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What Next?

Options for Investing in eTeaching[1] Excellence

T4 Phase 4 Report To

Chancellor James H. Page

July 1, 2013

1 *"eTeaching", for the purposes of this report, is synonymous with teaching through the use of digital technologies.*

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Executive Summary

T4 was charged with studying four topics: I) emerging eLearning paradigms; II) ways to streamline System wide efforts to leverage digital resources; III) the impact of eLearning on teachers and students; and IV) campus- level eLearning landscape developments.

Earlier T4 reports included recommendations (Appendix J) related to: terminology; planning and landscape development; investing in the scholarship of teaching and learning (SoTL); aligning System eTeaching leadership groups (ITS, DLSC, CAOs); aggregating best practice examples; and investing in institutional research. The 2012 Report described findings and recommendations based upon the Faculty Survey conducted by the Center for Research and Evaluation (CRE).

Findings from the Student Survey are described in this report with options for moving beyond the "add on" strategy. These strategies include collaborative re-examination of pedagogy across programs, better integration of curriculum design and academic assessment methods; and continued development of campus landscapes.

Over the past four years, campuses, faculties and students have substantial increased their use as evidenced by longer hours of screen time and greater levels of digital skills. With notable exceptions in selected professional programs, most development has occurred through the efforts of individual faculty and ITS or instructional design professionals. The literature characterizes these as individualistic "lone rangers" as using primarily "on demand" instructional design and IT services. The question remains, collectively how systematically will programs, campuses and the System leverage 'disruptive technologies' in the service of better teaching and student learning?

Part 1 of 2013 Report includes a commentary on market demand, higher education IT trends the need to think beyond technology to investing in eLearning pedagogy. Viewing the process of becoming well 'connected' developmentally, the risk of an "IT productivity paradox" similar to occurrences in other sectors including health care is considered and barriers to efficient development are identified. The needs for better data on learning outcomes and teaching practices are emphasized.

Part 2 describes five key findings from the Student Survey. A comparison of faculty and student perceptions in the two surveys is included. Part 3 addresses two signature issues: eTeaching and campus eLearning landscapes. Findings from campus visits are summarized and options for improved planning are outlined.

The Report concludes with recommendations. A case is made for continued institutional eLearning research and a consideration of the scholarship of teaching and learning (SoTL) as an opportunity to engage faculty in studies of pedagogy. Other major recommendations are to; a) clarify the alignment of academic governance and System level ITS governance; and b) increase student engagement in academic assessment activities. Appendices include the full CRE Student Survey Report, campus landscapes and selected literature reviews.

Useful Quotes

"In times of change learners inherit the earth; while the learned find themselves beautifully equipped to deal with a world that no longer exists."   *- Eric Hoffer*

"In general, institutions were too cautious in their goals for technology. In particular, most seemed content to use technology to enhance traditional classroom teaching, rather than to use technology to transform the way teaching is designed and delivered. Using technology to enhance classroom teaching merely adds cost to the system, with no measureable learning benefits. Most of our case study institutions had not institutional plan for learning technologies." - Bates, A.W. and Sangra, A. (2011)

"The boundaries between academia and the rest of the world have never been more porous. These external forces are shaping the strategic priorities of higher education institutions. Four priorities in particular are widespread and highly pertinent to information technology:

1. ***Contain and reduce costs****. The bleak economic outlook and reduced funding sources are making it imperative to reduce or at the very least contain the growth of costs. Efficiencies are sought, and business best practices are often viewed as the best path to achieving efficiencies.*

2. ***Achieve demonstrable improvements in student outcomes****. The practice of measuring, improving, and reporting student outcomes is moving from highly desirable to imperative. The window of opportunity for colleges and universities to shape how they define, measure, and improve student outcomes—rather than react to external requirements—is shrinking.*

3. ***Keep pace with innovations in e-learning, and use e-learning as a competitive advantage.****[3] Whether driven by the explosive interest in open educational resources (OERs), most notably Massive Open Online Courses (MOOCs), or by explorations in using technology to develop and implement new academic credentialing models like badging and competencies, presidents, chancellors, and provosts are eager to use technology to help inform and transform postsecondary education.*

4. ***Meet students' and faculty members' expectations of contemporary consumer technologies and communications.*** *Students and faculty not only expect that they will be able to use their smartphones, tablets, and consumer-based apps in their academic work but also expect that their institutions' services will work as elegantly and effectively as commercial services."*
                        – Grajek, S (EDUCAUSE, 2013)

Appreciation

In 2010, Chancellor Pattenaude established T4 to study the impact of technology on faculty and students and to assist the System addressing five System priorities listed below. We thank him for making this study possible. The task force also appreciates groups external to UMS whose work has informed and inspired T4. Survey efforts at exemplar institutions include the University of Washington, Pennsylvania State University and Babson College. The work of the Weatherstation Project and the National Center for Post-Secondary Improvement provided an aspirational model (Zemsky and Massy, 2004). The Sloan Foundation and EDUCAUSE have also been invaluable sources of information about exemplars, trends and best practices.

Preface

Over the past four years substantial increases in the digital expertise of students and faculty on UMS campuses have taken place. These investments brought with them increased understanding of the costs, potential benefits and barriers of using digital resources. These adaptations have been guided by Mission Excellence priorities including; improving return on investments (ROI), student retention and support; workforce readiness; assessment and online[1] education (Appendix A).

The results of UMS faculty and student surveys affirm the use of technologies in courses has been embraced by these critical end users even though eLearning implies a "hidden curriculum" requiring more work. There is also serious (and healthy) skepticism about priorities driving curricular changes. Thoughtful and outcome driven implementation of these changes are critical. A theme of 'healthy ambivalence' characterizes these early findings and echoes findings in similar surveys nationally during the past decade.

T4 Limitations: This 2013 Report is intentionally brief. As evidenced in the appendices, this subject matter is complex, dynamic and often esoteric. The scope of the T4 charge was broad and its resources limited. And, surveys and focus groups can be only 'snapshots' pointing to the need for ongoing institutional research on teaching and learning. Another limitation was the a) absence of learning outcome data; b) absence of campus eLearning plans and only rudimentary landscapes. Finally, the study could not aspire to provide definitive generalizations about the experience of more than 30,000 students in the System. For a detailed description of the limitations specific to the Student Survey see Appendix B.

Study Methods: This study was formative action research rather than summative or basic research per se. To examine themes comparable to those found in the literature, T4 employed: I) surveys; II) campus focus groups; III) literature reviews; and IV) targeted interviews with System leaders. NOTE - absent from these research methods were consultations with external consultants or visits to exemplar institutions.

The task force identified meta analyses from national studies, exemplar institutions and models guiding institutions becoming first 'connected' and then producing better curriculum and teaching practices. Dimensions of eTeaching pedagogy were identifies and options for re-engineering curricula and teaching practices. Hybrid curricular and pedagogical frameworks, annual survey methodologies, institutional eLearning strategic plans and the unique challenges of eLearning (e.g. cloud and mobile computing, MOOCs, optimal use of rich and social media and 'mass customization') are a sample of the topics studied.   At the T4 Blog (http://www.t4taskforce.maine.edu/) interested readers can find earlier progress reports. By September 1 a complete set of appendices and T4 artifacts will be submitted.

Part I

Responding to Disruptive Times

Today higher education is a multi-faceted enterprise struggling with both retrenchment and disruptive innovations. It is a locus of valuing traditions and incubating new knowledge and practices. Historically studies of teaching and technology can be traced to the times of Aristotle, Guttenberg, McLuhan. Currently one reads about higher education as 'academically adrift' (Arum and Roksa, 2011) and reinventing itself (Bowen, 2012). Maine continued to invest in public higher education while calling for greater productivity and the reevaluation of traditional expectations and practices. See Appendix D for a brief commentary on Higher Education as context for this study. Suffice it to say, faculty and students today are coping with far greater demands than those of using technologies in or out of the courses and programs.

These demands have caused T4 aspirations to be defined carefully, mindful of the need for a developmental perspective. T4 and the Center for Research and Evaluation (Appendix B) have presumed that not only are digital resources 'is here to stay' but they are changing how we teach and learn. Members of T4 have assiduously maintained a value neutral position with respect to benefits and costs of using technologies and digital resources. A good faith effort has been made to minimize and acknowledge the biases and limitations of this work.

Disruptive Language: 'Technology, E-Learning, online and distance learning' are terms frequently used and often poorly defined. In 2011 T4 operationally defined these concepts after a review of the literature. 'Technology' is used to mean an array of digital devices, software and online resources. 'E-Learning' is refers to any uses of digital or information and communication technologies (ICT) in learning and teaching. Courses are designed and taught using a range of delivery options. Allan and Seaman (2013) provide a widely accepted typology (traditional, web facilitated, blended/hybrid and online) characterized respectively by 0%, up to 29%, up to 79% and 80% or more online interactivity. The term "online" itself includes a range of interactive options ranging from tweeting and mobile computing, to participation through social media and compressed video.

IT Productivity Paradox: Higher education learns from experiences disseminating technologies in other sectors of the marketplace. For the half century in which digital devices have been diffused into organizations, measures of productivity have initially failed to affirm the ROI of these costly innovations. Spencer et al (2011), point to the health care industry one such example, summarizing the causes for this paradox as:

> *"Explanations for the IT productivity paradox fell into three categories: **mismeasurement, mismanagement, and poor usability.** Mismeasurement explanations traced the paradox to shortcomings in research; the latter two categories highlighted shortcomings in practice. All three categories proved relevant: some productivity effects of IT were hidden because of limitations in the data and analytic methods used to evaluate productivity, and some benefits were limited by ineffective management and poor usability."*

Campuses and academic programs are not immune from this paradox. Given the need to be leaner, more competitive and agile, this dilemma calls for moving beyond technology as an "add on" and developing more contemporary methods of utilization and evaluation.

CONTEXT

External to UMS, since 2010 the higher education business sector, strategic priorities and the eLearning paradigm itself are becoming more clearly articulated. Globally and nationally, journals, associations, institutional eLearning plans, profiles of tech savvy teachers, standards of digital teaching proficiency and novel course designs are abundant. New pedagogical resources (MOOCs, OESPs, social media, cloud computing, rich media, etc.) are proliferating and require study and evaluation by UMS campuses. These trends underline the need for investing in dialogues within academic units, shared governance and opportunities for the continued study of innovative pedagogy or teaching as practice. Investing in campus or system level integrated institutional research and in the nationally recognized scholarship of teaching and learning (Shulman, L.S. 1987, Twig, C.A. 2005) are two ways for the System to both evaluate this development and foster greater faculty engagement and teaching expertise.

Within UMS: On each UMS campus and in University College there are a substantial number of academic programs building digital expertise, making greater use of online (media and cloud) resources and demonstrating new and successful pedagogical practices (see Appendix C). However, an absence of strategic planning focused upon curriculum and pedagogical re-engineering are two apparent barriers to becoming optimally 'connected' both as campuses and as a System.

In the past year, the shift from 'technology as an add on' limited to campus classroom based courses, to realizing the transformative potential of eLearning is beginning to be facilitated by a revised UMS IT Transformation Plan emphasizing the need to support academic users. Chief Academic Officers have recognized advocated for the re-establishment of an office of Academic Affairs at the System level. Further,

Recommendations from the System's ABCDE Task Force have emphasized online and campus concierge services to provide better support for off campus adult learners. On campuses, the utilization of MaineStreet and Learning Management Systems by students and faculty has increased substantially. Cloud and mobile computing have become a staple of connectivity between faculty and students. It is worth noting that this rapid increase in the complexity and sophistication of eLearning underlines the need for collective and systematic study of pedagogy and technology.

