

ACHIEVING QUALITY AND SCALE IN ONLINE EDUCATION THROUGH TRANSFORMATIVE ASSESSMENT: A CASE STUDY

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ABSTRACT/KEYWORDS

The purpose of this paper is to present a case study of an online education program that achieved quality and scale by engaging in a Transformative Assessment process. This study demonstrates how current theories of transformative assessment, coupled with research on online education, may be used to create a framework for transformative assessment of online programs; the potential of transformative assessment for contributing to the development of scalability and quality of online education programs; and how the powerful combination of transformative assessment and online education can transform mainstream student learning, programs, and institutions. Finally, the study will attempt to outline future challenges and opportunities for transformative assessment and online education.

INTRODUCTION

Assessment of higher education is rapidly changing as faculty, administrators and other stakeholders grapple with the public's demand for accountability and the academy's own desire to improve. Best practices in assessment strategies continue to evolve in a field that is no longer focused on evaluation of students, programs and institutions, but rather on the continuous improvement or transformation of the same. At the same time, alternatives to traditional higher education, such as online education, have emerged that present unique challenges and exciting opportunities in assessment. One way to discover and unlock the powerful potential of those innovations is through transformative assessment that focuses on the use of systematic inquiry of student learning to build program and institutional quality. In this article, we present a case study that:

- Demonstrates how current theories of transformative assessment, coupled with research on online education, may be used to create a framework for transformative assessment of online programs;
- Demonstrates the potential of transformative assessment for contributing to the development of scalability and quality in online education programs;
- Provides examples of how the powerful combination of transformative assessment and online

education can transform mainstream student learning, programs, and institutions;

- Identifies future challenges and opportunities with transformative assessment and online education.

BACKGROUND ON ASSESSMENT

Much of the current thinking on assessment in higher education can be traced to the nine principles set forth by the American Association of Higher Education and its Assessment Forum (AAHE, 2003). The principles, captured in *Assessment Essentials* (Palomba & Banta, 1999) stress the importance of planning, a focus on student learning, engagement of key stakeholders and a process for bringing about continuous improvement by applying assessment findings (p.15). Throughout their work, Palomba, Banta and others stress the importance of “viewing the assessment process itself as dynamic rather than fixed” ([2], p. 17; Angelo, 1999).

Building on the AAHE work, The North Central Association of Schools and Colleges’ Higher Learning Commission (NCA) created a tool to assist institutions in their region to study institutional assessment programs. The tool, called *Levels of Implementation*, provides a ranking system that characterizes assessment programs along a continuum from Beginning, to Making Progress, to Maturing Stages of Assessment (NCA, 2003). Suggested qualities and characteristics at each level are defined around institutional culture, shared responsibility, institutional support and efficacy of the assessment program. Institutions are encouraged to move from Level I – Beginning, where there is ‘no shared understanding of the purpose of assessment,’ to Level III-Maturing, where ‘assessment has become a way of life’. Common to both of the above models is a focus on student learning and continuous improvement of teaching, programs and institutions.

While much of this work has focused on traditional student populations, there are emerging national initiatives such as the National Learning Infrastructure Initiative (NLII) committed to the assessment of the use of technology to improve teaching and learning. In collaboration with the AAHE, the Flashlight Project of the Teaching and Learning with Technology Group and the Coalition for Networked Information, the NLII is mid-way through a three-year study, called the Transformative Assessment Project (TAP), which examines how systematic assessment of teaching with technology initiatives can result in institutional transformation (NLII, 2003). The TAP has developed a useful rubric for examining the *purpose of the assessment*, the *type and method of data collection*, *application of assessment results*, and *dissemination activities* along a continuum from **Administrative**, to **Progressive**, to **Transformative** outcomes. The TAP continuum parallels the NCA’s Levels of Implementation ranking and again emphasizes that assessment should be conducted to continuously improve student learning and ensure programmatic and institutional growth.

The opportunity to pair transformative assessment with online education is significant and increasingly critical as student participation in this learning environment continues to outpace growth in all other sectors of higher education. Asynchronous learning networks (ALN’s) currently represent the most popular form of online education in this country, with 90% of 2 and 4-year institutions which offer distance education courses offering these courses asynchronously (U.S. Dept. of Education, 2003). Sloan-C, a consortium of over 200 colleges and universities and the leading online education organization, has developed a framework for assessing the quality of online education programs based on access, learning effectiveness, cost effectiveness, faculty satisfaction and student satisfaction. (Mayadas, Bourne & Moore, 2002). By integrating a transformative assessment framework with the Sloan-C pillars, programs

