Addressing A Missing Link In Higher Education On-line Content Development: Toward A Tripartite Collaborative Model

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ABSTRACT

Although more than a dozen methods for developing and offering courses through distance education have been utilized over the years, the offering of on-line courses through the "World Wide Web" is still in its infancy. The number of failures in managing such on-line offerings calls for substantial research to explore why some programs are successful while others fail. A few years ago, dozens of business schools in the US were trying to position themselves in what was promised to be a lucrative market for on-line education and training. While some institutions have successfully established internet-based programs, many others have scrapped their on-line projects. Many reasons account for these failures. Among these are misinterpretations of the market, problems faced by traditional schools, start-up costs, choice of development/delivery model and faculty skepticism. While all these reasons have a great impact on the results of the first decade of on-line education experience, this paper focuses on what seems to be the major factor: finding the right on-line model. The paper suggests that an on-line higher education model based on a partnership between the institution, the content experts and the e-learning technology providers is the most functional. This model helps each partner clearly determine an appropriate role, increasing the likelihood of a successful outcome.

INTRODUCTION

Technology enhanced distance education is intended to provide a wide range of students with learning opportunities they might otherwise have to forego because of an inability to attend regular classroom-based educational programs. This form of education delivery includes "…electronic courses, such as computer-assisted courses utilizing educational software; courses that make use of the Internet for content delivery, communication, and discussion; on-line courses for independent study and course discussion; and courses that allow assignments to be communicated via e-mail…"(Carlson & Olson, p. 349). In this article we are concerned with courses that rely on the Internet for delivery although our observations may be applicable to other forms of technology enhanced learning. As such, on-line courses do not require physical attendance on a college campus or affiliated institution to engage in classroom-centered learning activities. The popularity of on-line courses has blossomed over the past five to six years with recognition of their vast potential benefit to the post-secondary sector. According to Boettcher et al. (1997), by the year 2002, 78 percent of 4-year and 62 percent of 2-year public institutions were expected to offer some form of distance education. Inglis (1999) views online offerings as an alternative way to attract students while reducing teaching costs but there are additional compelling factors that justify online course delivery. These factors range from advantages for the individual learner to advantages for the host institution. For the individual, online instruction "provides more opportunities for collaborative interaction "…[which is] correlated with higher student achievement" (Mazoue 1999, p. 104). These opportunities may be especially attractive for students who are otherwise more inhibited in a large class setting. In an online environment, we might expect to find more questions raised by students and more student interventions and contributions in both synchronous and asynchronous course communication. Certainly reports from online instructors asserting the greater time commitments required for monitoring and replying to online discussions and questions attests to an active rate of student participation (Sakurai,

2002). Consequently, on-line courses have the potential to create a more egalitarian or democratic learning environment.

On-line course delivery creates opportunities for the host institution by opening access to new markets, to strategic partnerships, and to possible economies of scale that ultimately decrease the overall cost of teaching. For instance, Zanville (1996) found that replicating courses over multiple campuses or using the same modules over multiple courses could help create economies of scale. Zanville also believes that online courses help to reallocate instructors' time, time which can be used to better serve students on an individual basis with added convenience.

Another benefit of on-line delivery is in the area of instructional throughput. When designed effectively, on-line courses can help to reduce the time and volume of instructional activity necessary for students to complete a course. Online courses can help students test already mastered content, complete coursework sooner than they would with traditional course delivery, or help to circumvent course availability problems (Zanville, 1999). Students also reap cost savings since on-line delivery does not require them to incur travel and lodging costs while obtaining a degree and, more importantly, they will not have to completely forego their earning potential.

With all the advantages of on-line courses, one would have expected online courses and degree programs to have substantially revolutionized the higher education sector with cyber-universities blossoming world-wide. Yet, the potential of technology enhanced learning has not been achieved and resistance to this trend is usually based on concerns at the level of the individual student and at the institutional level. For example, a number of dysfunctions including dehumanization, a lack of opportunities for group-based learning, and reduced or absent opportunities for emotional growth and development have been documented by Ferguson and Wijekumar (2000). At the institutional level, while many universities have entered into strategic alliances with for profit companies to develop and deliver programs, faculty members continue to express reticence at ties with for-profits Grimes (2000).