Online survey research has become commonplace on campuses. Social media are used to enhance courses and programs. Information literacy has become a ubiquitous general education requirement though digital literacy has not yet been identified as a core or 'Gen Ed' competency. In the area of scholarship, undergraduate and graduate researchers have focused on the use of social media and the web on several campuses.

T4 Framework: To systematically study the experiences of teachers and learners, T4 and CRE created a developmental framework informed by the literature that includes I) three levels of analysis (end user, campus, System) and II) five core domains of inquiry (e.g. experience in courses, impact on participants, eLearning (technology and content) supports, relationships between course participants, and impact on campus culture). The developmental dimension was based upon longitudinal models of technology dissemination (Rogers, E. M. 1962), contemporary frameworks for eLearning management (Bates and Sangra, 2010) and eTeaching pedagogy (Bowen, J. A., 2012).

Part II

Student Survey: Key Findings

For a complete description of the Student Survey goals, methods, implementation and results, see Appendix B. Faculty and Student Surveys were developed and implemented through the Center for Research and Evaluation (CRE). The Task Force is deeply indebted to Brian Doore, Donna Doherty and Janet Fairman of CRE. They were largely responsible for clarifying the goals of the surveys, designing the evaluation project, constructing items, implementing protocols, successfully achieving necessary response rates, conducting many focus groups and completing both the quantitative and qualitative analysis of the results of the surveys and focus groups. Professor Doore served as the CRE project data manager and works with campuses to provide subsets of the data for further analysis.

Student Survey Methods and Results: Student perception data was collected from student using an online blanket survey of all UMS students and selected campus discussion groups with students. The limitations of this first System wide student survey of eLearning are detailed in the full CRE Report (Appendix B) emphasizing that the findings described should not be seen as definitive. Rather, similar to the 19th century daguerreotypes, these findings should be seen as useful snapshots of student perceptions used to generate hypotheses for further study.

The student survey achieved a statistically valid response rate with approximately 10% (n = 2,749) of UMS students participating. Three campuses, UMA, UMF, and UM had response rates exceeding 10 percent, while USM had a response rate of just 6.2%. The five primary findings were:

1) Collectively, students did not indicate course delivery preferences for online versus hybrid versus live courses. However, when the respondent set was limited to only those students who had taken all three types (i.e., live, hybrid, and online), these 369 students reported a strong aversion to online course offerings.

2) When asked how technology-intensive courses impacted student learning, students reported an association with higher levels of work, interest, deep thinking, academic honesty, focus on remembering facts and ideas, problem solving, perspective taking, creativity, and better written communication. Students rated oral communication lower, and argumentation similar to 'low technology' courses.

3) Students were positive about the variety of LMS systems in use, and rated BlackBoard, FirstClass and Moodle the most highly.

4) Students indicated they rarely needed technical assistance outside their university's regular business hours and preferred real time supports and web-based tutorials.

5) Open-ended responses: A sentiment analysis of the corpus of qualitative statements suggests this feedback was largely negative. Respondents concerns centered around 4 broad areas: 1) a lack of faculty responsiveness and engagement, 2) issues with the functionality of technology and LMS systems, 3) a perceptions of diminished quality of learning in online courses, and 4) lower quality of instruction / instructional design in online courses. A smaller number of responses noted the positive qualities of online courses (e.g. accessibility for working and off campus students. Many of the critical responses focused on the lack of training on the part of UMS faculty in teaching online. Several students offered specific suggestions such as targeted training for faculty and systematic review of online course content and procedures.

Comparing Faculty and Student Survey Results
A secondary purpose of the surveys was to compare similarities and differences between these stakeholders using parallel, fixed choice and narrative, survey items. With respect to sampling differences between these groups, a greater proportion of women responded to the student survey, while the gender balance was roughly equal for faculty.

1) Faculty and students perceived similar skill levels for their technological expertise, seeing themselves as somewhere between novices and experts.

2) Students were more likely than faculty to endorse the need for a Learning Management System.

3) Faculty perceived technical support to be less effective than did students.

4) Faculty rated student's skills using course-related and personal software significantly lower than students self-ratings.

Comparisons of Narrative Responses: a) Key Similarities.
1. Faculty and students acknowledged the benefits of increased access to online courses but this benefit to distance / online course offerings was heavily outweighed by those expressing concerns over course quality.

2. Neither students nor faculty saw technology itself as an absolute barrier to course quality or successful learning if it were well implemented.

3. Both faculty and students identified the need for better designed and executed online course offerings. To achieve this result, faculty identified the need for additional

supports, training, time, and resources to develop and implement higher quality online course offerings. Student comments echoed the desire for better-designed courses, with some students suggesting that faculty learn how to better use the tools and to teach online.

4. Students and faculty expressed concern that without better design and implementation, the overall quality of courses may be compromised using online formats. Many students and faculty reported frustrations with teaching and learning in the online environment.

5. Faculty and students reported the time associated with online courses to exceed that required in face-to-face offerings. The additional time was unrelated to course content and attributed to preparation or access to materials in the online environment.

6. The lack of face to face contact was cited as a barrier by both groups. Conversely, both students and faculty noted the need for better designed courses in which the instructor and students were highly engaged, and used appropriate technologies that facilitated learning.

7. Faculty and students acknowledged the value of a Learning Management System to house* supplemental materials, discussion boards, and other resources. Students (overall) rated BlackBoard more highly than did faculty.

8. Some students and faculty expressed concerns about the motivation to expand online offerings as a way to generate revenue and increase enrollment without adequate consideration of course quality.

LMS functionalities other than archiving and facilitating discussions could not be incorporated into this survey.

Comparisons of Narrative Responses: Key Differences.
1. Students focused more on faculty teaching effectiveness than faculty did of themselves. A greater proportion of faculty members focused on the lack of supports, availability of technologies, etc. as the primary barrier to increasing online course quality.

2. Faculty expressed concerns about the preparedness and skill level of students enrolled in certain online courses. In a parallel fashion, students expressed frustration with the engagement and teaching practices of some online instructors.

3. Overall, faculty wrote far more detailed comments than did students, and provided much more specific suggestions, ideas, and feedback for improvement than did students as a group. Students' comments tended to focus more on individual course experiences.

Commentary: T4 demonstrated the feasibility of conducting a System wide survey of students about eLearning. This type of iterative survey is commonplace at exemplar institutions and could usefully be continued within UMS. T4 has compared these survey results with reports

published in the higher education literature (see Appendix H). This review will be completed as an appendix by September, 2013.

The response rate of the survey as well as the qualitative contributions from face to face campus discussion groups make it clear that students are motivated to participate in the improvement and further development of technology mediated teaching and learning. That students value their experiences to date with online learning but indicate that improvements are needed in course design and direct instruction. T4 recommendations below emphasize the need to actively address these findings at all levels of the organization.

The campus level is key to addressing the limitations of this survey and discrepancies between faculty and student perceptions. T4 recommends that campuses make use of available subsets of the data gathered. And, additional student focus groups could allow for further examination of such issues as; support for students engaging course content, collaboration with peers and completing more complex assignments. Importantly, measures or indicators of student engagement with eLearning must be cross validated and include both outcome (learning results) and behavioral data gathering. These kinds of research initiatives need to be directly linked to ongoing institutional research activities that illuminate program and institutional effectiveness.

Part III

Campus Landscapes and eTeaching

Campus eLearning landscapes and approaches to cultivating eTeaching excellence are major topics in T4 survey data, campus discussions and deliberations among T4 members (Appendix D). They represent important 'cross currents' of perception and motivation. HOW these topics are addressed will predict the speed and utility of leveraging digital tools and resources.

Should innovation be driven by the interests of individual faculty and early adaptors? At program and campus levels, how will priorities be identified for deploying shared software, course templates, cloud resources, imported curriculum and even minimal standards of teaching? The growing dependence on complex eLearning resources leads to the need to move beyond adding technologies to a different kind of academic planning and development. This has been a conclusion in each of the four T4 reports to date.

Bates and Sangra (2011) published a seminal study of eleven diverse institutions and their approaches to curriculum and eTeaching development. They identified four basic options for course development which they characterized as through; I) 'long rangers'; II) through 'boutique' (on demand) development; III) through collegial materials development; or through IV) project or shared content development. Within UMS, institutional research could investigate the current use of these options on UMS campuses.

Is there urgency? In national media, Christenson et al (2011), Pappano, L. (2013) and others make the case for an emerging campus "crisis" caused by disruptive digital technologies.

Alternatively, a case has been made that eLearning has become "thwarted innovation" (Massy, W. and Zemsky, R.) or at least is "changing course" (Allen and Seaman, 2013).

Christenson's group, Bowen and others opine that the mitigation of such a crisis requires academic units considering redesign informed by the nature of changing media and a reconsideration of the university's "product" (learning and student success). Drivers for the 'crisis' theory include a dramatic rise in the costs of higher education, declines in state support, criticisms of graduation rates, workforce readiness and levels of learning both in K-12 and in higher education. Christenson et al (2011) summarized this juncture and emphasized the need to continue developing online education in more effective ways:

> "Disruption hasn't historically been possible in higher education because there hasn't been an upwardly scalable technology driver available. Yet online learning changes this. Disruption is usually underway when the leading companies in an industry are in financial crisis, even while entrants at the "low end" of the industry are growing rapidly and profitably. This is currently underway in higher education."

This case for urgency, together with the risk of the IT productivity paradox leads to two conclusions. Campuses are well advised to move beyond 'technology as an add on.' And, better data is needed to assess the effectiveness of redesigning curriculum and teaching.

Landscapes

The (8) campus and UC landscape documents developed identified innovative courses using new technologies and online resources (Appendix D). Campuses also made note of the need to increase investments in professional development opportunities and end user support options. Student survey and focus group data confirmed the presence of exemplary courses using digital resources (e.g. LMS, social media, external assessment services, laptops, ePortfolio technologies, international collaboration technologies etc.). Still, eLearning development plans and landscapes are yet to be systematically developed to support academic planning.

Further development of campus landscapes could provide a means to address four major themes identified in T4 data. One was the need to assure that technological innovations were driven by pedagogy, in disciplines and across the curriculum. A second theme was uncertainty about the alignment of centralized and campus IT support services. A third theme was the need to identify program specific mixes of virtual, classroom and community based learning opportunities. A fourth was the need to better align strategic business planning with strategic academic planning.

eTeaching and survey results

Obstacles on campuses: In published literature there is an abundance of eLearning survey studies, eLearning strategic plans and more recently, models of eTeaching. Two barriers slow the implementation of new teaching methods. The first is the distance between online teaching and outcome assessment processes. The second is an absence, on most campuses of working groups mandated to study teaching across disciplines and programs.

Obstacles within Programs: The pace of development is a function of the obstacles, drivers and resources present. At the level of end users (students and faculty) concerns likely slow the implementation of curricular re-designing and effective teaching include:

1. Confusion related to the mix of; I) student centered, II) teaching focused and III) course focused approaches to curriculum design and delivery.

2. A lesser institutional emphasis on teaching and a greater emphasis on research and marketable curricular development. This imbalance is not specific to UMS and predates the emergence of eTeaching (Donohue, F, J. 2012).

3. Fears of "legislated teaching, outsourcing the curriculum" and the exclusion of faculty from critical curricular decisions such as these.

4. Failure to adequately distinguish formative and summative institutional studies. .

5. The absence on campuses of a plan relating learning outcome assessment from summative program and course assessment activities.

6. Gaps in policy and contractual assurances related to the use of data analytics to supervise and assess courses and teaching.

These obstacles can be addressed on campuses and at the System level. Left unaddressed these may contribute to a more costly and slower pace of academic innovation. They can be addressed through shared academic governance and contractual mechanisms.

