

Instructional Design and Simultaneous Development of E-Learning for Multiple Audiences

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Purpose of Study

Advances in telecommunications technologies have enabled universities to adopt online learning as a delivery mechanism for distance education (Maeroff, 2001; Slaughter & Rhoades, 2004, p.176). Online learning allows institutions to pursue academic programs beyond their traditional geographic reach. These new channels allow institutions to extend instructional outreach and participate in a commercial marketplace for professional development and personal enrichment. Starting online education programs may enable institutions to develop new tuition-based revenue streams to supplement weakening governmental support. To meet this standard, programs must not just become cost-effective, but behave in an entrepreneurial fashion to become net generators of revenue (Michael & Holdaway, 2001). This profit and market orientation creates role ambiguity within the institution by introducing new models of the faculty role, intellectual property, and compensation, while spurring administrative expansion.

This study intends to examine specific cases at a major research university to illustrate the influence of academic capitalism on the production of e-learning. The case study will examine situations where an e-learning program, in an attempt to maximize profit, simultaneously develops for-credit and non-credit offerings in the same subject domain. Despite the different instructional models and audience needs, administrators expect that simultaneous development will result in reuse of materials and thus distribute costs. Scholars interested in tensions between the inertia of academic traditions and commercial education in a university setting may find interest in this study. Traditional views of university education revolve around a strong faculty, the degree credential, and institutional reputation. Whereas a market-oriented view of higher education revolves around experts, not necessarily faculty, creating education as a product that meets a market need and selling that commodity under an institutional brand.

Because this paper approaches e-learning from the viewpoint of those working in the production process, practitioners assuming roles associated with revenue seeking course creation may also find relevance in this study. One specific interest of this research is exploring whether individuals and teams co-producing education can produce multiple products for distinct audiences simultaneously. Can a team reconcile the traditional for-credit educational model with the non-credit academic capitalist model simultaneously, or does one format take precedence?

Relevant Literature

Context of the University as a Forum of E-Learning

Universities provide an appropriate context for examining the interplay of different approaches to online education. Maeroff (2003, p. 275) explains that keeping the “lofty ideals” of higher education “in sight may well be part of what will distinguish at least a portion of campus-based higher education in the era of virtual learning.” Research institutions have not abandoned their traditional missions, but rather have added on new activities and pursuits in response to environmental changes and industry trends. Rhoades (1998) suggests managerial and support professionals are co-producing or assuming greater authority over faculty output. Slaughter and Rhoades (2004) established a theory of academic capitalism which “suggests that the pursuit of external revenues creates webs of policies and procedures that call for greater use of and authority for managerial professionals. Information technology, as represented by online education, whether on-campus or at a distance, calls for greater use of managerial or support professionals who work with faculty to coproduce educational services” (p. 157). This research explores the specific phenomenon of producing two distinct educational products by just such a team of faculty and administrative support staff in an academic capitalist learning regime.

Learner or Customer?

Course production teams must take into account the nature of the learner or customer when creating an online learning experience. The customer might be a goal-oriented consumer of specific learning opportunities or a student maturing as a scholar on the way to a completing a degree program. Cagiltay, Yildirim, and Aksu (2006) assert that undergraduate students and senior citizens prefer instructor-led or linear-sequence instruction while middle-aged students prefer non-linear learning. This endorses development of separate product-lines for different audiences in the same knowledge domain. Maeroff (2003, p. 274) points out that while traditional university culture finds “reducing education to a consumer transaction” to be “distasteful”, for-profit online providers could teach universities a lesson in “how to treat students as customers in the best sense of the word”.

Faculty or Subject Matter Expert?

However, new financial models that stress cost-efficiencies may trigger conflict over the faculty role, academic freedom, intellectual property, and fair compensation for effort. Slaughter & Rhoades (2004, p. 180) note that “as managerial capacity increases and managerial professionals work with faculty to coproduce products based on information technology and geared to new student markets, the traditional role of faculty in colleges and universities is restructured.” As institutions attempt to unbundle the faculty role and reserve high-cost faculty time for non-instructional purposes administrative support positions like the educational technologist and instructional designer take on a more central role in production of online learning (Paulson, 2002). How the institution construes the faculty role and each team member perceives a role becomes an important element of the social construction of the instructional design by the team.

Design Prescription or Technical Facilitation?