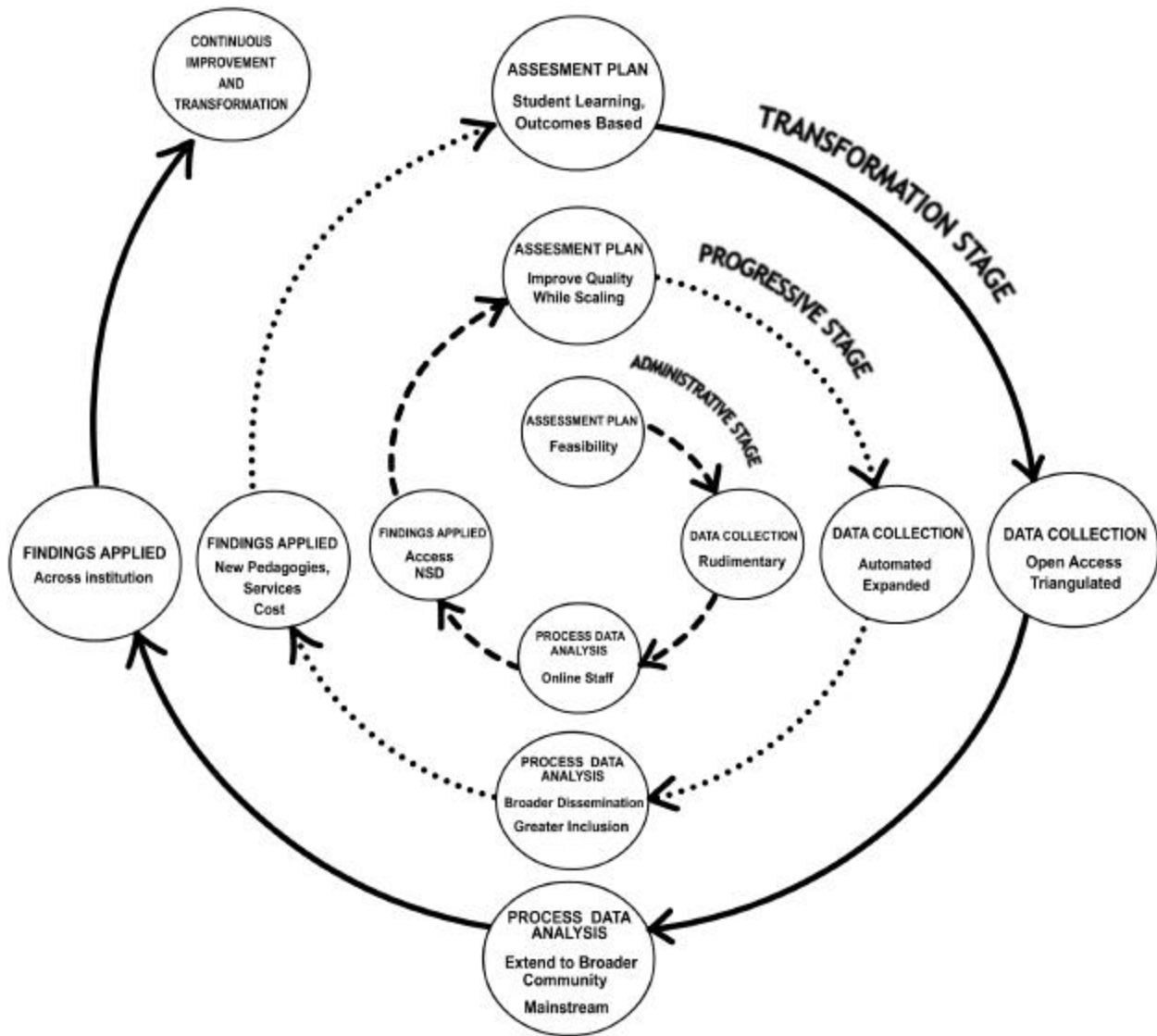
may realize the full potential for online education to transform their institutions.

A synthesis of the above scholarship reveals five principles underlying transformative assessment that can help institutions realize the potential of online education to improve student learning and transform their institutions.

1. Assessment is an iterative process that leads to continuous improvement of teaching and learning.
2. Assessment should be guided by a purpose that reflects institutional mission, goals and objectives.
3. Assessment engages an expanding circle of participants, including faculty, students, administrators and community members.
4. Assessment collects, analyzes, and applies data in a manner that contributes to improvements in student learning.
5. Assessment of online education presents unique challenges and unique opportunities that offer a powerful potential to transform student learning, programs and institutions.