T4 survey results are not prescriptive but indicate an agreement between faculty and students exists on key points. 1) eLearning can provide greater access, convenience and includes the promise of greatly improved learning experiences; and 2) Assuring optimal learning requires well planned implementation of technologies. Students also associated the use of digital technologies in courses with greater academic rigor. But, the evidence suggests that experienced students prefer face to face contact with instructors and peers. This is not a dichotomy but underlines the need to mix the two experiences through hybrid course and program designs. These impressions are consistent with published surveys tempering the hope that greater educational access, speed and convenience can easily translate into increased revenues and greater student success.

Part IV

Recommendations and Conclusions

The System and campuses can become more intentional and efficient fostering curriculum redesign and faculty engagement in academic assessment. Institutional priorities and planning together with operational reaffirmation of faculty managing the curriculum are essential. Re-establishing a System level academic leadership office is a critical but insufficient step answering the question, 'what next?'

Faculty survey participants offered specific suggestions for campus based action steps including; seeking greater support in the form of professional development, further developing incentives for innovative eTeaching and support for evaluating the effectiveness of online or hybrid courses (see the 2012 Phase 3 Report, Appendix B). Students provided few specific recommendations (Appendix B) but did point to the need for a greater emphasis upon the development of optimal eTeaching and course designs.

High Priority Recommendations

1. Include 'teaching excellence' on the System's Mission Excellence website.

2. Make 'teaching' (as well as leading curriculum development) a visible priority in an Office of Academic Affairs.

3. Establish a standing committee within campus governance structures to study pedagogy (including eTeaching) across programs. Similar to general education curriculum components, common elements of pedagogy can be identified and practices can be studied.

4. Invest in and support campuses fostering the scholarship of teaching and learning (SoTL).

5. Clarify the operational linkages between course assessments and learning outcomes.

6. Continue investing in higher education research. Consider the establishment of a center for the study of higher education practices.

Targeted Recommendations

System Level
1. Require plans to systematically improve eTeaching within campus strategic plans. Consider new curricular design options for both cost savings and effective course redesigns.

2. Prioritize greater inclusion of students in curriculum development and academic assessment on campuses.

3. Invest in a System wide study of adaptation of universal design practices providing access and participation of disabled students.

4. Review funding of professional development of faculty. Re-engage AFUM and governance units to improve teaching incentives and faculty safeguards to encourage teaching innovation and to better articulate the role of the faculty in a digital curriculum.

5. Identify external experts to review System wide approaches to transforming teaching and curriculum redesign.

6. Review System level policies related to course assessment. Create a framework permitting comparisons between courses offered in diverse modalities.

7. Produce a System level white paper on the state of Academic Assessment inclusive of assessment and transfer of prior learning outcomes. Consider options for leveraging general education credit transfer studies to include general education course designs.

8. Increase campus investments in scholarly research in higher education pedagogy and institutional development. Consider topics including; a) the role of campuses; b) the use of external academic services.

9. Maintain a System level teaching website highlighting UMS pedagogical studies and exemplar innovative curriculum designs.

10. Charge campus institutional research offices to work with faculty and review annual reporting policies including indicators of quality and teaching effectiveness.

11. Review faculty participation in the IT Services Transformation Plan implementation. Align ITS governance with academic governance structures.

12. Convene annually a System wide Summit on redesigning teaching and teaching effectiveness. Invite students to attend.

Campus Level
1. Create a white paper describing the campus framework for eLearning and digital literacy. Consider the construct 'digital literacy' as a general education expectation.

2. Study the 'bring your own device' (BYOD) literature and conduct student focus groups targeting both high and low risk student dropout subgroups to determine opportunities and barriers for technology support, advising and course content support in hybrid and online courses.

3. Increase investments in higher education research and the scholarship of teaching (SoTL) on campuses. Increase the number of pedagogical scholars and student researchers producing publishable eLearning research.

4. Survey faculty annually about the efficacy of professional development and direct instructional support experiences.

5. Include learning outcome variables in efficacy (retention, completion and learning) studies of online courses. Review modes of faculty teaching assistance.

6. Ask Senates to consider establishing a work group on teaching across programs. Use faculty leadership to create a cross campus (System) network of pedagogy study groups. Consider options for cross campus mentoring online.

7. Continue investing in campus landscapes to support curriculum development, teaching, instructional design, IT services and distance education initiatives. Aggregate and share examples of successful innovations in teaching and curriculum designs.

8. Identify and share exemplar eLearning programs at other institutions.

13. Document campus wide operations linking learning outcomes and curriculum quality assurance to study the relationships between course designs and teaching options.

14. Increase incentives including recognition for faculty achieving exemplary course design and teaching.

Program or Discipline Level – This level of investigation was not included in the charge to the Teaching through Technology Task Force nor reflected in the data gathered. Further consideration of developing optimal curriculum and teaching within the disciplines could be encouraged through the secondary analysis of T4 campus level data and further review of the literature.

Conclusions: 'Disruptive innovations' related to teaching through technologies and complicating, enhancing and transforming teaching and learning across the University of Maine System. During nearly four years of inquiry a remarkable increase in use of digital resources confounded and inspired this investigation. T4 demonstrated that obtaining meaningful input from end users (faculty and students) is feasible and can benefit campuses and the System.

Students provided 'mixed reviews' of their experiences in online and hybrid courses. They and faculty respondents concurred that continued re-engineering of digitally mediated teaching and curriculum design was needed. Obstacles impeding this evolution include long standing disincentives for teaching, often cited 'digital divides' reflecting the range of awareness about eLearning; and assumptions of digital resources as 'add ons.'

T4 recommended continued articulation of campus landscapes and a review of campus options for more collectively supporting teaching dialogues and studies. Gaps in a) eLearning development plans; b) documentation of campus wide minimal teaching practices; and c) campus wide linkages with course assessment practices and learning outcomes the norm on most campuses.

T4 recommended that System continue not only to provide System wide IT services but also strengthen its role fostering teaching as a visible element of mission excellence. It is the great hope of T4 that the inquiry and dialogue on campuses and across campuses that this initiative represents, is continued.

Report Appendices*

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Appendix B: Parts I and II

T4 Student Survey Findings

An analysis of UMS student survey responses to the Teaching Through Technology Task Force student perception survey

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4/23/2013

This report summarizes the perceptions of the 2,749 students who responded to the T4 Student Survey. Included are summaries of specific survey questions and students' extended narrative comments.

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Introduction

In 2011, the University of Maine System (UMS) engaged the Center for Research and Evaluation (CRE) in the College of Education and Human Development at the University of Maine to conduct a study to gather information from faculty and students affiliated with the seven campuses of the UMS System about their use of technology in teaching and learning at the post-secondary level. For over 20 years, CRE has provided research and evaluation support to researchers, the Maine Department of Education, and colleagues throughout the University of Maine System. CRE has a statewide mission to promote data driven practice, policy and research.

The present study gathered survey data from UMS students to determine the ways in which they have used technology as part of learning, and their perceptions of the impact of that technology on the course environment learning process. The information gleaned will help to document the opportunities and barriers that presently exist across the UMS system, and will provide the System office and individual campuses with an objective evaluation of the ways in which technology is currently implemented in courses offered as well as the adequacy of the technological and pedagogical support currently available on each campus (e.g., the degree to which a respondent uses the IT Help Center for support).

National landscape

Technology is having a profound and often disruptive impact on the traditional roles and structures within higher education. The implications of technology on the traditional 4 year university extend into nearly all aspects of the services those institutes provide. These changes are driven in part by the opportunities afforded by technology to provide services in a more efficient manner. For example, students may now complete registration, order their textbooks, participate in their courses, complete their assignments, and receive their grades completely online. Some students may earn a degree from a campus they have never physically visited. More surprising is that this scenario is now commonplace in traditional brick and mortar institutions like those in the UMS.

In other institutions, technology has made the previously impossible possible. At Virginia Tech, one professor has expanded his live course to over 2,500 students through the adoption of various social networking and course administration resources (Parry, 2012). Indeed, the drive for increased enrollment is a primary motivation for institutions to expand technology-enhanced offerings (Bacow, Bowen, Guthrie, Lack & Long, 2012; Chau, 2012).

Broadly speaking, colleges and universities are grappling with technology as it relates to five major issues facing all institutions: 1) Revenue growth; 2) Serving non-traditional populations; 3) Improving retention; 4) Responding to space constraints; 5) Managing costs; and, 6) Improving learning outcomes (Bacow et. al., 2012).

Methods

This project used both qualitative and quantitative methods to collect and analyze research data. The study is comprised of 3 basic elements: an online faculty survey administered as separate modules between October 2011 and April 2012; focus groups held with faculty at each of the seven UMS campuses between October 2011 and February 2012; and an online student survey conducted in Fall of 2012. This report focuses on the findings from the online student survey, while the findings from the faculty survey and focus groups can be found in the T4 Year 1 report published by CRE in July of 2012[1].

Student online survey. An online student survey invitation was sent to all known full and part time students in the in the UMS user email database (provided by the UMS office) who were actively enrolled in a course during the Fall 2013 academic term. A unique invitation was sent to each student using Qualtrics (an online survey engine). The Qualtrics system uses a secure socket layer (SSL) encryption protocol, and is a widely used and respected survey administration tool. The identity of each respondent and non-respondent was known only to members of the research team. To permit more informative analyses of participants' responses, information in the UMS database provided basic directory information for each recipient. Specifically, we gathered data from the UMS office on the person's name, academic rank, campus affiliation, and years of service in the system. In this manner, we were able to determine the extent to which the response set matches the characteristics of the population.

The survey was designed to gather information on a broad range of topics including: student learning and experiences, technical support; impact on learning; digital habitats and learning management systems; and impact on students' interaction with faculty and each other. Following administration, data were aggregated and analyzed to determine overall patterns for the UMS students.

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[1] Doore, B., Fairman, J., & Doherty, D. (2012). *Evaluation report: Teaching through technology: Faculty perceptions and experiences at Maine's seven public universities: Year 1 report.* Center for Research and Evaluation, College of Education and Human Development, University of Maine. Orono, Maine: July, 2012.

Survey response rates. A total of 30,293 full and part time students who were currently enrolled in a course (during the Fall 2013 semester) were invited to take the survey. Response rates by institution appear in Table 1.

Table 1: Students in total sample

Campus	Total Sample	Percent of total Sample	Total Responded	Campus Response Rate	Proportion of Total Responses
UM	10,832	35.80%	1,126	10.4%	41.0%
UMA	4,570	15.10%	547	12.0%	19.9%
UMF	2,162	7.1%	223	10.3%	8.1%
UMFK	1,047	3.5%	73	7.0%	2.7%
UMM	845	2.80%	73	8.6%	2.7%
UMPI	1,463	4.80%	121	8.3%	4.4%
USM	9,368	30.90%	586	6.3%	21.3%
Total	30,293	100.0%	2,749	n/a	n/a

In addition to an analysis of survey completion by campus, response rates were examined for full versus part-time students. Response rates for full and part time students did not differ from their representation in the total sample (Table 2). Specifically, the representation of full time students on the survey was expected as they account for two-thirds of all students in the UMS. The representation of students by degree program was similarly representative of the total number of students enrolled (Table 3). For example, 68% of responses were received from Baccalaureate degree seeking students while they account for 72% of all students in the UMS. While students' ages were not part of the directory data provided by the UMS, the self reported ranges may reflect a potential bias towards older students in the sample than in the population. For example, half of the students responding were between the ages of 18 and 24, with another quarter of respondents between the ages of 25 and 39 years of age (Table 4). When asked to report their gender, nearly two thirds of respondents indicated they were female – a proportion that is likely higher than found in the overall student population (Table 5). Thus, while representative in terms of degree program and part/full time status, the responding sample may better reflect the UM, UMA, and UMF campuses, and they may more accurately describe the perceptions of older students and women.

