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# A Framework for Operational Decision-Making in Course Development and Delivery

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## **Abstract**

This paper will discuss factors that influence operational decision-making during curriculum and course development and delivery, how these factors integrate, findings in the literature and how they apply to the practical context. Finally, we provide a framework to support decision-making processes involved in the online instructional practice within distance education institutions.

## **Trends and Factors: A Literature Review**

“Designing a strong course or curriculum is always difficult, time-consuming, and challenging”. (Diamond, 1998, p.1) In theory, the course development process seems straightforward, involving a group of people working collaboratively and synchronously. However, practice shows that this is not a standalone system, but instead an intrinsic part of an institution, characterized by its organizational structure and culture and consequent idiosyncrasies. In a macro level, there will be several of these processes taking place concurrently within the institution, disputing resources and subject to common standards and guidelines. In many cases, there will be several levels of decision-making, involving managers of different stature in the organization. Coherency and quality can easily be at stake. Many are the interdependent factors that play a role in decision-making during the course development process, including the employed models of development, technology, copyright and intellectual property, cost and faculty support.

We discuss each one of these in more detail in what follows. In a second part of this paper, we report how UMUC has dealt with the issues related to course development and delivery and provide input for reflection and debate on some critical issues.

## **Models and Processes**

Bates (2000) discusses two main models for planning and managing courses. What he calls the ‘Lone Ranger and Tonto’s approach is the one in which “technology-based materials are (...)

initiated and developed by faculty” (p.59). This model has the advantage of helping “faculty understand the potential of the technology and thus lead to innovative ideas” (p.60); it “maintains the autonomy of the faculty”(p.60); it “avoids having to make difficult decisions about long-term investment in technologies” (p.60); and it “creates an environment that encourages experimentation” (p.60). On the other hand, “amateurism rules in the design and production of educational materials”.(p.60) under this kind of approach and rarely a final product is complete and shared among others. In many cases “graphics and the interface are poor compared with commercial products with which students are familiar”(p.61). Moreover, the approach is often not cost-effective, since faculty members might spend too much time dealing with technical issues, instead of focusing their energy on their mission at the institution.

Moore and Kearsley (1996) also discuss a model, which they call the ‘Author-Editor’ model. In this case, “a subject matter expert writes the draft of the study guide and an editor (or editorial staff) produces the final document” (p.104). The process might also include reviewers, and will go through some managerial phases such as acquiring copyright licenses and creating possible additional multimedia. This model in essence is in between the other two described above.

## **Technology**

As Burge and Roberts (1998) note “The Information Highway is a trendy shorthand to describe the fact that telecommunications and computing networks (...) are converging”. (p.68). The use of broadband, VoIP technologies, software development suites, advanced authoring tools, among others have enabled the use of multimedia, simulation and virtual reality as part of the same virtual classroom. Interactive video, audio-graphics and audio-conferencing soon will not be considered as separate technologies, but embedded in web-based learning. The use of these media through the same medium is frequently called convergence. However, the definition of the appropriate media for teaching/learning will still be part of the decision-making of managers and educators in the online learning arena. Technology convergence is also the channel for intertwining course development and delivery, since during development one will be forced to take into consideration many aspects of the delivery, such as software interface, medium capabilities, and a diverse set of software tools.

## **Copyright and Intellectual Property**

According to Levy (2003), the current copyright law "allows the owners of the copyright absolute domain for the life of the author plus 50 years" (p.7). This domain in fact means rights to reproduce in any format; prepare derivatives; distribute copies through sale, rent, lease or gift; perform and display publicly. Universities have been treated differently through the doctrine of fair use, which "allows copyrighted materials to be used without express permission of the copyright holder in an educational setting" (p.8) Moreover, faculty members who work full-time for educational institutions formally are "considered work-for-hire" (p.8) and thus do not own their work. "The issues of copyright, fair use, and work for hire are all being considered in this era of online learning" (p.8) Any institution will have to consider carefully the consequences of ownership of those who are taking responsibility for course development.