Figure 1 below depicts our vision of how these principles may be operationalized. Using the terminology presented in the TAP rubric, an institution or program begins at the Administrative Stage (center of Fig. 1) where data is collected and studied by a limited number of stakeholders. Findings are applied to make improvements and adjustments in the assessment process itself so that the institution can evolve to the Progressive Stage. At the Progressive Stage, the purpose and process are informed by a much broader constituency which helps to lead to a deeper questioning of the assessment of quality and of teaching and learning. Application of the findings leads to improvements in access, learning effectiveness and cost effectiveness and, when shared with an even broader community, evolves the institution to the Transformative Assessment Stage. At the Transformative Stage, assessment is integrated into the culture of the institution where all goals and objectives are uniformly assessed and the results are applied to achieve continuous improvement.

Figure 1: The Transformative Assessment Process



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BACKGROUND ON THE CASE

The case study presented to illustrate an online program's evolution in the Transformative Assessment process is based on the authors' seven years experience as founders and directors of the online program at the University of Massachusetts Lowell (UMass Lowell). UMass Lowell's online education program started small with the hope of identifying new markets to expand access and bring needed revenues to the campus. The Division of Continuing, Corporate and Distance Education (CCDE) was charged with developing Lowell's online program to achieve those goals. The online program at UMass Lowell now

offers 6 full degree programs and approximately 6400 enrollments per year, is one of the largest in New England and is a major contributor to UMassOnline (UMOL), UMass' system-wide portal for online education. The UMass Lowell online program is entirely self-supporting and returns significant revenues to the campus and UMOL to seed continuous growth (for an in-depth review see Moloney & Tello, 2003).

The study is a retrospective of the transformation of the program as a result of ongoing assessment that increasingly focused on student learning. The organizing principles outlined above served as a guide for forming the assessment plan and the Sloan-C pillars emerged as essential considerations in designing the program. The case will be presented along the continuum suggested by TAP: Administrative, Progressive and Transformative. We will outline the purpose, method, findings, and application of the findings for each stage of the assessment process based on a format proposed by Banta, Lund, Black, and Oblander (1996, p. 70). The findings will be summarized according to 3 of the 5 pillars: Access, Learning Effectiveness, and Cost Effectiveness and discussion of the final two pillars, Faculty Satisfaction and Student Satisfaction, will be woven throughout the study as essential metrics for our assessment program.

STAGES OF ASSESSMENT

A. Administrative Assessment Stage: Feasibility

A plan to continuously assess the quality of the online education program at UMass Lowell was set in place from the outset in 1996. The focus of this initial plan was evaluative in nature and could be characterized in the TAP/NCA categories of Administrative or Beginning. A shared institutional understanding of the assessment program was not in place, there was no focus on meaningful assessment of student learning outcomes, or a process for engaging a broader community. There was however, an intent to apply the findings to expand the program and to improve the quality of student learning. This last characteristic is what enabled our assessment plan to evolve from the administrative stage to a more progressive approach that will be discussed in Section B below.

1. Assessment Purpose

At this stage, the purpose of the assessment plan was to *conduct comparative research examining the feasibility of using online education to provide quality access and learning to students equal to on-campus face to face programs*. Like many institutions experimenting with online education, the 'no significant difference' benchmark for comparing distance education with face to face education had to be established to achieve credibility with the faculty and administration (Russell, 2003; Swan, 2003). Only then, could plans for scaling the program to increase access, improve quality of learning and enhance revenues for the campus be considered.

2. Data Collection

To address the feasibility question for online education, we had to collect a great deal of data around the technical competency of students and faculty, the adequacy of their hardware and software and of our technical support services. Data was collected from a review of student technical support requests, student administrative communications and a review of student petitions for refunds.

To assess learning effectiveness, the data collected at this stage paralleled what we were using to evaluate

student performance in our face to face courses. To establish the ‘no significant difference’ benchmark, faculty administered the same kinds of tests, projects and writing assignments as they did with their face to face courses to assess student learning. Grade distribution and retention data were examined to ensure that online students were achieving at the same level as their face to face counterparts. Overall student satisfaction was assessed through course evaluations created for face to face courses and simply posted online at the end of the semester. Course enrollment trends were also collected and studied for indications of student satisfaction and market analysis.

During this start-up phase, we were aware of the need to collect data around cost effectiveness, yet we had no pre-existing mechanisms in place to examine course development costs (including intellectual property), infrastructure development or staff expansion. Therefore, cost assessment that “integrates learning impact with cost efficiencies” (a TAP characteristic) was delayed until the Progressive Assessment Stage.

3. Data Analysis

Only the professionals responsible for developing the online program conducted the data collection and analysis. Summarized data was then shared with the online faculty who had an opportunity to respond to the analysis, but were not involved in the formation of initial research questions or the interpretation of the data. The NCA Level I of Implementation characterizes this pattern where “...faculty are not engaged in assessment activities that get to the core of measuring student-learning outcomes.” ([4],p. 19).