Table 2: Response rates for full and part-time students

	Total Sample		Responding Students	
	n	%	*n*	%

Full-Time	20,122	66.40%	1,847	9.2%
Part-Time	10,165	33.60%	902	8.9%

Table 3: Response rates by degree program enrolled

	Total Sample		Responding Students	
	Count	%	Count	%
Associate	1,500	5.0%	134	4.9%
Baccalaureate	21,803	72.0%	1875	68.1%
Graduate	3,046	10.1%	479	17.4%
Law	276	0.9%	14	0.5%
Non-Degree Graduate	898	3.0%	63	2.3%
Non-Degree Undergraduate	2,758	9.1%	184	6.7%

Table 4: Response rates by age

	Count	%
less than 18 years	24	0.9%
18-24 years	1286	46.8%
25-39 years	733	26.7%
40-54 years	556	20.2%
55 years or more	147	5.4%

Table 5:Response rates by sex

		Count	%
Gender	Male	951	34.7%
	Female	1,789	65.3%

Table 6: Enrolled in at least one course during the past 12 months by campus

	Count	%
UM	1171	37.3%
UMA	612	19.5%
UMF	245	7.8%
UMFK	114	3.6%
UMM	110	3.5%
UMPI	158	5.0%
USM	627	20.0%

Table 7: Enrolled credits

		Mean	Median	St. Dev.
How many credits are you taking this semester?	Undergraduate	11.3	12.0	4.9
	Graduate	5.4	6.0	4.1

Limitations

Like any study, this research has a number of limitations—both anticipated and unanticipated—in the sample, content, analysis, and generalizability of the results.   These limitations are framed in terms of the threats they pose to the validity of this study.

Respondent bias. Although all UMS students were afforded an equal chance to participate, not all elected to do so. A basic analysis of respondents versus non-respondents suggests that part and full time students are proportionally represented, but women are over-represented. Men and students from several campuses (e.g., USM, UMFK) were under-represented in the final response set. What is less clear is the degree to which these respondents are representative of the perspectives and attitudes of the student body as a whole. It is possible that some students were more motivated than others to participate in the survey.

Researcher bias. The study was conducted in a fashion to minimize researcher bias, however, there are unavoidable sources of bias that could be present in the findings. For example, there is the possibility that the researchers have not interpreted respondents' comments from the surveys accurately. However, the team effort to code and interpret comments consistently through discussion and consensus reduces the likelihood of misinterpretation. The non-identifiable written comments from the surveys are included in the appendices of this report. In this way, the reader can review these and determine whether unintended research bias may have been introduced.

Construct-representation. The questions included in the surveys were selected because they reflected the priorities set forth by the T4 group, and were parallel in form and purpose to the previously conducted surveys of faculty experiences with technology. Since these questions represent only a fraction of all the possible topics we might have explored, there may have been some unintended bias in the selection of topics, the wording of questions, or both. To counter this, we included a number of opportunities for respondents to tell us what we had neglected to ask, or to comment on other topics they felt were relevant to the discussion. Although there were a few comments from respondents about the wording of the questions, as well as a few comments about topics not covered by the survey, these tended to be relatively idiosyncratic in nature.

Disaggregation of results. The present report does not include a full disaggregation of results, nor does it include a comprehensive set of analyses. Although we have included a campus-by-campus report of descriptive results for the surveys (including the qualitative comments), it does not attempt to compare all possible groups. We plan to release a comparative summary of findings in the near future (June 2013) which should give policymakers a starting place for their discussions about the

role of technology in teaching and learning and the similarities and differences in the experiences of faculty and students. We will also release the complete de-identified dataset for both the student and faculty survey in order for those campus-based leaders to complete their own analyses of the data.

External validity. These findings are, we believe, reflective of the perceptions and attitudes of UMS students as a whole. The reflectiveness of these findings at the campus level may be less robust. For example, 73 UMFK students responded (7.0 of the total campus student body), which was a significantly smaller absolute number (and proportion) than other campuses.   In contrast, a total of 547 UMA students (12% of the total campus student body) responded to the survey module thus eliminating much of the sampling error associated with smaller samples such as the one from Fort Kent. Furthermore, the applicability of these findings to other institutions outside the UMS is not known. The importance of external validity in this case is not well understood. While we believe that these findings can stand on their own as prima-fascia evidence to support system and campus level decision-making, it is not known whether similar institutions can use these findings without first conducting a detailed study of their own context.

Organization of this report

This report is organized into three broad themes: Impact of technology on student learning and the course experiences, Learning Management Systems (LMS), and technical support and services. In each major section, we first present the quantitative followed by qualitative survey results. We then present a short synthesis of the findings to summarize the major points for that section. Following these themes are the broad conclusions from the study and a short list of recommendations for future planning.

Section 1: Impact of technology on student learning and course experiences

Students were asked to report on the kinds of technologies they used regularly in their academic work and the impact they believed those technologies have on their learning. More specifically, students indicated on the survey their level of usage of specific devices and software tools, whether those resources have influenced the time they spend on their studies, changes in their academic focus, their relationships with their instructor and peers, and any changes in the intellectual rigor of their courses.

Response rates reported for technology use were also examined to better understand students' current technology habits. Most respondents estimated their typical personal and academic technology use at approximately 4 or more hours per day, and half of the responding students estimated their technical expertise as competent to solve most everyday technical problems on their own, although they did occasionally need help or were called on to help peers (Tables 8 & 9, Figures 1 & 2).

Table 8: Student use of interactive technology (e.g., computer, smartphone) for personal and academic related purposes

	Less than 1 hour a day		1-2 hours per day		2-4 hours per day		4-6 hours per day		6-10 hours per day		More than 10 hours per day	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Total Use	46	1.7%	123	4.6%	519	19.4%	646	24.1%	**872**	**32.6%**	472	17.6%
Academic Use	361	13.4%	593	22.0%	**970**	**36.0%**	447	16.6%	270	10.0%	51	1.9%
Personal Use	669	25.8%	522	20.1%	618	23.8%	326	12.6%	386	14.9%	76	2.9%
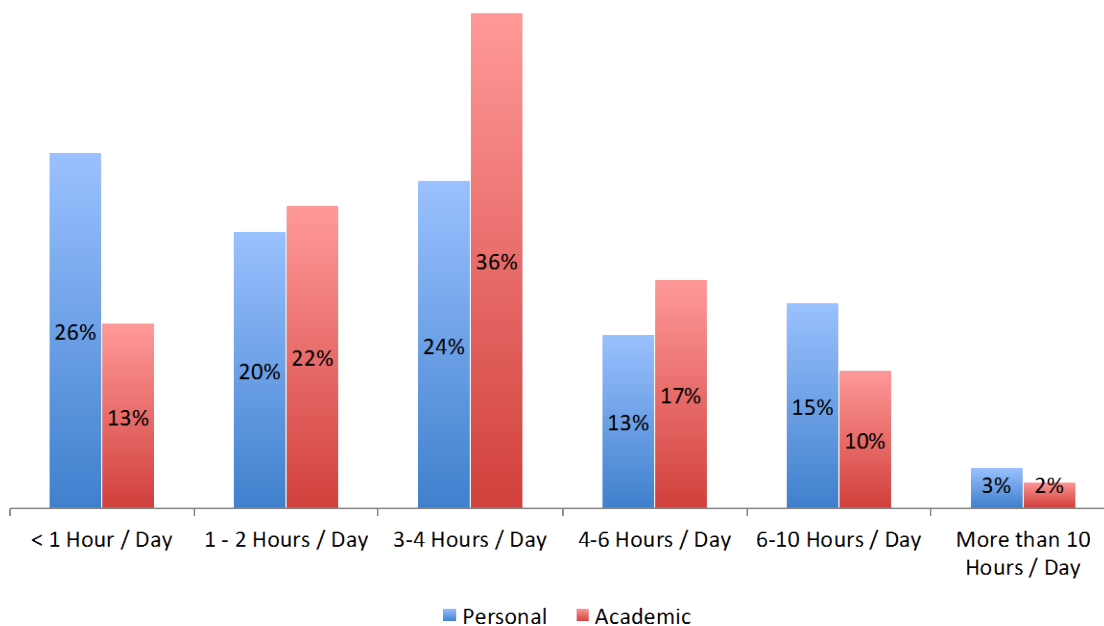
Figure 1: Student use of technology for personal and academic purposes

Table 9: Student ratings of their own technical expertise

	Count	%
I'm the person that usually needs help for even minor technical problems. I cannot usually help others with technical problems.	145	5.3%
I can usually solve most everyday problems, but often need help for anything more complicated. I can help others with some technical issues.	1,281	46.6%
I can figure out issues and problems for all but the most difficult of problems. I can help others with most technical problems.	999	36.3%
Others regularly come to me for tech advice, I seldom, if ever, need technical help.	324	11.8%

Others seek
my help --
"expert"
12%

Usually
need
help
5%

Can solve
most
problems
36%

Often need
help
47%
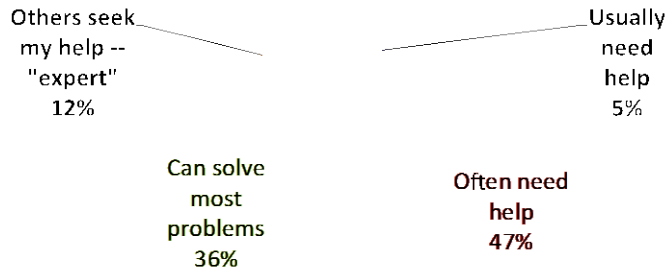
Figure 2: Student ratings of their own technical expertise

Students were also asked to evaluate their own skills in using course required and personal software. In each case, students rated their own skills on a 1 – 10 scale with 1 representing "unskilled" and 10 representing "expert." On average, students rated their skills using course-related software skills at 5.77/10, just above the midpoint of the rating scale (see Figure 3 below). Students' ratings of their own mastery of personal software (e.g., social media) was significantly higher at 7.02/10 ($t = 32.244$, $p < .001$).

Student Proficiency with Software

	5.77	6.89	7.02
	Technical software / technologies specific to your discipline	Productivity software (Microsoft Office)	Personal software (e.g., social networking, non-work apps)
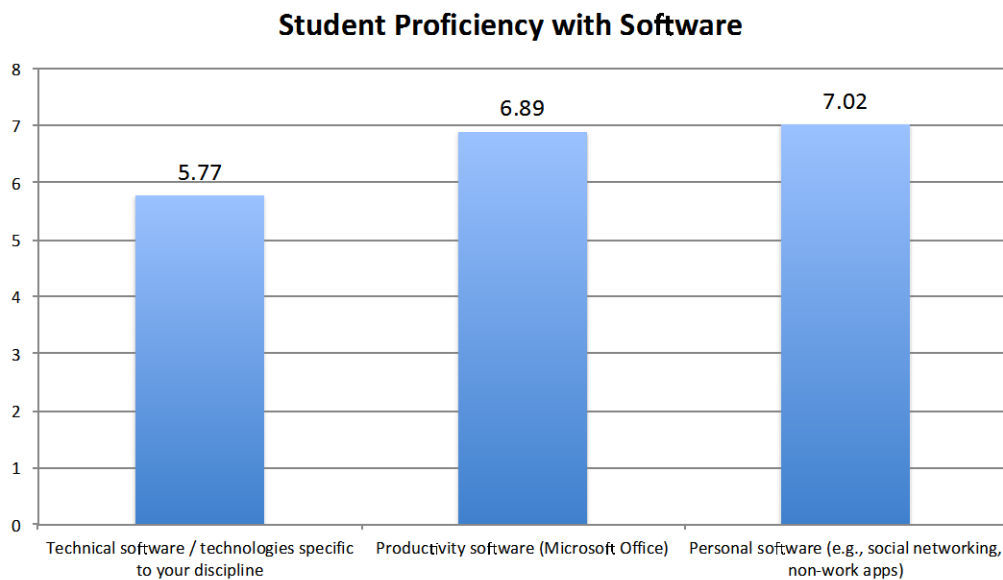
Figure 3: Student proficiency with software (0 = Novice; 10 = Expert)

Students were also asked to report on their usage of specific types of technologies to complete academic work. Not surprisingly, they reported using a computer the most frequently to do their work, with their cell phone being the next most frequently used device. Surprisingly, students reported using

tablet-style devices such as the Google Nexus 7, Kindle Fire, and iPad substantially less than their phones and iPod style devices (Table 10).