In our view, the academic community has not adequately considered the reasons for the apparent failure of technology enhanced learning to meet expectations. We have concluded that range of issues examined, as reflected in much of the currently available research is focused too narrowly on the educational experience of the student. For the most part, online education discourse has typically centered on the impact of online delivery on various components of the educational process such as content design, instructional practices, learners, management, administration and facilities (Muirhead, 2000; Wee Keng Neo & Swee Eng, 2001). There is often a focus on improving course content and the effective use of delivery technologies by faculty making an initial transition to the online environment (Eastman & Swift, (2001), or on the impact of online delivery on student learning (Demirdjian, 2002). While these perspectives are valuable in understanding the online educational process, they appear to rest on an implicit assumption that more effective delivery will result in more satisfied students which in turn will result in more growth of online educational opportunities.

In this paper, we take a slightly different approach by considering an earlier stage of the value chain, the development of on-line courses. Our contribution to the discussion of online line course and program effectiveness is to take a structural perspective. We focus on current online course development models and formulate an extension of these models described as the tripartite model. Our proposals are based on the belief that effective on-line course delivery is a function, at least in part, of design factors (Cook, 2000). Further, because "Detailed, content delivery models are significantly followed in commercial courseware factories but not in academia" (Rada, 2001, p. 104), we believe that an integrative approach is needed and wish to consider conditions that maximize the development of effective online products in the post-secondary sector.

The remainder of the paper is organized as follows. Part II considers the objectives typically articulated in launching on-line courses. Part III analyzes some of the models currently in use when developing and offering on-line course and assesses their shortcomings in satisfying the objectives of all parties concerned. Part IV presents a collaborative model and part V concludes the paper.

OBJECTIVES OF ONLINE DELIVERY MODELS

From a strategic perspective, institutions of higher education consider the adoption of online course delivery as a tactic to facilitate achievement of their overall educational mission. Many institutions have already formulated a commitment to continuing education and integrate online delivery as a technologically-driven variation of this commitment. The online model allows the institution to reach a larger number of students, to do so in a highly cost effective manner and to reduce a variety of risk factors often involved in new course/program development. We believe that these three objectives are paramount for institutions in the development, delivery and overall management of their online programs. Each of these objectives in considered in turn below.

Enrollment Objectives

Enrollment represents a significant portion of the institutions revenues, and while other sources of revenue are emphasized in annual and strategic planning, enrollment remains the priority for most post-secondary institutions. Effective online programs respond to the needs of a student body that displays new dimensions. The contemporary student body is more geographically dispersed, includes a greater proportion of adult learners with a significantly different set of educational needs compared to the traditional post secondary student, and is a more technologically savvy group. The typical post secondary institution at one time emphasized educational programs needed by students in the immediate catchment area. Some institutions which had developed international reputations were also able to attract foreign students and students from beyond the immediate geographic boundaries. But, for the most part, managing enrollment effectively meant knowing the needs of the immediate potential student body and adjusting capacity accordingly.

Institutions typically found it easier to manage growth than capacity reduction since contractual arrangements with faculty often made downsizing virtually impossible. The results of declining enrollment would therefore be under-utilized classroom capacity. Online delivery provides the institution with another method of maintaining enrollment growth or at worst, enrollment stability resulting in more predictable or constant revenues.

Cost Objectives

On the cost side, the incentive for the institution is to develop a complete understanding of online education costs before launching an online program. Several reasons for this have been documented in the literature. According to Bates (2000), there are substantial differences between costs for development and delivery of traditional versus technology-enhanced courses. Additional costs for the institution result from the need to commit significant investments in technology, which are both necessary and significant.

While the true cost of traditional education is not always visible, e.g., salaried instructors are expected to prepare and teach their materials, the cost of online courses can be more easily isolated in the budgeting process. With relative ease, it is possible to evaluate the cost of online courses by determining the average cost per student. Cost factors to be considered might include capital and recurring costs, production and delivery costs, and fixed and variable costs. Capital costs are costs for infrastructure, equipment and material necessary for the offering of courses. Recurring costs are costs that occur on an ongoing basis, such as information technology support. Production costs are costs incurred during the development of the courses while delivery costs are associated with teaching a course. All these costs can in turn be divided into fixed and variable components. For technology-based education in comparison to traditional courses, fixed costs are high but variable costs are low.

We suggest an alternative approach to the analysis of cost factors, categorizing them as technology costs, administrative costs and development and delivery costs. These three categories more accurately reflect the different interests that should collaborate in online education delivery, i.e., the information technology (IT) enterprise, the higher education institution and the content experts. This structure is derived from the experience of several successful online programs. For example, some programs are built through an association between the IT firm and the teaching institution. Most of those programs have been successful in terms of risk sharing and cost reduction in some aspect. The IT firm and the teaching institution each contribute their respective expertise. The IT firm provides online

technology while the teaching institution provides course content and a degree upon completion.