4. Findings and Application of the Findings

In this section we present our Administrative Stage findings and how they were applied to make improvements, and highlight discoveries unique to online education. Using the Sloan-C pillars as the organizing framework, we will present our analysis of the impact of our assessment activities around learning effectiveness, access and cost effectiveness, again, student satisfaction and faculty satisfaction are woven throughout the discussion.

a. Improvements in Access

According to Sloan-C, the access pillar ensures that “*all learners who wish to learn online have the opportunity and can achieve success.*” This pillar focuses on technical access as well as access to courses and programs and student services (Moore, 2003, p. 26). Assessment findings on technology access indicated that although students were satisfied in general with the program (75% indicated they would take another online course), they were frustrated by the technology including lost dial-up connections, access to chat and their own limited understanding of browser and email software. These findings resulted in the expansion of online technical support hours, the addition of a toll-free support telephone, an online technical support Webboard and online “Help” tutorials ,and the development of an online orientation that addressed frequently asked questions and outlined hardware and software requirements.

In terms of access to courses and programs, scans of enrollment data showed that student demand exceeded course availability in volume and content. Students also expressed a need for fully online degrees. As a result, we launched our first online certificates and degree, the Bachelor of Science in Information Technology (IT) and developed a plan to migrate only courses and certificates in this degree program. This decision helped support the large-scale growth of the UMass Lowell online program.

b. Improvements in Learning Effectiveness

The Learning Effectiveness pillar maintains that *“learners who complete an online program receive educations that represent the distinctive quality of the institution”*. Not surprisingly, our studies proved that we achieved the “no significant difference” benchmark in grades and final course evaluations between students in face-to-face and online/distance education courses, consistent with the literature on this topic (Russell, 1999; Spooner, Jordan, Agozzine, & Spooner, 1999; Swan, 2003; Verduin & Clark, 1991; Wideman & Owston, 1999). What was surprising was given our “novice” status as online providers in the 1996 – 1997 period, both online students and faculty expressed such high levels of satisfaction with our online program. Despite the limitations of the technology and our crude learning management system, on average, 77% of online students indicated a high to very high degree of satisfaction with their course and 95% of the online faculty, asked to continue to teach online in future semesters. These findings exceeded our expectations, and we began to wonder why.

While flexibility and convenience were obvious explanations, we were also hearing faculty and students talk about increased interaction in their online courses; and faculty began questioning traditional assumptions about seat-time, their roles as instructors (lecturer versus facilitator) and the evaluation of student learning. For example, knowing that online multiple choice exams could be taken by anyone at the other end of the computer terminal, some faculty began to wonder about their true value in assessing student performance. While faculty were reportedly pleasantly surprised by the amount of interaction in their online courses, they wondered how much of it was improving their students’ learning and expressed concerns about the limitations of the course management system. We knew we had access to a wealth of data to assist in the study of these dynamics such as online lecture notes, PowerPoint presentations and student communication archives, yet we needed faculty input to frame the questions and guide the process in a meaningful way. As a result, consistent with the TAP/NCA recommendations, we greatly expanded faculty participation in the assessment process.

c. Cost Effectiveness

Course enrollment trends and student satisfaction data offered ample evidence of the potential of the online education program to expand access and generate new revenues. At the same time, the costs for implementing these findings to improve learning effectiveness and access were daunting. As a result, an assessment plan was implemented in the Progressive Stage to collect data regarding the cost of course development, faculty development, infrastructure and human resources.

B. Progressive Assessment Stage: Quality and Scalability

The realization that students and faculty were satisfied with their online experience, combined with our access to new kinds of data, ignited our assessment activities as new questions about learning effectiveness, access and cost effectiveness emerged.

1. Redefining the Purpose for Progressive Assessment

The purpose of assessment during the Progressive Stage became more focused on *how to improve the quality of student learning while expanding the program and the return on investment to the campus*. Based on Administrative Stage findings, a strategic plan for the expansion of the online program was created with program objectives and targeted benchmarks to help assess our progress toward the goals of the plan. The objectives were similar to the pillars and included: a) expanded access to online course offerings, certificates and degrees, and support services (both technical and academic); b) improved instructional design to enhance student learning or learning effectiveness and c) standardized cost analysis

for developing courses, programs and delivery of the same.

2. Data Collection

Each objective outlined above was mapped to a set of data to measure our progress under each benchmark. Student surveys were revised to aid data collection on access issues as well as learning effectiveness. For example, we revised the course evaluation to assess the effectiveness of communication tools to achieve interaction and build learning communities. Data collection was automated by developing protocols for querying course communications and online surveys to parse data directly into spreadsheets. These enhancements facilitated a more scholarly approach to assessment and made possible a number of important studies. For example a doctoral study, conducted by co-author Steven Tello (2002), examined the relationship between interaction in online courses, student satisfaction and student retention; a study that could not have happened without the archived data which was triangulated with telephone interviews and other qualitative methods.