Table 10: Student use of specific technologies for academic work

	Never		Once a month or less		A few hours a month		A few hours a week		An hour a day		Several hours a day	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Computer (laptop / desktop)	5	0.2%	3	0.1%	28	1.0%	270	9.8%	445	16.2%	**1994**	**72.6%**
Tablet (iPad, Nexus, or similar)	**1954**	**73.9%**	96	3.6%	113	4.3%	184	7.0%	156	5.9%	142	5.4%
Cell phone / smartphone / iPod	**985**	**36.5%**	268	9.9%	337	12.5%	390	14.4%	351	13.0%	371	13.7%
Office productivity software (e.g., Microsoft Office)	61	2.2%	62	2.3%	174	6.4%	787	29.0%	734	27.0%	**897**	**33.0%**
Communication / email	12	0.4%	68	2.5%	352	12.9%	730	26.8%	**976**	**35.9%**	582	21.4%
Online social networking (e.g., Facebook)	**909**	**33.4%**	288	10.6%	319	11.7%	377	13.9%	462	17.0%	363	13.4%

Next, students were asked to provide information about the number of courses they had taken through different presentation formats (including online, hybrid, and live classroom) and then indicate their preferences for each style. Not surprisingly, students had taken far more live courses than whether hybrid or online. Moreover, while a large proportion of students had never taken an online or hybrid class, just seven percent indicated they had never taken a live college course (Table 11). As a result, the overall student ratings of course taking preferences for online and/or hybrid courses may be substantially biased against online and hybrid options by respondents who have no direct experience (Table 12).

Table 11: Student course taking history

	0		1-2		3-5		6 or more	
	Count	%	Count	%	Count	%	Count	%
Live classroom (Most or all major course activities take place in the classroom)	182	6.9%	236	8.9%	537	20.3%	**1692**	**63.9%**
Hybrid/blended (Some face to face and some online)	**1064**	**42.3%**	935	37.2%	369	14.7%	146	5.8%
Online class (Most or all major course activities take place online)	**933**	**36.3%**	790	30.7%	466	18.1%	381	14.8%

Table 12: Student course type preference

	Very Strongly Avoid		Strongly Avoid		Avoid		Indifferent		Prefer		Strongly Prefer		Very Strongly Prefer	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Live classroom	35	1.3%	30	1.1%	79	2.9%	308	11.4%	442	16.4%	567	21.1%	**1229**	**45.7%**
Hybrid	182	6.9%	98	3.7%	349	13.3%	**1148**	**43.6%**	485	18.4%	253	9.6%	117	4.4%
Online	435	16.3%	231	8.6%	494	18.5%	**680**	**25.4%**	387	14.5%	185	6.9%	260	9.7%

To determine whether these ratings for course taking preferences would be substantially different when considering only the perspectives of students who had taken all types of courses, we filtered the response set to include the 369 students who had taken at least one class through each delivery method. We found that this group had approximately the same gender and age representation as the overall responding sample. Similar to the overall sample, this group also preferred live courses and were indifferent to hybrid courses. In contrast, 70 percent of students with direct experiences with all three types of courses reported they avoided online courses (Table 13).

Table 13: Student course type preference – students who reported taking all course types

	Very Strongly Avoid		Strongly Avoid		Avoid		Indifferent		Prefer		Strongly Prefer		Very Strongly Prefer	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Live classroom	1	0.3%	1	0.3%	0	0.0%	17	4.7%	58	15.9%	82	22.5%	**205**	**56.3%**
Hybrid	15	4.1%	11	3.0%	51	14.1%	**137**	**37.8%**	98	27.1%	36	9.9%	14	3.9%
Online	**114**	**31.8%**	52	14.5%	87	24.2%	88	24.5%	10	2.8%	6	1.7%	2	0.6%

Another dimension of technology as a mediator to student learning is the effect it has had on

students' academic and course related skills. To address these questions, we asked students to rate whether the skills required in a technology intensive course (e.g., an online course) were different than those required in a non-tech intensive course. For each dimension, students rated these skills on a scale of 0 (much less than a non-tech intensive course) to 100 (much more than a non-tech intensive course). The middle anchor was "the same as a non-tech intensive course." In general, responding students indicated the level of demand for these skills was significantly greater for all of the 5 ratings (t's = 5.80 – 38.75, p's < .001; see table 15 below). One exception was students' oral reasoning which students rated as significantly lower in tech-intensive courses (t = -23.37, p < .001; see Table 14).

Table 14: How does a technology intensive course impact the following? (50 = no change)

	Mean	Median	SD
Success in the course	58.82	60	21.65
Workload	65.18	67	17.94
Interest in the subject	55.39	53	21.81
Deep thinking	52.91	50	21.85
Academic honesty	54.33	50	21.20
Remembering facts and ideas	52.21	50	25.39
Learning course content	55.01	54	24.28
Problem solving	55.14	54	23.93
Making an argument	50.00	50	23.71
Evaluating other perspectives	55.13	55	23.83
Being creative	55.67	57	26.01
Oral communication	35.51	35	24.11
Written communication	62.46	64	23.51
Other	53.52	50	25.22

Table 15: One-sample t-test results for students' self-ratings of the impact of technology intensive courses on various aspects of thinking and learning.

One-Sample Test		
	Test Value = 50	

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval	
					Lower	Upper
Success in the course	17.40	1,823	0.00	8.82	7.83	9.82
Workload	38.75	2,095	0.00	15.18	14.41	15.95
Interest in the subject	10.78	1,901	0.00	5.39	4.41	6.37
Deep thinking	5.80	1,900	0.00	2.91	1.92	3.89
Academic honesty	8.10	1,574	0.00	4.33	3.28	5.37
Remembering facts and ideas	3.90	2,000	0.00	2.21	1.10	3.33
Learning course content	9.26	2,009	0.00	5.01	3.95	6.08
Problem solving	9.53	1,966	0.00	5.14	4.08	6.20
Making an argument	-0.01	1,811	0.99	0.00	-1.10	1.09
Evaluating other perspectives	9.31	1,868	0.00	5.13	4.05	6.21
Being creative	9.68	1,972	0.00	5.67	4.52	6.82
Oral communication	-26.37	1,924	0.00	-14.49	-15.57	-13.41
Written communication	23.82	2,017	0.00	12.46	11.44	13.49
Other	2.29	268	0.02	3.52	0.50	6.55

Students also rated the impact of technology intensive courses on several aspects of faculty behaviors and performance. Specifically, they ranked faculty performance in tech intensive courses against the performance of faculty in non-tech intensive settings. Using the median ranking of no change as the baseline, students indicated greater faculty accessibility, responsiveness, preparedness, and clarity. They also noted higher standards for student work, more practical and useful instruction and a slightly heightened perception of that person being an expert in their field. In short, responding students perceived more technologically savvy faculty as having greater expertise, preparedness and standards, and as being more responsive and communicative (Table 16).

Table 16: How does a technology intensive course impact the following characteristics of faculty?

	Much less		Less		No change		More		Much more		Don't know	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Accessibility	158	6.0%	364	13.8%	451	17.1%	747	28.3%	**832**	**31.5%**	92	3.5%
Responsiveness	96	3.6%	346	13.1%	554	21.0%	**941**	**35.7%**	612	23.2%	87	3.3%

Preparedness	69	2.6%	256	9.7%	**960**	**36.5%**	740	28.1%	442	16.8%	163	6.2%
Clarity	159	6.0%	522	19.8%	**813**	**30.9%**	649	24.7%	383	14.6%	106	4.0%
Standards for student work	70	2.7%	287	10.9%	**1063**	**40.5%**	636	24.2%	399	15.2%	168	6.4%
Practical and useful instruction	153	5.8%	380	14.5%	**861**	**32.8%**	718	27.4%	402	15.3%	109	4.2%
Expert in their field	81	3.1%	196	7.5%	**1352**	**51.7%**	429	16.4%	294	11.2%	263	10.1%

Section 2: Learning Management Systems

Students also provided feedback about the usefulness and quality of Learning Management Systems (LMS) commonly in use across the UMS. Nearly three-quarters of respondents indicated it was quite or very important for the UMS to provide a LMS to all students (Figure 4). They were also asked to provide information about the LMS technologies they used, and their overall perceptions of those systems. Not surprisingly, most (87%) students had used BlackBoard. Another 42% had used FirstClass, however the vast majority (960/1147; 84%) of these were from the UMaine campus. Synapse was used by 10 percent of the respondents, but these were exclusively from UMaine where the LMS was developed. Other systems were used significantly less often, but their usage was more evenly spread across the system (Table 17, Figure 5).
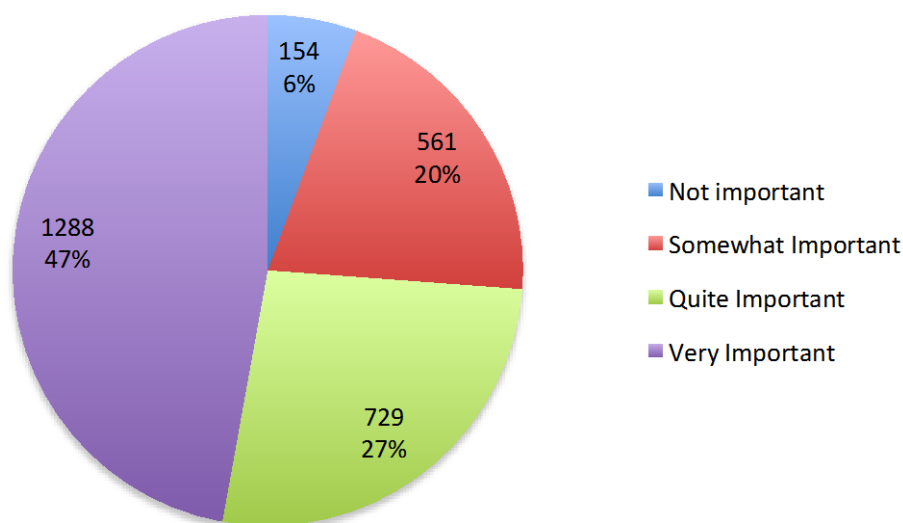

Figure 4: How important is it for the UMS to have a LMS available to all students?