Instructional design originally derives primarily from behavioral and cognitive theories of learning. Merriam and Caffarella (1999, p. 264) summarize behaviorist theories as concerned with identifying behavioral competencies through skill development and training while cognitivist theories are concerned with learning how to learn, cognitive development, and age-based characteristics. Instructional designers attempt to take a methodologically sound approach to development of learning materials based on these ideas. For instance, instructional design seeks to identify learning objectives and the necessary prerequisite knowledge so learning experiences can be “designed for learners who are *selected*” to have the prerequisites or “to teach the prerequisites in a sequential fashion before teaching” of the objectives (Gagne, 1974, p. 280). An instructional designer might identify behavioral objectives that states learning objectives in “specified, quantifiable, terminal behaviors” (Saettler, 1990, p. 288). The mental model of instructional design approaches the development of an e-learning experience as the creation of a sequence of activities that will provide students with the necessary steps to attain new knowledge. Instructional designers tend to approach faculty members as experts holding the knowledge they need to design into a product and might refer to them as subject matter experts.

Educational technology has also matured, with professional information technologists that specialize in educational technologies assigned to assist in e-learning development. The technology experts tend to overemphasize the ability of technology to facilitate learning or improve the learning environment. Meanwhile critics of the field observe that new technologies frequently fail to meet expectations and therefore lack a meaningful educational impact. Many educational technologists approach e-learning design differently than instructional designers. Instructional design coupled with technology tends to create drill-and-practice exercises

influenced most by the developer rather than the learner or teacher (Saettler, 1990). Educational technologists might be more willing to concede ultimate authority for design of the learning environment to the faculty member, in line with traditional views held by the faculty (Slaughter & Rhoades, 2004).

Using the internet to deliver e-learning raises potential for learning environments based on humanist, social learning, and constructivist approaches (Merriam & Caffarella, 1999). Davidson (1998) recommends integrating constructivist exercises into a more traditional objectives based framework to prevent disorientation. This constructivist and social-learning approach implements features of andragogy and self-directed learning typical of higher education coursework. Educational technologists assist faculty in constructing a facilitative environment for learning instead of designing a product that prescribes a delivery-centric learning process. Ideal online courses include a mix of offline reading and online content with interactivity, while facilitating communication among the course participants (Carr-Chellman & Duchastel, 2000).

Research Methods

Identifying a case for study

Research included personal interviews with primary team members from an online course production that included courseware products for both non-credit and credit audiences. Interviews included an instructional designer, educational technologist and faculty member. Interview questions intentionally skirt the controversial aspects of online course development, academic capitalism, and avoid explicitly identifying any preferred method. Questions attempted to get each person to describe how he or she envisions themselves and their role, the roles of other team members, the learner and the products.

Interview Questions

1. Who else should I interview related to this project?
2. How does your background prepare you for developing an online course?
3. Describe a personal philosophy or dominant theory you when developing courses.
4. What is your ideal process for creating an online course?
5. How does your preferred approach differ from what others on your team prefer?
6. How would you describe the actual method used to develop these products?
7. Did you find it necessary to alter the approach being used to develop these products?
8. What role did the marketing plan play in development of these courses?
9. What role did the faculty play in developing this course?
10. What opportunities or constraints derived from the budget or financing of this course?
11. What were the advantages of developing two or more courses simultaneously?
12. What were the disadvantages of developing two or more courses simultaneously?
13. What were the effects of dividing the work among so many roles?
14. Who had the most influence on the design of the courses? (Were there differences between the credit and non-credit in terms of who took the lead role?)
15. What motivators existed for the department and faculty for each course?

After conducting these interviews and processing my notes, I correlated the interview summaries to relevant literature. Development of a case study example will drive the literature review and summary of the research. Julian, Larsen, and Kinzie (1999) demonstrated the value of case studies as simulations to prepare instructional designers for new challenges. This information on how the other team members perceive the situation and how they choose to communicate about the situation will inform future collaborations. Summers, Lohr, and O'Neil

(2002), developed a theory that instructional designers and educational technologists must develop communication competency that includes the ability to communicate in terms their clients can understand.

Design Considerations

Interview questions sought the mental model used by the e-learning production team members to differentiate between the team-members, different audiences and their needs, and the objectives of the e-learning production process. Open-ended questions aimed to avoid implying any hypothesis to avoid leading subjects to a conclusion or probing for symptoms that do not exist. For consistency, each subject received the same questions. Since subjects tended to elaborate freely in response to questioning, in some cases one prompt satisfied answers for multiple questions. To ground the research in existing theory, I will assert attributes of the course creation process as expressed by the production team members. I will draw comparisons between this case and norms expressed by online learning literature describing traditional roles and methods.

Limitations of Methods & Scope of Study

This study will yield results most relevant to application by practitioners in a similar situation, that of producing online learning simultaneously in two formats. The study may fail to generalize to other institutions or other situations. The case study intends to describe the case-at-hand accurately. The research methods do not include a thorough examination of the policy structure or governance structures that control or influence the development process in this case. Interviews do not include an administrator, so the results are weighted heavily towards with less power in the organization charged with performing the work under certain established management priorities. The research was unable to undertake a review of products since the

courseware is still under development. The project review did not obtain cultural or planning artifacts in use by the team during development, so results derive primarily from what the team members chose to share verbally. As a result, the research may not describe influences on the development team members deriving from organization culture, institutional policies, or management directives. These shortcomings may limit the general applicability of this study.