To better assess faculty needs for support and development, surveys of faculty satisfaction with both their online teaching and course development experience were initiated. In particular, we were interested in examining data on the time it took to develop and teach online courses as well as technical and learning effectiveness challenges encountered by online faculty.

Cost effectiveness data was collected from several sources, including course enrollment and tuition records, faculty teaching and development stipends, faculty development and support staff, technology infrastructure costs and division overhead analysis. This analysis laid the groundwork for a strategy to track the return on investment in the online program.

3. Process for Data Analysis

The process for analyzing the data was greatly expanded and formal procedures were established to share the information with a much broader audience. Faculty participation in the assessment of data increased significantly and over 70% of the online faculty reviewed evidence of student satisfaction, grade distribution, retention and course enrollment trend data.

In addition to open meetings with online faculty, we invited our course management system vendor and other administrators to explore how to improve the quality of our online program. Faculty, online professionals and our CMS vendor discussed assessment findings as a team and examined programmatic and pedagogical challenges, alternative interpretations of the findings, and then collectively defined the next set of questions. This public discussion of the teaching learning dynamic was transformational as faculty examined data in a public forum, for many a first in their teaching careers.

4. Findings and Application of the Findings:

By expanding the kind of data collected and the process for engaging the faculty in particular, our program began to yield the powerful impact of assessment as an educational tool. The more that faculty worked with technical support staff, administrators and the CMS vendor, the more significant our improvements turned out to be as they began to focus increasingly on student learning.

a. Improvements in Access

The data on access to technology and student services indicated that though we had made great strides in creating stability in the infrastructure and technical support, we needed a more efficient, user-friendly,

electronic approach to academic services such as advising, registration and library services. A cross-functional team composed of faculty, staff and administrators was created and all student applications, forms and services were moved online. Support staff were retrained to deliver services electronically and within a year we noted an improvement in student satisfaction with these services. This cross-functional approach to improving student access for our online students began a process for mainstreaming these changes and enhancing services to face to face students as well.

Student demand for online degrees continued to rise so we launched a second degree, the Bachelor of Liberal Arts (BLA) and several related certificates. All faculty and course development resources were applied to migrating these two degree programs (75 courses) online, a task which was accomplished within two years. Based on faculty and student surveys that revealed a dissatisfaction with student technical preparedness for taking online courses our face-to-face student orientation was redesigned for online students and expanded to include detailed technical and pedagogical considerations for students taking online courses.

The findings from the doctoral research study described above showed that students' family and work commitments and the student's enrollment in a certificate or degree program were all factors contributing to a student's decision to persist or withdraw from a course. The study also found that despite the online orientation program, students' expectations for their online learning experience didn't match their actual experience. Based on these findings a brief online quiz was developed to enable students to assess their own readiness for online education (available online at <http://continuinged.uml.edu/online/123.htm>) The quiz examines a student's technical knowledge, learning style and ability to manage time; all factors that appear to contribute to student success in online education.

b. Improvements in Learning Effectiveness

An analysis of the data collected in relationship to Learning Effectiveness resulted in changes in our online course design and in our faculty development efforts. The data indicated that a positive relationship exists: a) between student attitudes to interaction and student persistence; and b) between student perceptions regarding the use of the discussion forum, the frequency of discussion forum use and student persistence (Tello, 2002). These findings helped to support a program emphasis on asynchronous communication between faculty and students. Changes to our course and faculty development efforts increased our emphasis on the effective use of the asynchronous discussion forum in all online courses.

Related data examined multiple dimensions of communication and interaction between instructor and students which supported student persistence and satisfaction. Frequent feedback, prompt feedback, communication of clear expectations were all factors identified as important in supporting student success and participation in online courses, consistent with Chickering and Gamson's *Seven Principles for Good Practice in Undergraduate Education* (1987). Improvements reflecting these findings included the introduction of a "Start Here" section in every online course, to help communicate clear expectations, as well as introduce communication and response guidelines for faculty and students.

During this period we also initiated changes in both the content and delivery of our faculty training. We began to pilot online training programs blended with face-to-face workshops. Satisfaction surveys and training program evaluations from online faculty indicated that participation in an online course as a student was important in helping them to understand the necessity of clear course communications and the challenges of taking an online course. These and other pedagogical changes that placed greater emphasis on student learning were integrated into our training curriculum. Through the assistance of a training grant from the Sloan Foundation, we expanded our faculty development effort to primarily an

online experience, which now requires that all faculty interested in teaching in our online program must participate in two online, four week development courses.

c. Improvements in Cost Effectiveness

During this stage, considerations of access, learning effectiveness, faculty satisfaction and student satisfaction were considered in the context of costs, bringing a much needed business discipline to our planning. As we moved to a full cost-accounting of the online program and broke out costs for instruction, faculty development, course development, technology, marketing and other division overhead, we were able to make informed decisions about which programs to develop and what staff, faculty and technology resources were needed to support it. In addition to guiding investments, the cost effectiveness data assisted in establishing guidelines for faculty compensation, royalty fees, course minimum and maximum enrollments, and related policies.