Table 17: Students using specific LMS tools

System	Count	% of all survey respondents
Blackboard	**2400**	**87.3%**
Moodle	235	8.5%
First Class	1147	41.7%
Sharepoint	26	0.9%
Synapse	282	10.3%
Desire to Learn	22	0.8%
OWL	355	12.9%
Other	346	12.6%
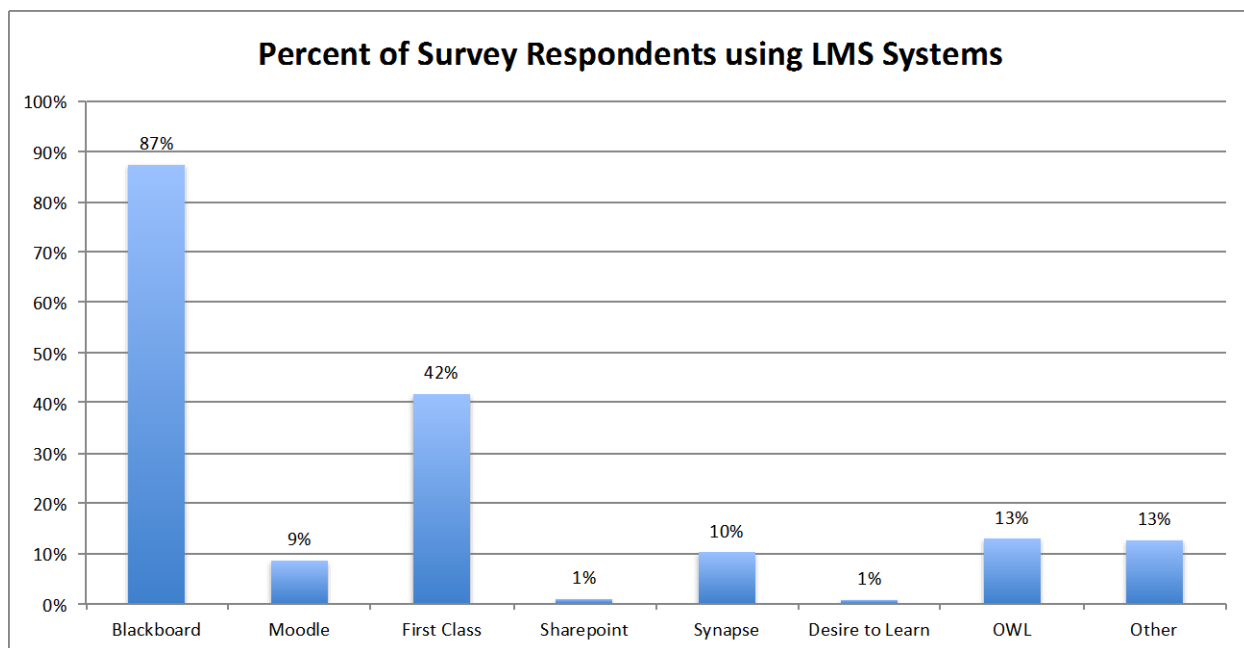
Figure 5: Proportion of survey respondents using specific LMS tools

Students then rated the usefulness of each of these tools on a scale ranging from very poor to very good. For each system there was a not applicable category for students who had no experience with the system. Three-quarters of BlackBoard users said the system was good or very good, the two highest ratings possible. Moreover, the ratings for BlackBoard were the highest of any system listed. User ratings of other systems were less consistently positive. For example, while 65 percent of FirstClass users rated the system as good or very good, just 30% of Sharepoint users were positive about the system. Figure 6 shows the collapsed categories of Very Poor / Poor, Neutral, and Good / Very Good for the systems listed on the survey.

Table 18: Student ratings of specific LMS tools

	Very poor		Poor		Neutral		Good		Very good		Not applicable	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
BlackBoard	68	2.6%	233	8.9%	393	14.9%	**996**	**37.8%**	900	34.2%	42	1.6%
Moodle	22	2.8%	38	4.9%	87	11.2%	80	10.3%	**69**	**8.9%**	479	61.8%
First Class	72	4.7%	141	9.2%	221	14.4%	385	25.0%	**434**	**28.2%**	285	18.5%
Sharepoint	10	1.7%	5	0.9%	**40**	**6.8%**	16	2.7%	8	1.4%	507	86.5%
Synapse	24	3.0%	32	4.0%	79	9.9%	**101**	**12.7%**	96	12.1%	463	58.2%
Desire to Learn	6	1.1%	5	0.9%	20	3.5%	13	2.3%	**23**	**4.0%**	502	88.2%
OWL	35	4.1%	55	6.5%	117	13.9%	**139**	**16.5%**	83	9.8%	415	49.2%
Other 1	39	8.0%	45	9.3%	56	11.5%	88	18.1%	**102**	**21.0%**	155	32.0%
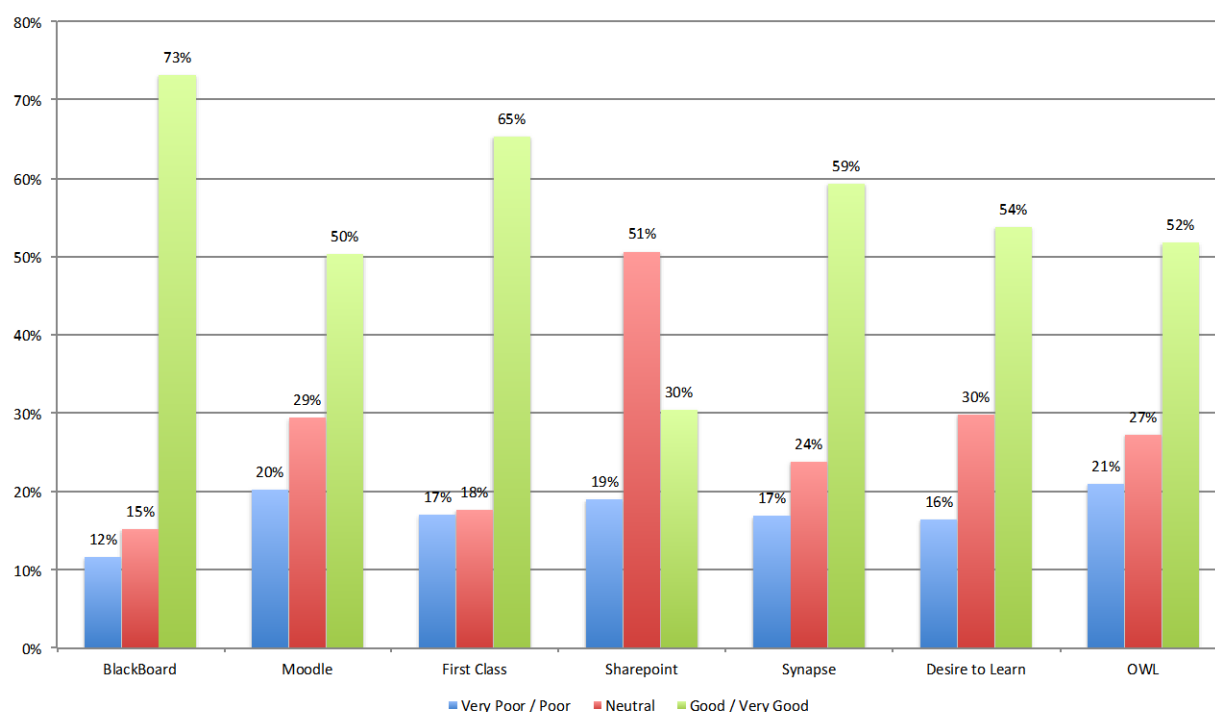
Figure 6: Ratings of LMS systems by active users of those systems

Finally, we asked students to comment on the variety and number of LMS systems used. Overall ratings indicate students either find the systems in use to be a positive experience, or are neutral in their perceptions of the number of systems used. A very small minority of students indicated a preference for more variety in the LMS technologies available. The remaining 20 percent, however, indicated there were too many systems in use. Although the majority of respondents responded positively, one out of five UMS students expressed some level of frustrations with the number of systems in use (Figure 7).

41
1%

545
20%

793
28%

102
4%

1297
47%

- Negative, there are too many systems used
- Negative, there are too few systems used
- Neutral
- Positive, I find most of the systems helpful
- I have never used an online course management system
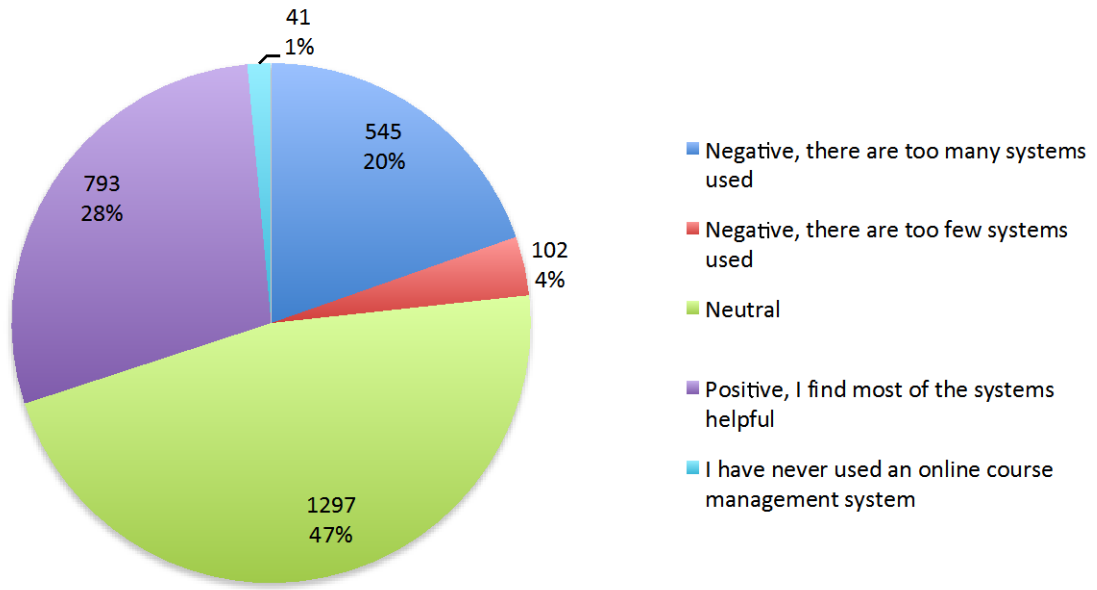
Figure 7: Students' ratings of the number of LMS tools used

Section 3: Technical Supports

Students rated the technical supports currently in place across the UMS. When asked how often they needed support outside their university's regular business hours, approximately 90 percent of respondents indicated once a month or less (Table 19). Similarly, approximately 90 percent of students found the university-provided technical support to be adequate (Table 20). However, just 40% of students agreed that on-demand assistance was there when they needed it while another 50% neither agreed nor disagreed (Table 21).

Table 19: How often do you need technical assistance outside of your university's business hours?

	Count	%
Daily	9	0.3%
2-3 times a week	31	1.1%
Once a week	65	2.4%
2-3 times a month	130	4.8%
Once a month	215	7.9%
Less than once a month	1078	39.4%
Never	**1206**	**44.1%**

Table 20: Overall, the current University-provided technical support is?

	Count	%
Highly inadequate	53	2.0%
Inadequate	225	8.5%
Adequate	**2071**	**78.3%**
More than adequate	296	11.2%

Table 21: On-demand support for using technologies is available when I need it.

	Count	%
Strongly disagree	45	1.7%
Disagree	210	7.8%
Neither agree nor disagree	**1356**	**50.5%**
Agree	902	33.6%
Strongly agree	174	6.5%

When asked to comment on the types of technical support they preferred, more than three quarters of responding students favored direct assistance through a help desk type of service. Approximately half of responding students also preferred to access web-based tutorials, and a third preferred live sessions on how to use technology. Approximately one quarter indicated a preference for an elective course in technology, but just one eighth of students had a preference in favor of published-sponsored help services (Table 22).

Table 22: Which types of support do you prefer?

	Very strongly avoid		Strongly avoid		Avoid		Indifferent		Prefer		Strongly prefer		Very strongly prefer	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
University help service (in person or by phone/computer)	23	0.9%	12	0.4%	39	1.5%	409	15.3%	**847**	**31.6%**	674	25.2%	674	25.2%
Live sessions on how to use technologies	113	4.3%	94	3.6%	359	13.7%	**1122**	**42.7%**	557	21.2%	249	9.5%	136	5.2%
Web-based tutorials	107	4.1%	95	3.6%	320	12.2%	780	29.7%	**852**	**32.4%**	306	11.6%	169	6.4%
An elective course in technology	247	9.5%	165	6.3%	454	17.4%	**1072**	**41.2%**	399	15.3%	136	5.2%	132	5.1%
External help service (publisher sponsored or similar)	227	8.7%	193	7.4%	490	18.8%	**1366**	**52.4%**	231	8.9%	62	2.4%	37	1.4%

Section 4: Open ended responses

The final question of the survey asked students if they had any other comments about the use of technology. Students submitted a total of 1174 unique comments (see Appendix XXX for the complete set of student feedback). Although more than a third of the respondents wrote comments, it is important to note that these students represent approximately 4% of all students in the UMS, and that they are a self-selected sample. It is also worthwhile to note that the ratings in the comments were significantly more negative on the whole than the quantitative survey results reported above. Therefore, the conclusions drawn in this section of the report apply only to those respondents choosing to submit a written responses, and cannot be generalized to be representative of the opinions of the entire student body.