In comparison to many other programs that are solely owned by the teaching institutions, jointly owned online programs have a greater likelihood of success. A number of successful programs share a joint ownership structure. For example, UCLA, Stanford, the University of Pennsylvania, among others have all joined forces with e-learning companies to launch online programs (Grimes, 2000).

While joint ownership may have contributed to early success of these programs, additional factors may have been operating that ultimately resulted in reducing the cost benefits of these arrangements and contributing to the more limited long term success of such programs. We refer to these factors as dead weights that prevent the achievement of initial expectations.

Before proceeding further, it is necessary to define dead weights, to consider how they operate and how their negative impact on online education programs can be minimized. We define dead weights as any action that does not contribute to or encourage the adoption of online programs. A dead weight could be a faculty member who holds a negative attitude toward online offerings. This attitude can be manifested by a refusal to participate in online program activities such as course development or instruction or, if participation is obligatory, by a lack of interest, motivation or at the very worst, a propensity to sabotage. Many reasons may account for such attitudes. As we have pointed out before, the online offering may require more time for preparation. Some faculty members may not be as receptive to a high tech environment. On some campuses, faculty members have resisted partnerships that would require them to give up control over how their courses are delivered. For instance, some e-learning companies have insisted on presenting information in short, snappy sound bites, which faculty members say would trivialize what they teach. Such concerns may contribute in part to decisions by universities such as Cornell and the University of Maryland to take sole ownership of their online distance learning efforts and to spin them off as for-profit ventures in an increasingly competitive technology enhanced learning environment (Grimes, 2000). The evidence indicates that once a third party is involved, faculty members are less committed, because they perceive a loss of control over content and standards. They are not open to accommodate the demands of the IT firm concerning how curriculum is presented to students.

In other situations, the dead weight is associated with an institutional as opposed to an individual impediment. For example, the institution may not have a culture that is open to a technology driven process. Resistance may take the form of institutional decision making or resource allocation that is not in step with the needs of on-line development and delivery. In such cases, we might otherwise conclude that the institution is simply not ready for an on-line approach. In proposing the tripartite model we consider how institutions can overcome problems created by dead weight.

Risk Objectives

In general, post secondary institutions can be considered risk averse having traditionally operated in highly stable business environments without significant levels of uncertainly. Contemporary business environments are much more turbulent and are probably more appealing to highly entrepreneurial organizations that can accommodate increased levels of risk in return to more rewarding opportunities. This is not the profile of most post-secondary institutions. Traditionally developed courses, relying on classroom delivery, increase risk levels in today's educational marketplace. Technology makes the educational market more competitive by increasing the options of the student consumer. This makes it more difficult for the institution to predict and exercise any reasonable degree of control over revenues. For the same reason, it may be difficult for the institution to derive adequate economy of scale benefits if enrollment objectives are not met. Partnerships with IT firms reduce the level of risk faced by institutions and this advantage may account for the initial popularity of partnership models. The tripartite model proposed in this paper must be able to demonstrate that risk objectives are addressed before claiming that it increases the likelihood of long term online program success

ONLINE PROGRAM MODELS

Next, we generate a set of program models based on the involvement of up to three partners, each contributing uniquely to the online venture. Rada (2001) identified three components that were essential in the process of online course development, administration, delivery tools and content production. We conceptualize these as infrastructure providers, technology providers and content providers and use these to generate three models defined and assessed below.

Definitions

The contributions of each partner fall into the domains of infrastructure, technology and content. Each of these tends to be provided by a particular type of organization as follows.

Infrastructure Provider (IP)

The role of the post-secondary institution has been previously described as providing infrastructure (Mazoue, 1999) with an emphasis on compatibility of existing resources with online initiative. Extending this perspective, we perceive infrastructure associated with the post secondary institution to include tangible support systems and processes such as admissions and registrar's services, library services and program marketing. Beyond these supports, the institution also provides credibility and legitimacy that represent vital elements in the student and faculty recruitment process.

Technology Provider (TP)

Technology is typically provided by an information technology firm and refers to the platform housing the content as well as the delivery systems allowing student's to gain access. The platform may allow multiple access points, e.g., CD and internet. Platforms such as Web CT are common in many post secondary institutions. Usually, the institution will commit to a platform that can easily integrate technological advances.

Content Provider (CP)

Several sources are available for content but the core appears to be faculty members in the host institution with expertise in the topic area. This core consists of full time faculty who undertake content development. The core may be supplemented with faculty from other institutions, with part time or sessional instructors, or others drawn from industry.

