggest that these latter cannot be taught through a computer-mediated interface, but I would say that I am not comfortable, given the rather poor educational backgrounds of many of my students and given the lack of traditional academic training in my field, with the belief that my students could take on difficult textual and critical tasks in a user-centered learning environment. Others in different situations may be more willing to work in such a medium with these types of classes. Within my situation, however, I insist that my seminar classes need to be taught live.

Now, given the social conditions of my students and given the prescriptive nature of the introduction to technology class, an asynchonic medium has many advantages. For example, users can participate in class when they wish or when it is most convenient for them in terms of time or space. Given their jobs and family responsibilities, asking the students to participate synchronically in the class defeats the great autonomy that the asynchronic technology gives them. Students can do assignments asynchronically, take tests asynchonically, and ask questions asynchonically. If group work is desired, then this can also be done asynchronically. Since we use Blackboard as our educational portal, synchronic functions such as chat and "virtual blackboard" are available, but my inclination is to take advantage of the asynchronic technology rather than trying to make the technology mimic a traditional classroom.

With the introduction to technology class, we use a very good textbook, Oja and Parsons' -Computer Concepts (Thompson Publishing), currently in its 6th edition. Both "live" and "virtual" students like this textbook because of its clarity of presentation. The textbook begins with relatively simple concepts and becomes

more challenging as it progresses. The textbook is ideally suited for an electronic environment and a virtual class because of its multimedia and self-directing format. The textbook comes in paper and also on an accompanying CD-ROM disk that allows interactive self-quizzing and additional web-links. Also, multimedia labs are on the CD and these allow further self-instruction. Blackboard and other popular commercial educational portal "cartridges" are available for free from the textbook publisher. If the instructor wishes, students can deliver their completed assignments through a "digital drop-box." They can also take tests online that are then automatically graded and recorded in Blackboard. Instructors can download tests (which can be randomly generated or composed). All in all, the combination of the textbook, Blackboard, and the multimedia elements of the class lead to a rather self-facilitating, systemic mode of instruction that works well for such a prescriptive and introductory class.

Given that this is Library and Information Science class, however, I have also added additional elements to the course other than those supplied by the textbook. Beside the final web page composition project, I have additional, specifically library-oriented assignments following each chapter and I require that the students post their responses to the assignments on Blackboard's electronic bulletin board. These assignments contain links to outside web sites, such as IBM's web site on its information and communication technology research. Unlike the seminar courses that I teach where the class really rests on my specific expertise in an area, this course can take advantage of a huge universe of information that goes far beyond my ability to supply or focus. Though these additional projects add additional work to the course, students generally appreciate these sites and sometimes share additional information that I, along with their classmates, find enlightening, as well.

IV. Conclusion

My experience with web-interfaced classes is that their success depends on a combination of their graphic design, the purpose and method of the class, and the supporting materials used. Importantly, this intersection must take account of the medium that is in use and the advantages and disadvantages of such a medium. The medium shifts the types of rhetorical and pedagogical strategies that might be used in comparison with traditional classroom learning, and it also affects, though perhaps in ways difficult to see, the types of learning that can take place. Thus, the notion of "design," here is broadly that of "information architecture"; that is, in design one must take account of a total ecology of learning, and in this case, because of the electronic medium, treat it systemically. In my opinion, too little attention is

paid to the relation of materials and social structure using different modes of instruction (lecturing, interactive classroom learning, close textual analysis, textbook study, etc.). E-learning is an exciting area of pedagogical expansion but its conditions for success must go beyond mimetic attempts to "capture" classroom instruction and learning in a virtual format. If such would even be possible someday (using Internet-2 or other high-speed interactive networks), the experience would still be closer to that of current live televised instruction rather than live physical instruction. In practice, the conditions of the medium need to be thought-through in a more encompassing social and historical analysis than they currently are. Interestingly, because of the social embeddedness of such new technologies, theory, or rather the lack of theory, quickly shows itself in practice.

[1] I would consider classes that meet more than 80% of the time via the web to be web-based.

[2] During the first semester of implementation, I taught, simultaneously, a live and a web-based version of the same course—introduction to computer technology. Student evaluation scores for these two classes showed a 25% rise in my scores for the online class compared to the traditional, live class. Subsequent evaluations in following semesters followed this trend.

[3] This increase of formal control while expanding the freedom of expression of the user in terms of content, not uncoincidently, coincides with an ideology of communicative freedom within capitalist democracies, a rhetoric that is very clear in the earlier advocates of Rogerian rhetoric during the 1960s and 1970s and has been a selling point for e-learning and other modes of user-centered instruction during the past half century. The coinciding of political and pedagogical economies, here, are most easily seen in those private, for-profit universities (for example, the University of Phoenix) and those for-profit units of traditional universities that have recently come to the forefront in terms of offering e-learning curriculums and even degree programs. This intersection of the expectation and desire for quick profit motives on the one hand and quick learning and degrees on the other, form part of the political critique of such texts as David Nobles' well-known, "The Digital Diploma Mills." (http://communication.ucsd.edu/dl/ddm1.html). This conjunction of economies, ultimately based on the financial needs or desires of both the institution and the students, has often been at the bottom of critiques of "professional education" where this financial motivation is seen as the basis for education, often leading to a purely skills based education rather than one where reflection, and with that time, is needed for knowledge. The notion of "knowledge-acquisition" (as if knowledge were a "ready-at-hand" thing), is sometimes seen as part of this reduction of the temporal element for learning in the institution's desire for quicker profit through the faster satisfaction of student needs through such pedagogical and administrative devices as more prescriptive courses with more informational, skills-based content, clearer learning outcomes for courses (i.e., knowledge goals) and higher acceptance and graduation rates). Needless to say, this model of the "technical university" (that is, not so much the study of technological topics, but the

reduction of learning as a whole to an instrumentalist and technocratic university-State financially based economy) is the norm today throughout the world, outside of the most elite or privileged universities, though sometimes this model comes into conflict with a residue of humanistic values residing in the bourgeois "buyers" of education. (In this light, it might be instructive to revisit the issue of the "digital diploma mills" in light of the huge failure in the United States of the vast majority of those "mills" in higher education during the past five years, particularly in regard to undergraduate liberal arts education where the parents of younger students seem to desire a live teacher presence in exchange for their tuition dollars.)