Attributes of Case

Organization of Case Study

To organize this case study I will utilize the work of Pahl (2003) who provides a framework for conceptualizing an online teaching and learning environment in four dimensions: Format, Infrastructure, Pedagogy, and Content. These dimensions will situate and organize the attributes of the case study into specific dimensions. Specific characteristics and attributes within each dimension will likely differ in future cases. However, identifying possible deterministic factors from this case then assigning them into dimensions within this framework may allow a means for extrapolation to and comparison with other projects.

The four dimensions of the teaching and learning environment from Pahl (2003, p. 100)

- **Content** - The *subject-oriented perspective* refers to the subject taught and the representation of knowledge in the teaching and learning environment.
- **Format** - The *organizational perspective* comprises attributes taken from an organizational context: curriculum, syllabus, staffing, etc.
- **Infrastructure** – The *technical perspective* relates to the hardware and software environment into which the TLE is deployed.
- **Pedagogy** – The *educational perspective* refers to the instructional design of the TLE determining in which way the course is taught.

Content

The content of this course is applicable to multiple audiences, one of the reasons the university selected it as a viable investment for development funding. Personal enrichment, professional development, and degree-seeking traditional students might all partake in this subject matter. The course covers advanced materials and does not attempt to remediate heavily on subject matter considered introductory. Most of the course material applies to a certificate as an optional extension of an undergraduate degree. Despite the advanced nature of some of the material, it does not depend heavily on prerequisite courses and the majority of students have no background in the major area of study. The subject material of this course consisted mainly of factual reading materials and examples from practice. Most of the content established a highly structured foundation but because the content involves applied knowledge, there were some sections with nuanced theories or debatable approaches.

Format

The description of format varied for each team member interviewed. The faculty member had an open mind to a variety of possible configurations for this subject matter. The faculty described a broad array of possible goals that would motivate the academic department to offer this material. The subject matter for the course relates to specific academic programming goals and ties directly to outreach grants. The department was motivated financially by the ability to gain a larger than normal share of tuition for student credit hours from off-campus students. In the noncredit versions of the course material, the department would benefit even more since most of the revenue would accumulate directly within the department instead of a central administrative unit.

A business strategy implemented by the administration of a continuing education marketing and business development unit held great influence over this project. This strategy proposed simultaneous development of both for-credit and non-credit offerings based on the subject matter. Subjects identified the main purposes of the strategy were to encourage the development of multiple products into a product suite that could be marketed more effectively while distributing development costs over a greater number of products. The project obtained seed funding from the administration to facilitate hiring of departmental assistants and assignment of support staff from central IT support units. This business model coupled with the proposal process and award of seed funding served to get the faculty committed to a timeline for development and motivated to keep pace.

The project had enough seed funding and support to assign support staff to assist in the development of the course in addition to the faculty member. The project had distinct roles for several people including an instructional designer, project manager, educational technologist, multimedia specialist, content development assistant, and subject matter expert.

Because of the team effort and the funding, the faculty was willing to abandon exclusive property rights over the resulting finished product. Under the institution's policy, the author of the work retained the ability to obtain royalties through the institution and control future use of the material for academic quality reasons. This allows the administration and faculty to negotiate a resolution to an area of concern in academic capitalism (Slaughter & Rhoades, 2004). The department, the faculty, and the institution all expected the initial course(s) to begin providing revenue to support development of the last few courses in the product suite. The marketing and business development unit set the pricing and marketing strategy, which determined the revenue projections.

The project team conceptually focused on both non-credit and for-credit projects at all times. Practically speaking all of subjects recalled focusing efforts almost exclusively on either non-credit or credit at any given time. There were multiple instances where delays, opportunities, or perceived changes in reward structure caused the focus to shift from one to the other. The decision about what deserved focus originated with the faculty member. Each subject identified the limiting factor to the pace of development as the time, availability, and output of the faculty. Although the project achieved results, they are far off the expected pace because of the limited availability of a faculty member that has several competing priorities.

Infrastructure

An institution-wide learning management system hosted the course. This allowed each team member to author content in a centralized collaborative environment. The software also allows authors to publish content once and share it among many courses, facilitating the multiple product design. The system facilitates automated grading of assessment questions and tracking of grades. Asynchronous discussion forums are available along with course e-mail to facilitate student communication, though these features are not prominent in the course design. Interactive learning exercises were developed by the education technologist to engage the learners and provide practice exercises for students to test their memorization of concepts and vocabulary.