Online Program Models and Assessment

The existing online models are bipartite collaborative models based on the association between two complementary partners. They are summarized in Table 1.

Table 1: Existing Online Programs Models

	Infrastructure Provider **(IP)**	Technology Provider **(TP)**	Content Provider **(CP)**
Infrastructure Provider **(IP)**	-	-	-
Technology Provider **(TP)**	IP&TP	-	-
Content Provider **(CP)**	IP&CP	TP&CP	-

IP: Infrastructure Provider: e.g. universities; TP: Technology Provider: e.g. information technology firms; CP: Content Provider: e.g. professors

The TP & CP model

This model represents the partnership of a technology provider with professors or other content providers. The strengths of this partnership can be found in the contributions that each partner brings to the venture. The information technology firm contributes a platform and delivery system that can be adapted to the client's needs. The content provider designs the most up-to-date program content for various clienteles, who typically are more easily differentiated with an online delivery model. Opportunities for adaptation and customization are very important in the online segment of the learning market. Such a model is cost efficient and presents a low risk of legal disputes over material ownership. The TP&CP online program models might be cost efficient; however, they lack the credibility which only a post-secondary institution can offer. Despite the proliferation of such programs, especially internationally in Southeast Asia, in North America, this model is usually associated with in-house professional development programs.

The IP & CP model

This model describes the partnership of the post-secondary institution with professors. The distinguishing strengths of this partnership center on content and infrastructure and legitimacy. Because a successful program depends on the effective student recruitment and retention, the contributions of the infrastructure provider, in areas such as marketing, admissions and registrar services, are especially important. The program often leverages the reputation of the infrastructure provider in the initial stages.

However the risk reduction in this model is low. The post secondary institution has to buy and update online software at an increasing cost. Consequently, the break-even and ultimately profitable position cannot be easily attained. Such a model is not cost efficient and does not fit in an institution where employees are unionized.

The IP & TP model

This model describes the partnerships of post -secondary institutions and information technology firms. The strengths of this partnership are derived from the contributions of infrastructure and technology that lead to substantial risk reduction. The infrastructure contributions typically include the same elements described in the previous model but a break-even and ultimately profitable position is more quickly attained with a relatively lower level of risk. The information technology firm contributes a platform and delivery system that can be adapted to the institution's needs, while remaining accessible to large numbers of students. The opportunity for adaptation and customization is more likely in this two-way partnership since it is in each partner's interest to develop an optimal online learning product as quickly as possible. While this approach is cost efficient with high credibility there is a low level of engagement from content providers who consequently may not be as supportive as needed.

THE TRIPARTITE COLLABORATIVE MODEL (IP, TP & CP)

The tripartite collaborative model corrects for the weaknesses of existing online program development/delivery models either in terms of cost efficiency, credibility and or legal matters. The tripartite model, a partnership of the IP (post secondary institutions), TP (information technology firms) and CP (professors), represents a working relationship of the major contributors to the development and delivery of online education. This approach invites the relative strengths and unique contributions of each partner, i.e., the post-secondary institution's credibility and degree granting authority; the IT firm's state of the art online education platforms at the lowest cost possible; and the content specialists who are more motivated to develop innovative content. Such a relationship seems to effectively address the major drawbacks that result in the failure of many online initiatives. The model leverages the strengths of each of the previous models while reducing the associated weaknesses. It assures that the content is derived from leading experts in the field and reduces the likelihood that regular faculty members who may otherwise be ambivalent about the merits of an online program, will take a neutral or even contrary position. One additional advantage of this model is its capacity to generate solutions to potential legal dilemmas related to the ownership of online products that are often at the center of problems with bipartite online education models.

Model Evaluation

In a recent study, Volery & Lord (2000) investigated key success factors in online education. Previous research cited by the authors included three factors, technology, instructor characteristics and student characteristics. Since the last factor is beyond the scope of this paper, attention will be limited to the first two factors. The bipartite collaborations denoted by the TP&CP and the IP & CP models are predicted to be less efficient because partnerships between content providers with either infrastructure or technology providers rule out two key elements of a functional partnership. These collaborations would not be able to confer the academic credentials students seek in enrolling in post-graduate programs or manage risk by generating cost reductions expected from a collaborative partnership in online programs. According to the authors, each of these two factors are in turn comprised of three components which we review briefly before considering how they can be applied to predict the effectiveness of our models.