## **Cost**

The costs of developing materials include “the preparation of text, audio, video, computer-based tutoring, intelligent, exploratory learning, simulations, etc” (Rumble, 2001a, p.80), which should be available on the web. “There is some evidence that lower levels of cost are more likely to be found on synchronous online courses, with asynchronous courses costing more.” (p.80) “A high

proportion of the costs of developing materials is labor costs” (p.80), which however “can be reduced or at least kept in check by adopting cheaper approaches to course development”(p.81), such as the author-editor models. Contrary to Bates’ (1995) statement that “once a program is made or a text designed, it then becomes a fixed cost” (p.39), advanced-studies have a much shorter lifetime, and need frequent revision. Thus, part of this development must be included as variable cost. As Rumble (2001a) suggests “What does seem clear is that the costs of developing a course are being pushed up – and significantly so whenever media are used in a sophisticated way.”(p.81)

## **Faculty Support**

It is common that faculty members that undertake the task of course and curriculum development in many cases do so at their own risk, with very little support from their institutions. Research and publication have been traditionally emphasized as the golden activities for which faculty members are recognized and rewarded. In teaching institutions, the number of adjuncts makes it hard to have a solid body of faculty members available and committed to these endeavors. When using simple models of production, adjuncts and full time faculty become in many cases the subject-matter experts and the editors.

## **UMUC Graduate School: A Case Study**

Considering the factors listed previously, we analyze course and curricula development at UMUC, with special focus on the Graduate School. This analysis focuses four critical areas: quality, scalability, cost-effectiveness and process efficiency.

## **The Context**

The University of Maryland University College (UMUC) has been offering online (web-based) courses as part of dozens of degree-seeking programs, both in the Undergraduate and Graduate level, since 1994. Historically, UMUC carries a distinct structure in which the Graduate School (GS) is separated from the School of Undergraduate Studies (SUS). Admissions, student affairs, several policies and administrative issues are controlled independently within each school. Course development is part of the differentiation between GS and SUS. SUS uses a model where course materials are produced in-house by a team of professionals. On the other hand, the GS course development process is syllabus-centric. Possible extra material to go along with selected book(s) or collection of texts is usually developed by one individual following a typical “craftsman” process.

There are certain assumptions held with regard to online course development at UMUC. They frame the analysis of the processes and procedures and influence any final recommendations. These are:

- The selection and development of courses for online delivery is not a linear process with static set of priorities.
- Online course development varies within and between programs. This variation is a valued characteristic in that it allows for flexibility and the ability to adapt, respond quickly to changing needs, and priorities, while; nurturing a dynamic environment.
- There is a variation in the skills, abilities, and needs of students. Therefore, student attributes often necessitate different methods of course development and delivery.
- There is an underlying commitment to quality that exists as a common thread through UMUC’s online courses, despite the variability used in their development

and delivery.

- Individual faculty directly and significantly affects the quality of the instruction and students' learning experience. This necessitates ongoing faculty training and support in both pedagogical and technological issues and methods.
- There is also recognition that faculty, student, support staff, and administrator experiences gained through course implementation and delivery provide a valuable source of feedback, which can be used to enhance the quality of courses upon their revision.

## The Decision-framework

There is a need to articulate a set of criteria that should be considered when deciding what courses to develop for online delivery, and which development model to apply to each course. Currently, there are sets of formal and informal standards used in both schools when making such decisions. However, there is value in recommending a standard set of criteria for use by all programs in making such decisions.

The purpose of the criteria is to provide a framework that guides the selection of courses for online development, as well as selection of the processes, models and resources, which should be devoted to their development. This uniform set of criteria provides the framework for a systematic analysis of course development decisions, while allowing for flexibility in the critical thinking that underlies the final decision. Application of a standard criteria set also encourages a considered, reasoned, and sound decision making process that influences course and program quality, pedagogy, and development costs.