Pedagogy

Most of the subjects interviewed felt that while the faculty retained control over the content, the instruction designer had the most influence over the products that emerged from the development process. The instructional design of the courses revolves primarily around the traditional design concepts of Dick & Carey (1996). The process begins with an audience analysis, an identification of learning objectives, and then a content outline that breaks up

content into component pieces and ties content back to specific objectives. The overall design process incorporated elements of review recommended by Pahl (2003) needed to reform and evolve the learning environment over time in response to learner needs and changing infrastructure.

Both the faculty and the instructional designer describe the course as being organized into small content blocks or learning objects. Breaking up the content into discrete chunks allows the faculty to focus on meeting course learning-objectives, allows faculty to turnover content to a production team, and enables reuse and reordering of content for other courses (Strijker & Collis, 2005). The learning object approach also provided opportunities for the instructional designer to spin-off ideas from the faculty member for the educational technologists to produce into engaging interactive exercises.

The faculty member appreciated being able to use this modular approach since it distributed labor and allowed for a process that enabled a new conceptualization of the course when moving from the in-person medium to the online medium. Carr-Chellman & Duchastel (2000) warn that “transposition from one medium to another may have some value in reaching certain outreach goals, but it also runs serious risks of diluting the original instruction and possibly rendering it ineffective” (p. 229). However, the faculty did express concern that the fixation on breaking everything into small chunks had some negative side effects. Most notably students cannot easily print the course content to be read offline, giving the course content all the disadvantages of an e-text and none of the advantages of digitized content. Compared to the possibilities for the ideal course described by Carr-Chellman & Duchastel (2000), this structure unnecessarily eliminates student convenience and choice, which should be a prominent feature of any online course. The faculty also remains unsure if students are not sometimes better served

with a longer narrative that introduces several concepts in a related authentic manner instead of small blocks of individual concepts.

An area of contention potentially may arise over how much instructor activity will be necessary to facilitate enrollment in the course each offering. The faculty and instructional designer believe some communication with students and responsiveness to inquiries remains an important part of the educational process. Morris & Finnegan (2005) established some norms for faculty in online undergraduate courses. Pyle & Dziuban (1999) cautions that the communication process and the technology that facilitates it can rapidly consume an online instructor's time. Administrators, because of the budgetary constraints imposed by the format considerations previously outlined hope to completely eliminate the instructor's role from the non-credit courses and provide an instructor-led course with discussion only for tuition paying students pursuing academic credit.

Conclusions and Implications for Practice

Division of Labor & Focus of Effort

Because of the desire for multiple products to launch simultaneously as part of a product-suite for marketing and revenue purposes, it is unlikely that administrators will narrow the number of simultaneous development efforts in the e-learning arena. However, since faculty time and availability at a research institution tends to be the limiting factor, administrators may wish to assign the same support staff to work with multiple faculty to achieve a timely completion of the product family. The instructional team seems cognizant of the diversity of their audiences in everything they do, but unable to focus on multiple output goals simultaneously.

Faculty and departments seem motivated to switch to a new preferred target in response to changes in the timeline, funding or non-funding of related grants, and shifts in perceptions of potential registrations and revenue. Furthermore, the support staff indicated that goal ambiguity exacerbates the difficulties of being a first-time online instructor. Literacy with teaching online and the technologies involved takes time to develop. Brandt (2001) indicates there is a significant performance difference once users develop expert level mental models. It might be preferable to gain commitment and keep faculty focused on one project at a time, at least to begin the effort. A consensus business decision about which project should be given priority as a starting point can be mutually agreed by the faculty and project manager and used as a learning exercise in addition to a product outcome.

Implications for Instructional Design

Non-credit education will not always have a clean relationship to for-credit education for any given discipline or subject matter. Instructional design usually accounts for characteristics of the audience first. The instructional designers on this project did not consider undergraduate students to be true adult learners because of a lack of experience and cognitive development. The non-credit audience for this project was comprised of adult learners with a practical experienced-based grounding for the subject matter. These audiences have different needs. According to Carr-Chellman & Duchastel (2000) and generally accepted principles of adult learning associated with working adults (Merriam, 2002; Marsick & Watkins, 2002;) the non-credit and credit populations have very different learning needs and styles even if the objectives are very similar.

Finally, the business process must remain flexible to accommodate a variety of instructional design results. If the process dictates such low costs that no day-to-day

instructional activities are possible in the course, the design process begins with an environmental constraint that limits proper decision-making. Regardless of whether the faculty member or instructional designer is in charge of determining the final makeup of the course product, most options should remain on the table to allow quality courses to emerge. Administrative policies should encourage cost effectiveness but not prescribe design.

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