The creation of a budget template that aggregated expenses and revenues provided evidence that the program was exceeding the targeted return on investment and enabled the program to grow at a rate of nearly 75% for two consecutive years while generating new revenues for the campus. These findings, shared with departmental faculty, academic deans and the Chancellor, brought new enthusiasm for the program and a commitment to seed new development. However, the fiscal discipline that this process imposed on the process drew some faculty resistance and we realized that we needed mechanisms to engage the faculty deeper in the assessment of cost effectiveness as suggested in the TAP and NCA assessment rubrics.

C. Transformative Assessment Stage: Continuous Improvement

Over the past three years we have made tremendous gains in maturing our assessment program and are now poised to enter the Transformative Assessment Stage. This stage is challenging to enter and even more challenging to sustain as it requires an institution-wide commitment to the development and growth of a learning community while maintaining an ultimate focus on the assessment of student learning.

1. Purpose

While we continue to study how we can improve the quality of learning and expand enrollments, we now continuously explore new ways of applying what we are learning from assessment to bring about institutional improvements in access, learning effectiveness, and cost effectiveness. As such, the purpose of our assessment program has evolved from establishing the feasibility of online education in the Administrative Stage *to transforming the institution by mainstreaming the best of what we have learned from our online education program.*

2. Data Collection

At each stage of the assessment process, we have built on the data collection efforts in the previous stages. As such, student surveys continue to be a reliable and efficient method of collecting data and are heavily utilized to study access, learning effectiveness and cost effectiveness. Similarly, technical access data continues to be collected through online technical support forms, a technical support discussion forum, and monthly usage reports.

Input from the faculty in previous stages resulted in dramatic changes in our capacity to assess learning

effectiveness and holds tremendous promise for improving student learning. For example, technical changes to our course management system now enable us to customize surveys based on specific course and discipline needs. Faculty are taking advantage of automated reports on student discussion and chat participation to assess student learning. Additionally, more instructors have introduced formative assessment strategies, building on assignments, rather than administering one multiple-choice exam at the mid-term and conclusion of their courses.

To strengthen our ability to assess student learning, we have begun to collect data on the content of course syllabi to determine what percent conform to Division standards for statements of course goals, learning outcomes, course requirements and detailed grading criteria. This effort is integrated with a faculty development effort to encourage more faculty to incorporate formative assessment strategies into their courses to reinforce our commitment to developing students through assessment. An expanded faculty survey now enables us to collect data on the progress the division has made in these areas as well as to assess the carry over of effective online teaching strategies to face to face courses. The survey continues to query faculty on satisfaction with course migration, training and other development services and needs. Data on faculty satisfaction is also collected through interviews, at open meetings and other important qualitative venues.

To expand student participation in the assessment process, a recommendation by NCA and TAP, the student graduation interview process, previously designed for face to face students, is being redesigned to collect more pertinent and qualitative data from our online students. Data regarding community and corporate educational needs is now routinely collected as part of our program development process and includes needs assessment of students at companies and educational organizations.

In addition to the full-cost accounting data collected in the Progressive Stage, a new template to assess cost effectiveness at the program level has been implemented. This data along with enrollment trends, is factored into Division and University budgetary data to determine revenue, expense and net ratio targets in the 5 year strategic plan.

3. Process for Data Analysis

Our process for analyzing data has evolved from a closed, limited review in the Administrative Stage to an open, inclusive process in this Transformative Stage. Faculty are now actively involved in setting the assessment agenda, conducting studies and influencing the development of the online program. This high level engagement of the faculty has significantly enhanced the impact of assessment on continuous improvements in course design, instruction and program development.

The process for engaging the faculty has been encouraged in two ways. First, by enabling the faculty to conduct scholarly research related to the assessment process, several of the faculty have published their findings in professional publications and enhanced their professional portfolios while contributing to the developing literature on this topic. Second, we have provided additional compensation to several faculty to expand and formalize both data collection, analysis and dissemination. This has helped to institutionalize assessment by cultivating a pipeline of assessment experts who are able to continuously advance our assessment program.