According to Volery and Lord (2000), ease of access and navigation refers to a low level of frustration on the part of students trying to access and navigate through the online content. Interface represents the students' reactions to the course's visual appearance and structure. The degree to which the technology allows students to interact in a manner approaching a classroom setting is termed interaction. The next set of factors relates to the instructor. 'Attitudes toward students' refers to the instructor's teaching approach and motivational qualities. In an online setting these would be manifested in how student email inquiries are handled or how capable the instructor is in resolving problems remotely. Instructor technical competence refers to the instructor's ability to apply and promote the technology demonstrating competence in internet-based knowledge in addition to traditional content. Classroom interaction refers to encouraging participation in the virtual classroom created by the course's website.

These success factors can be applied to both the bipartite and tripartite models to predict how well each model will perform against each of these factors. These predictions are listed in Table 2.

Table 2: A Matrix of Models and Key Success Factors

	Bi-partite Models			**Tripartite Collaborative Model**
Key Success Factors	**IP&CP**	**TP&CP**	**IP&TP**	**IP, TP&CP**
Ease of access and navigation	Low	High	High	High
Interface	Low	High	High	High
Interaction	Low	High	High	High
Attitudes towards students	High	High	Low	High
Technical Competence	Low	High	Low	High
Classroom interaction	Low	High	Low	High

As predicted by the matrix, two models, TP&CP and the tripartite model (IP, TP&CP) are likely to score high on all the key success factors identified by Volery & Lord (2000). These success factors maximize the positive experience of the student. However, one additional level of assessment is needed to determine which of the two models is more likely to be effective. When all objectives are considered and the two models are assessed to predict how likely each is to achieve the objectives, only one of the two models emerges. These objectives include student enrollment, an efficient cost structure, a reduced level of risk, and a framework within which legal issues can be effectively managed and resolved. Predictions of how well these models are expected to perform against these objectives are summarized in Table 3.

Table 3: Partnership Objectives

Objectives	**Models**	
	IP&TP	**IP, TP&CP**
Enrollment objectives	Low	High
Cost objectives	Low	High
Risk reduction	Low	High
Functional legal framework	Low	High

Model Objectives

With respect to enrollment objectives, because the tripartite model rates highly on each of Volery and Lord's (2000) success factors related to making the online experience a positive one from the student's perspective, there is a greater likelihood that enrollment objectives can be met. The partnership's online educational product will more effectively meet student expectations for convenience and access to a high quality reputable program leading to a recognized degree. A greater likelihood of meeting enrollment targets is related to a higher probability of meeting cost objectives. With larger numbers of students the institution is able to derive scale economies lowering the cost per student. The educational product is expected to incur maintenance and up-dating costs throughout its product life. An intact partnership means, for example, that course authors, already familiar with the content can engage in maintenance and up-dating activities. Costs associated with these activities should be lower than would otherwise be the case.

Because of the potential for reducing costs when enrollments have attained adequately high levels (Postashnik & Capper, 1998), risk is reduced for all three partners. Moreover, whatever level of risk does emerge can be shared three ways. A partnership that contractually binds the partners for a set time period reduces uncertainty about the future. Objectives related to a functional legal framework may also be more easily achieved in a three way partnership. However, the question of ownership of online intellectual property continues to be debated (Neumann, 1998) and consequently legal framework objectives probably require further investigation that is beyond the scope of this paper's initial consideration of model comparisons. Among the questions raised are functional ownership models, the prevalence of royalty compensation structures, the relationship between proportion of development costs absorbed and proportion of revenues received, and the relationship between rate of development costs absorbed and the rate of revenues received.

CONCLUSION

This paper proposes the tripartite collaborative model as a key to the success of online higher education. After reviewing the different online higher education models, the paper presented an evaluation of the models and predicted their relative effectiveness using key success factors. Based on these predictions, we propose that the tripartite model is the most functional approach. While all existing bipartite models have some advantages, overall, they are less efficient. Although the IP&TP configuration is common to many of the current online programs, its advantages of cost reduction and program credibility are offset by the lack of incentives for the full involvement of content experts. The IP&CP online program model may have credibility and content expert support but lack in cost efficiency. Such a model would fit poorly in an institution where faculty members are unionized. The TP&CP model is associated with cost efficiencies and the support of content experts but lacks the credibility associated with traditional post-secondary programs. Such a model would be more suitable for in-house professional development programs. Consequently, we predict that the only model capable of circumventing the shortfalls of bipartite models is the tripartite collaborative model.

Our review of bipartite models and consideration of the properties of the tripartite model is intended to generate further discussion of issues involved in online education development. We believe this aspect has not received adequate attention and should become better represented as an area of interest in future research.

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