Sentiment analysis. To determine the broad sentiment of these responses to the open ended question, we analyzed the raw text using *sentiment analysis* methods (Prabowo and Thelwall, 2009), using IBM SPSS Text Analysis for Surveys and the Sentiment Analysis with Python NLTK (Perkins, 2010) for text classification. Additionally, all comments were coded by CRE staff to ensure inter-rater reliability and reduce the likelihood of misinterpretation. A number of comments were removed from the analysis due to the superfluous nature of the text (e.g., none, N/A, nothing else, etc.) however all comments have been included in the Appendix.

Although the comments are representative in terms of degree program and part/full time status, the responding comment sample may better reflect the UM, USM, UMA, and UMF campuses. The comments were also slightly skewed to reflect to experiences of full time students (61%) vs. part-time students (39%). Overall, the highest number of comments (positive or negative) were submitted from students in the following programs: Liberal Studies, Mental Health and Human Services, Nursing, Social Work, Management, Biology, and Business Administration. However, these programs only represented 25% of all comments submitted. Positive comment percentages were consistent across regular academic degree levels (associate, baccalaureate, graduate and Law) with a range of between 15.6% and 16.9%. Positive comments percentages among non-degree students was significantly higher with non-degree undergraduate positive comments at 22% and non-degree graduate positive comments at 44%. Negative comments for regular academic degree students ranged from 33% (Law) to 70% (Baccalaureate and Graduate). Negative comments for non-degree students ranged from 55% to 60%. Part time students were generally more positive than full time students in the nature of their comments

with 25% of comments classified at positive and 58% of comments were negative in nature. Full time student comments were classified as predominantly negative (74%) with only a small percentage of comments categorized as positive.

Each comment was classified and coded as a **positive sentiment**, **negative sentiment**, or a **neutral sentiment**. Using **hierarchical classification**, a *neutrality value* (0.0-1.0) was determined for the text comment first, and a *sentiment polarity* value was determined if the text was not determined to be neutral. Overall, 68% of all the comments were classified as negative sentiment, 18% were classified as expressing positive sentiment and 14% were classified as neutral sentiment. The degree to which the body of comments were classified as negative sentiments were reflected in the value of the sentiment polarity and the relatively low level of neutrality found in the comments. The sentiment analysis results were also broken down by campus of respondent below (Table 23). Interpreting the results of respondent sentiment expressed across the UMS, the mean positive polarity is consistently low across the system with a range of between .25 and .35. The weak neutrality of the comments indicates that the sentiment (negative) was strongly expressed. Again, across the system, negative comments dominated the responses to the question with the larger campus respondents reporting 65%-69% negative sentiments.

Table 23: Results of sentiment analysis by campus

	Mean PosPolarity*	Mean Neutrality*	Percent Negative/Positive
UM	.33	.26	69%/15%
USM	.31	.25	68%/17%
UMA	.35	.23	65% /24%
UMF	.34	.23	66% /20%
UMM	.25	.45	44% /19%
UMPI	.30	.25	83%/9%

Open coding. Following our sentiment analysis, we then analyzed these comments for broad themes. As shown in the sentiment analysis, the majority of feedback expressed negative opinions of technology, and specifically of online education. These **negative perceptions** centered around five broad themes: 1) faculty responsiveness and engagement (e.g., email); 2) functionality of technology and LMS systems; 3) quality of learning in online courses; and, 4) quality of instruction / design of online courses. A minority of responding students expressed **positive feedback** about the use of technology including: 1) accessibility of courses; 2) flexibility of engagement with content; and, 3) outstanding examples of faculty effectiveness.

Faculty responsiveness and engagement. One area of concern for responding students was the level of faculty responsiveness to student learning needs. A majority of student comments related to this theme noted a perceived lack of meaningful engagement, responsiveness, or attentiveness on the part of faculty teaching (primarily) online courses. Specific comments noted long wait times for faculty to respond to questions by email, a lack of faculty input in online discussion boards, and a lack of attentiveness to student problems or issues during a course. Comments typical of these sentiments included the following:

> An example of a specific problem: we were a good 11 weeks into class and I was the ONLY person who had stumbled upon (entirely accidentally) the 'class content' section and had been taking the online quizzes. The professor acted as if we were all morons, but I'm sure it was just a technological misunderstanding.

> I have only taken one on-line class thus far. I was greatly disappointed in the responsiveness and professionalism of my instructor. I received no individual feedback on my discussion threads, application essays, peer reviews nor final paper. I had to ask the instructor for the teammates names for the group exercise, he was delinquent in responding to e-mail. The draft final paper from my classmates for which I had to complete peer reviews I received a day after they were due. The instructor extended the due date to the Monday following Thanksgiving. So instead of completing this assignment before the holiday as scheduled, I had to do it over the holiday weekend, which was not convenient. When the instructor was late in grading papers or other tasks, he sent the students in the class an e-mail with his lame excuses. My assignments were completed on time as directed. I wouldn't expect him to accept similar excuses from me if I was late in completing my work. I hope my next instructor is more responsible and engaging with the students.

> I have had very positive experiences with online course, however the courses online that were not positive have been beyond unacceptable. I am currently in an online course in which the teacher goes off for months at a time and has thus for failed to impress anyone in the class. Online courses should be available, but entrusted to those who put time and effort into their courses

> I feel like being able to email a professor is hit-or-miss. Some professors are very helpful and will give clear and concise responses quite quickly. Others don't even want to be emailed in the first place. However, person-to-person interaction remains the best solution.

Functionality of technology. Another issue raised by respondents was the functionality of specific instructional technologies used on campuses and by individual faculty members. In general, respondents who mentioned this category expressed frustration that these technologies were not in place, did not work properly, or were not used effectively because faculty did not have the skills to use them. Comments typical of this category included the following:

> A lot of time can be wasted in class because the USM classroom technologies do not seem to be user friendly for professors - so perhaps a class for professors on how to operate classroom technologies would be beneficial.

> I really wish that there was a single unified system instead of FirstClass, Blackboard, WileyPlus, and OWL. It is a little ridiculous, and I think that with a single system I will actually be able to check all of my classes in one night.

I have used Blackboard for my online classes and I enjoyed using it and had very few problems with it. The few times that I had trouble, I sent an email to my instructor explaining that I was unable to get my lessons and the instructor always managed to get back to me right away and the problem was solved very quickly. I only had to call tech support a couple of times and they were very helpful in taking care of the problem. I have enjoyed the online classes and they are very convenient to take. I have had very good success so far in using the technology.

Have one, just one course management system - please. One is still learning with the aide of technology, but we are also learning the technology and how it manipulates us into thinking the way it does. Therefore one does not think the way he or she would like, but in the way we skew our thought through the technology to get what it wants.

The online systems here [are] an absolute train wreck. There is absolutely no logical reason to have multiple communication systems. Having two university emails virtually guarantees that important mail will be lost at some point. Then add on top of those email address in system communication channels (e.g., Communiques via Synapse, which as an aside can NOT be forwarded to another account) has forced me to check a half dozen pages regularly for messages from my advisers and my students.

With campuses all over Maine, it should be easier to participate in classes that are being offered in-person when you are located elsewhere. Even the times I use polycom between USM and Orono, it doesn't always work and no one can figure out why. This is a major area of improvement.

Quality of learning in online courses. A number of students expressed concerns about the quality of learning in online course environments. Specifically, students commented on the intellectual rigor of online courses, the prevalence of cheating by other students, the depth of learning they experienced and the academic level of conversations / discussions. Although a very few students commented that they felt online courses were more rigorous, the majority of comments were negative. The following comments are typical of comments related to the rigor / quality of online courses.

I have taken close to 100 online training classes in the military, and I can honestly say it was detrimental to our military readiness. Technology alone cannot ever equal real instruction in the presence of other students and faculty. Most people do not work as hard in online classes, and feel that they don't have to participate with meaning. Many students take online classes because they are viewed as easy credits; education isn't about hoops that we have to jump through or credits earned, it is about earning for our future, to develop our minds. Students learn as much from interacting with other students as they do from professors, and sometimes more from fellow students. I am extremely proficient with technology, and have taken computer science courses, and I thoroughly enjoy technology. That being said, it is scientifically proven that more learning occurs with pen and paper, rather than by reading from a screen and typing. Pushing technology in courses that are not technology based is hurting our future economy because it is hampering the learning environment. Technology certainly has it's place in education, but the idea that it can be the sole medium is a dangerous idea.

My experience with online classes has thus far been less than positive. I have learned less from web classes compared to classroom-based classes. It seems the teachers use the same templates over and over again, lecture videos are blurry and were recorded a few years ago. I feel cheated that its old information and the instructors can't be bothered to make new ones. The instructors take their time in getting back to you when you email them, i.e., a week in some cases. Many of my online classes have interns helping to grade work and I don't get answers from the teachers, so I feel very removed from the learning environment. On a whole web classes are not worth the money! and I will try to stay away in the future

Depending on the professor, the use of technology can be helpful or hurtful. It all depends on how available the professor is to answer questions and how much interaction takes place with the students as well. I'm also taking an online yoga class. In my opinion, this should not be an online class but it happened to work with my schedule and I needed another credit to be part-time. The interaction is primarily through the discussion board but there is very little student-student and student-professor interaction. I hate to admit it but this class is a very easy blow off class; I wish I was being challenged. The use of technology (blackboard) in this class makes it easy to B.S. my work and leave the work that is due every Sunday to the last minute. This differs from the calc. class because if I don't learn the material, I will fail the test (which is done in person in a classroom with other classmates).

Overall, online courses were very disappointing. However, I would recommend them to students who are trying to graduate more quickly because it's an easy way to get gen-ed credits in subjects that you aren't interested in but have to take.

Quality of instruction / design of online courses. A substantial number of comments related to the quality of course design and by extension, the quality of the instruction they received from those courses. Specifically, respondents noted the lack of consistency in the way courses were organized, inconsistent use of Learning Management Systems, ineffective communication, and a lack of effective online teaching pedagogies.

I have only had one online course, so some of my answers may have been different if I had experienced more online courses. My experience with this one course was bad, but I believe that was mostly due to the professor. She condensed a 16-week course into n 8-week course with the same amount of work. I was doing the online work at my job, and I was not sleeping at night and I still barely managed to get everything done. She tried to make us work through holidays and she mostly let us teach each other the material (which, after a week or two, none of us really understood or cared anymore). We did have books we had to read, but her posts on the forums suggested that she did not even do the reading herself, as she was making statements about the books that the author themselves (in the books) argued against. I was able to give her page citations that proved she was wrong, and she still argued with me. The course was with XXXX, and because of this experience I will never take another online course.

I am coming to think that the degree of technology says a lot less about what you learn from a class than the person teaching the class. Some online courses are very intensive and I get a lot out of them, while others are much less work than average. I m very self-motivated, though, and I think that works to my advantage when there is a lot of technology involved.