4. Findings and Application of the Findings

a. Improvements in Access

As our online program and institution transitions into the Transformative Stage, we have found that online students and faculty are much better prepared in terms of Internet connectivity, hardware and software skills than they were two years ago. Over 63% of our online students have high speed Internet access, suggesting the possibility of increasing the use of bandwidth intensive media and communications tools in our online courses. However, any decision regarding changes in technology platforms or media must now be assessed for its potential to impact on access, learning, and cost effectiveness, an example of the integration of assessment activities.

The changes brought about as a result of earlier assessment stages have dramatically increased online students and faculty satisfaction with both technical access and technical support. In AY 2003, 98% of students and 98% of faculty indicated that the course website was available when they needed to engage in course related activities. Approximately 16% of online students have made use of technical support services over the past year and 90% of these have indicated the services helped to promptly resolve their technical issue. An AY2003 survey of all online faculty indicates that 100% of faculty agree that technical support staff quickly helped to resolve their technical issues.

Application of the Progressive Stage findings on student services has resulted in increasing demands from face to face students and faculty for the kind of user-friendly, automated services now provided to our online populations. As a result, all of CCDE faculty and student services have been redesigned and now online and face to face students have integrated access to quality academic services. Further, findings on access needs are now being integrated into the campus' migration to its new student records system, again an example of the transformative impact of the assessment program on the institution.

Student survey data also revealed an increasing need for accelerated semesters and for expanded access to programs at the graduate level. Since many faculty had already discovered that the 14 week semester was no longer necessary in the online environment, they, the academic deans and the Chancellor agreed to pilot a 10 week semester this fall (2003). Additionally, several face to face courses will be offered in the same timeline with blended online supplemental instructional activities. To respond to the need for online graduate level programs, the faculty initiated three online graduate certificates followed by three online masters degrees, and finally, in 2003, our first online doctoral program. Drawing on our assessment findings from above, we developed a comprehensive business plan in collaboration with the sponsoring departments to launch each of these degrees while sponsoring departments received grants to launch the degrees that enabled them to add staff and faculty support.

b. Improvements in Learning Effectiveness

Characteristic of the Transformative Assessment Stage, we continue to deepen the focus of assessment on student learning and continuous improvement. Toward these ends, the first degree launched under the seed grant program described above is our first truly outcomes-based program which is described below. A description of how best practices in online education, as defined by the faculty and professionals at UML, is making its way into the mainstream of the institution, transforming the way we think about teaching, learning and assessment.

Outcomes-based Program Development

The Masters of Education in Educational Administration represents the first online graduate degree developed at the University, designed around student learning outcomes and based on community and student needs. Partially funded with a grant from the Sloan Foundation, the Graduate School of Education developed the program to address a shortage of school administrators by helping to prepare students for K-12 Principal certification in the state of Massachusetts. Each courses is designed to prepare

students to be transformational leaders in their school system and to pass a state certification exam. The first graduates of this program are just entering their final semester, which includes a year long, field-based practicum in School Leadership that will result in a portfolio of the student's achievements in the program. In addition to all of the assessment activities outlined above, the success of this program will be measured by our students' ability to meet state certification requirements. This program has also been customized for the Lawrence Public Schools, an inner-city school system challenged to improve student test scores and ranking by the state Department of Education. Ultimately, the true assessment of the effectiveness of this online program will be the improvement of student learning in that school system. Again, this program characterizes the TAP and NCA definitions for transformational assessment.

The Online Teaching Institute

The UMass Lowell Online Teaching Institute is another example of how a training project initially introduced to support online courses in CCDE has expanded its role and services to support effective online teaching across the institution, UMass system and region. The Institute emphasizes the development of effective teaching strategies for online courses through a sequence of online workshops, face-to-face trainings, and on-going pedagogical and technical support. This cost effective approach has resulted in the development of over 300 online course at UMass Lowell, and an annual online enrollment of 6400 students. Table 1 summarizes the impact of Institute training and development activities at UMass Lowell.

Table 1 Impact of Online Teaching Institute

	AY2000	AY 2001	AY 2002	AY 2003
Faculty Trained	55	101	126	108
New Courses Developed	26	37	44	34
Total Online Courses	115	210	264	293
Total Online Enrollments	2564	4371	5428	6374

Though the Institute was launched to migrate online courses for CCDE, demand from traditional face to face faculty grew as word of the Institute's successes spread among faculty. To respond to this demand, the Institute, in collaboration with the UML Faculty Teaching Center, now provides on-going seminars open to all UMass Lowell faculty. As a result, approximately 150 web-enhanced courses in the undergraduate and graduate day programs have been developed at little cost to the institution. Perhaps more importantly, 84% of faculty participating in Institute training activities in AY 2003 indicate their face-to-face teaching was enhanced by this training. These joint training programs helped move Institute offerings beyond technical discussions of chat tools and course management systems to workshops which explore deeper issues regarding the development of online course objectives, student assessment across disciplines and the facilitation of deep learning with online communication tools.