The selection/decision making process is actually composed of two intertwined (and not necessarily linear) steps. The first involves administrative decisions such as what should be developed and when. The second involves a set of pedagogical decisions such as how best to develop the course, how best to present the material, and how many resources to devote to the development project. The following list represents a standard set of selection criteria, broken down into these two broad categories. The order of the criteria on the list does not imply any particular weighting or ranked importance, since needs and priorities change within and across programs over time.

<b>Administrative criteria</b>	<b>Pedagogical criteria</b>
External pressures	Author – content, communication, and time management skills and abilities
In-house capabilities – resources, support, content, and process	Complexity of the course (programming and technical requirements)
Number of expected enrollments and sections	
Production effort and cost	Discipline standards
Program and curriculum goals and needs	Pedagogical validity and need for resources
Potential revenue (credit and non-credit)	Quality assurance
Scheduling and development of new programs	Reusability of the content/learning objects
Shelf-life of the course	Student skills, knowledge, characteristics, and special needs
Timeliness in responding to new areas of focused need	Technical standards
Where and how will the information be housed	Timeliness meeting currency requirements of the content

	Type of course (i.e. discipline-specific content considerations)
	Upper level versus lower level content and students

## Improving the Course Development Process

Multiple course development models currently co-exist. There is a value in retaining the use of them, since it allows diverse programs to meet the varying needs, skills, and abilities of students. Multiple models also allow for flexibility, scalability, and ability to adapt quickly and easily to unexpected and changing needs, and promote quality and cost-effectiveness. This diversity should be expanded, since the adoption of additional models can also serve as a means to foster creativity and innovation.

In order to produce and revise quality, appropriate and relevant online courses and programs, it is often required to be able to shift quickly to the changing needs and demands of students. The response to this requirement includes fine-tuning resource allocation into course development units; exploring outsourcing of content acquisition and multimedia and graphics production; providing clear statements detailing course development, revision priorities and agenda.

There is a need for developing a common, searchable, accessible library of learning materials and objects for the purposes of: getting the maximum usage out of the developed materials; increasing course quality; and efficient storage and management of files and objects. Learning content management systems can greatly support this task in a cost-effective and timely way.

Faculty members play an integral role in online course development, delivery, overall course quality, and the educational experience as a whole. Therefore, the institution should consider with care the efforts in providing support to this group. Training should be provided to potential course authors, informing about expectations and encouraging self-reflection about faculty member's own skills, work style, time, and suitability to develop an online class. Staff and/or units should be added and expanded to support faculty during post-development phase. Compensation and reward systems should be revised to respond appropriately to the needs of faculty involved in course development, and to encourage those who are not naturally driven to this task.

Course quality is often hard to be articulated, defined and insured. One of the biggest barriers to quality is time and personnel, in terms of quality of skills and knowledge, commitment, and quantity. In the online realm, currency is a general indicator of quality. With a growing inventory of courses, currency might be a critical issue. Broken links and out of date information are counter to quality. Assessment done by external sources is also a way to insure overall quality. Such assessment is a good crosscheck of quality, and lends additional credibility to the materials assessed. Student evaluations should be geared to provide specific feedback on course material quality. This feedback should then be formally considered and incorporated into a revision or enhancement of the course.

## Final Remarks

Many aspects of course development can be complex and require future and continuous consideration. It is urgent to balance the issues of academic freedom and intellectual property on the part of the faculty member, variability versus uniformity in format and level of detail throughout courses and programs, and institution's ownership of course content. An operational

approach to quality must be defined and planned Institutions should manage to have advisory boards or committees that oversee specifically course development issues. This group should bring together representatives from different programs to discuss common online course development issues, to learn from each other's different ways of developing and delivering online courses, and to share resources, ideas and opportunities with an eye to increasing course quality, efficiency, and scalability.

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