The Institute opened their faculty development services to colleges and universities across New England and, with help from a grant from the Sloan Foundation, the Institute was expanded to include online development courses. The Online Teaching Institute has introduced over 400 faculty from across New England to online teaching and course development and has provided training and development services to all five UMass campuses as well as faculty and staff from the region's community, state and private colleges.

In 2003, 93% of faculty participating in the training program indicated the program provided them with the skills and understanding needed to develop and teach online. Over 90% of the UMass Lowell faculty who participated in the Institute training program went on to develop and teach at least one online course, 97% of these faculty also indicated they will develop and teach another online course at UMass Lowell. A review of online course teaching assignments confirms that 95% of online faculty continue to teach in subsequent semesters.

Cost effectiveness

Currently, online student enrollments and revenues account for approximately 30% of the Division's enrollments and income. Several templates to assess cost effectiveness in relationship to access and learning effectiveness have been offered in various Sloan C publications (Bishop & Schweber, 2002). Similarly, UML now has a robust system for monitoring and assessing our capacity to generate new income for the campus and this year exceeded the campus FY 2006 targets three years ahead of schedule. As a side benefit, the program has also contributed approximately \$500,000 per year in faculty development in online education, positioning the faculty to keep pace with cutting edge technologies and constantly seeking the best out of online education. In addition, the online education program has paid for the development of the technical infrastructure that allows faculty to integrate the web, discussion forums and chat into their online or face to face course.

SUMMARY

The explosive growth of online education over the past decade has presented higher education with challenging questions regarding its feasibility as an educational medium. As a result, online education had to enter the assessment arena earlier and more intensely than its traditional, face to face counterpart. As can be seen from the study above, online education has greatly benefited from the imposition of this rigorous assessment requirement leading to significant improvements in both the process of developing online courses, faculty and programs as well as the overall quality of online courses and programs. True to the Transformative Assessment Process, those practices which have been established as best practices in online education after several years of assessment are now being mainstreamed into our institution and higher education in general. If this trend continues, all students may benefit from the rigorous assessment initially focused on online education.

We hope that the framework created by using the TAP Assessment Rubric with the Sloan-C pillars provides others with a map of how to proceed in what can appear to be a daunting undertaking. Yet, significant challenges lie ahead in this important work. This assessment effort will have to put greater emphasis on assessment of student learning outcomes if we are to achieve a truly transformative assessment program. Also, as we strive deeper into assessment of student learning, we will undoubtedly encounter challenges and limitations with the technology and our ability to maximize its potential. As outlined above, we have initiated several projects this year that will move this agenda forward for the online education program, however, our capacity to mainstream these efforts is yet untested.

Despite these challenges, we are excited about the wealth of information about student learning that online education brings. New opportunities exist within emerging technologies and evolving pedagogies to improve the teaching and learning dynamic in higher education significantly. Already we have yielded tremendous evidence that online learners invest more time interacting with faculty, each other and course content than in face to face courses. We know that faculty can shift their role from lecturer to facilitators in the online classroom and improve student learning as a result. Most importantly, we now have access to more data on student learning than ever before, our challenge is to identify what questions are important to bring about continuous improvement in programs and student learning.

Clearly, achieving a high quality, transformative assessment program takes time, patience and diligence on the part of faculty and administrators. As Angelo suggests in his article, *Doing Assessment As if Learning Matters Most*, institutions that foster a shared trust, shared motivation, shared language and shared guidelines have the optimum conditions for moving into transformative assessment [3]. We hope that this case study motivates other academics to take a new look at assessment as an opportunity to build a learning community characterized by trust and a capacity to continuously improve the way in which faculty teach and students learn.

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Dr. Jacqueline Moloney has been actively involved in curriculum and instructional innovation in higher education for the past fifteen years. In addition to spearheading the development of a comprehensive student learning center and faculty development center, Dr. Moloney led the successful redesign of Lowell's Division of Continuing Studies, Corporate and Distance Education. Under her leadership, the Division developed one of the region's largest online education programs which has received national notoriety and three Sloan Grants for program and faculty development. In addition, she has crafted numerous innovative partnerships with business and industry that have yielded impressive results for the Lowell campus.

As an active member of the Sloan Consortium for of Asynchronous Learning Networks, Dr. Moloney has served as a contributor to the national dialogue on the emergence of online learning programs. In addition to consulting with numerous private and public institutions on faculty and student development, Dr. Moloney assisted in the creation of UMassOnline, a system-wide effort to expand its online programs. Dr. Moloney has authored articles on the use of technologies in the classroom; cross-disciplinary approaches to curriculum reform; and the organizational reform of higher education.

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