My recent first online course has been an extreme disappointment. Faculty contact with students is minimal at best. The workload is extreme and feels as though it is meant to be "busy work" only. I often feel that by doing the required weekly postings I am teaching myself and my peers. To me, it is frustrating to have to pay a great deal of money in tuition to teach myself when in fact I would much rather pay for a course that is actually taught by the professor whom I feel is the expert and the person I would like to learn from. The other disappointing and frustrating thing are all the student fees that go along with these online and hybrid courses pertaining to transportation, etc. when in fact students are either not on campus at all or only on campus 2-4 times/semester. As an educator, I am appalled at the lack of teacher accountability/ teaching commitment and the high cost of education for online & hybrid schooling!!

Finally, the best class I have taken at USM was online based in the Lewiston campus (XXXX). The other two I thoroughly enjoyed online were ECO101 and 102 (XXXX). Both instructors had placed a significant amount of thought in the online delivery and he classes were incredibly organized and the presentation well thought out. Instructors were extremely responsive.

Accessibility of courses. Despite these criticisms of online education, there were a number of respondents who appreciated the access this format afforded them. Most commonly, respondents noted that online courses allowed them to overcome distance and conflicting work/home schedules in their pursuit of their degree. Several respondents noted that online courses also helped them overcome personal disabilities that made regular coursework challenging. Common accolades of distance education included:

> I love online classes because of the time constraints during the day for regular classes. I like regular classes when they are convenient. Technology is good when you are able to understand what is being asked of you.

> I like the on-line courses. It is easier for me to further my education, on-line, while I am working. I live 35 miles from the campus, so on-line courses save me gas and time. I also like the fact that I can do the required work on my schedule. I prefer to take my classes on-line.

> I have enjoyed the online classes that I have taken. I have chronic migraines and find that online courses are easier to work around my disability.

> I am located on an island without a daily ferry. I have taken a total of four U. Maine courses in 2012 all using different technology platforms. In one, our local one-room school became a U Maine Polycom site for real-time distance learning classroom participation; in another, most of the communication with classmates was on Skype, and in two, four in-person class sessions at UMF were interspersed with regular communications on the Blackboard discussion page. All worked fine, and the availability f these technologies makes it possible for me to take courses. I cannot commute because of my remote location. Learning how to use the technology was part of what I learned in some of the classes, but I see that as an added educational benefit.

> I find this technology amazing! I am a mom with children still living at home and currently taking six classes. I could never manage this workload without this technology. Thank you!

Student learning styles. Another theme expressed by a smaller number of respondents was that of the fit between online and technology-heavy courses and their personal learning preferences. In this area, students were more balanced in their opinions of the effect of technology. For a slight majority of responding students who offered comments, technology was seen as an impediment to their learning preferences, with a substantial number expressing a desire for face to face learning. However, a substantial number wrote about the unique attributes of online and digitally enhanced learning that facilitated their personal learning styles. The following comments typify the contrast between the usefulness of technology in helping them structure and review content, and the barriers that technology sometimes created for effective and meaningful engagement.

> I really enjoy taking blackboard quizzes as homework at my convenience and helps instructors highlight important material from lectures.

As a person who suffers from depression and anxiety, I've found that after my first semester of online courses I am doing much better in my classes. Online course work has suited my needs perfectly, and I would say that the only flaw for me is that I am so far away from the campus that I cannot see professors in person (though that is not something I miss). Sitting in a live class can be very boring for me as a bright individual, and seeing other people in class not pay attention or not putting forth the same effort I put forward can be distracting. Now that I do my courses online I can do my course work at my own pace. I feel like I have more time to put towards homework when I don't have to go to a live class.

I learn much better in a face to face situation. I'd prefer not to use online classes.

As a doctoral student, I just have not experienced any kind of real challenge in an online course. Hybrids are just ok, but they are no substitute for dynamic lecture/discussion, and exchange of ideas. I would much prefer a 140 mile round trip commute than take an online class. I would only take an online class for some other reason....like a "check the box" class that was required for recertification or something along those lines. If I care about the subject matter, I would much prefer a traditional setting that offers the highest degree of challenge, expectation, and genuine discussion.

Complexity of online learning. A final category of comments exemplified the complex nature of learning in technology-intensive and online environments. In many cases, students offered complex analyses of the issues at play in online learning environments. They often noted the ways in which the skills of the faculty member at teaching, and with technology were a significant mediator to overall course quality. They often criticized the survey itself noting that it was asking them to respond in a uniform manner when their personal experience was so variable. This is a valid criticism and one that was debated prior to the launch of the survey (see Limitations sections above for more detail about the trade-offs in the constructs measured by this survey).

I have taken online course that were horrible failures. I felt very disconnected with the professor and it was difficult to ask questions and get prompt responses. I have taken hybrid courses that worked great - better interaction with the instructor an connection with other students. Blackboard is great but Firstclass can be frustrating and slow to work with. I wish more instructors used Blackboard instead of Firstclass. I took the course EDT 400 and it was a great class, great teacher and it taught me a lot about using technology in my classroom (I'm an Elementary Education major). A course like that would be great for those students who struggle with technology and how to incorporate it into the schoolwork.

I have found in online classes that professors who have the most structure and consistency in their organization of the class and how they utilize blackboard are, in my opinion, the most successful. I dropped a class mid way through the semester out of frustration with the professor's inconsistency and lack of organization, assignments were posted in a number of different places (sometimes in an announcement, sometimes in modules, sometimes through email, one week a discussion question would be posted under modules, the next week it would be posted somewhere else, but never in the discussion board), and also links to different videos and lectures didn't always work. It was almost as though the professor needed to take a class on how to use blackboard. I think that in some ways online classes are a bit more intense, and it is frustrating to have a professor who does not understand the need for consistency and structure.

It may be that students who were especially negative took the time to write comments, but it is equally possible that these results are representative of a large number of students in the UMS. In either case, nearly 1000 students offered feedback, with over 500 of those students expressing dissatisfaction at some level with the use of technology in the UMS. While a substantial number of students commented on the positive qualities of online courses, the majority of those who offered

written comments did not. System and campus-level policy makers may benefit from conducting additional focus groups with students at their own campuses as the nature of issues raised by individual students on this survey were, to some extent, idiosyncratic by their campus of attendance.

Conclusions and recommendations:

Summary. This survey received a statistically valid response rate with approximately 10% (*n* = 2,749) of UMS students participating. Response rates appear to be higher for older students and women. Three campuses, UMA, UMF, and UM had response rates exceeding 10 percent, while USM had a response rate of just 6.2%. Thus, these results may be somewhat more valid to describe the perceptions of women, older students, and students from UMA, UMF and UM.

Overall, responding students did not report strong opinions of course-taking preferences for online versus hybrid versus live courses. However, when the respondent set was limited to only those students who had taken all three types (i.e., live, hybrid, and online) these perceptions changed significantly. In contrast to the neutral ratings of online courses offered by the whole group, this subset of 369 students reported a strong aversion to online course offerings.

When asked how technology-intensive courses impacted student learning, students reported higher levels of work, interest, deep thinking, academic honesty, focus on remembering facts and ideas, problem solving, evaluating others perspectives, being creative, and written communication. Students rated oral communication lower, and the ability to make an argument to be similar to less technology-intensive courses. Thus, divorced from the issue of online courses, the overall group of responding students perceived value added benefits from the inclusion of more technology in their courses.

Students also provided feedback about the type and quality of LMS systems presently in use in the UMS. While students indicated that a LMS system was important to have, they did not indicate the need to have just a single system in use. Students overall were positive about the variety of LMS systems in use, and rated BlackBoard, FirstClass and Moodle the most highly. Most students rarely needed technical assistance outside their university's regular business hours, and when they did access those supports, they preferred In-person or live supports and web-based tutorials. Students found these supports to be adequate.

Approximately one third of respondents provided open-ended responses on the survey. Comments were primarily focused on online learning experiences. A sentiment analysis of the corpus of qualitative statements suggests the overall tenor of this extended feedback was negative. Respondents concerns centered around 4 broad areas: a lack of faculty responsiveness and engagement, issues with the functionality of technology and LMS systems, a perceptions of diminished quality of learning in online courses, and lower quality of instruction / instructional design in online courses. A smaller

number of responses noted the positive qualities of online courses, such as accessibility to students who are employed full time and those living in remote areas. A few participants wrote about the exemplary work of specific UMS faculty in their online, hybrid, and live teaching. Many of the critical responses offered focused on the lack of training on the part of UMS faculty in teaching online. Several students offered specific suggestions to address this problem such as targeted training for faculty and a systematic review of online course content and procedures.

Recommendations.
The broad results from the student survey highlight the promise of the broader use of technology in higher education to promote learning, increase access and raise standards. Students also shared a cautionary tale about the negative consequences associated with low quality online offerings and situations where there is a lack of faculty training in online pedagogy. The following recommendations reflect the broad patterns of this survey, as well as the suggestions of smaller—but still practically important—groups of students.

- Conduct campus level focus groups to determine the specific opportunities and barriers to the use of technologies in teaching, both in live/hybrid environments but also in online courses.

- Identify specific supports to improve the course taking experiences of students.

- Increase the online teaching skills of UMS faculty by providing appropriate professional development and direct supports (e.g., staff dedicated to designing online course environments) combined with peer review of online teaching methodologies.

- Implement a comprehensive course evaluation system for online courses that permits methodologically valid comparisons to live course offerings. Seek to determine the equivalency of academic rigor, student engagement, and faculty feedback present in online and live / hybrid course offerings.

- Increase the other supports needed to successfully teach in online settings (e.g., graders, students / staff to assist with the preparation of materials, managing settings, and facilitating the communication between faculty and students.

- Increase the incentives for faculty to perform at exemplary levels. For example, a financial incentive for faculty whose courses exceed specified design and implementation criteria.

Appendix B: Part II
UNIVERSITY OF MAINE CENTER FOR RESEARCH AND EVALUATION

Student and Faculty Perceptions of the Role of Technology in Higher Education

A comparative analysis of faculty and student responses to the Teaching Through Technology Task Force (T4) perception survey

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Donna Doherty, M.S.

6/27/2013

Addendum to the T4 faculty and student survey reports

Purpose of this report.

The purpose of this summary is to provide an additional overview of the similarities

and differences between the faculty and student surveys administered as part of the T4

initiative. This report does not replicate or repeat the analyses already described in the

faculty and student survey reports, nor does it attempt to review all questions asked of

those groups. Instead, its focus is limited to those points of commonality between the

survey forms, beginning with an analysis of those items appearing on both student and

faculty surveys. It then considers the broad input received from faculty (focus groups and

survey comments) and students (survey responses). The reader is strongly encouraged to

review the individual faculty and student survey reports as they contain much more detail

than is reflected in the broad findings shared in this document.

Analysis of matched questions

Although there were a number of questions that were very similar on both the

student and faculty surveys, only a few questions appeared in exactly the same format. For

example, while both faculty and students answered questions about BlackBoard, those

questions were not presented in precisely the same manner and thus cannot be directly

compared. The reason for these differences in the survey forms was the emphasis on the

alignment between the questions and the respondent groups. Thus, students were asked to

comment on how systems impacted their learning, while faculty commented on the

impacts on their teaching.

There were a total of five matched questions between the student and faculty survey

forms. Overall, a greater proportion of women responded to the student survey, while the

gender balance was roughly equal for faculty (Table 1). Both faculty and students

perceived similar skill levels for their own technological expertise (Table 2). That is, both students and faculty saw themselves as somewhere between novices and experts who needed help for more challenging problems. Students were more likely than faculty to indicate support for a centralized Learning Management system (Table 3). Faculty perceived technical support to be less effective than did students (Table 4). Faculty rated students skills using course-related and personal software significantly lower than students self-ratings (Table 5).

Table 1: *Percentage of respondents by gender*

		Faculty		Students	
		Count	Column N %	Count	Column N %
Gender	Male	193	46.6%	951	34.7%
	Female	221	53.4%	1789	65.3%

Table 2: *Respondents' ratings of their own technical skills*

	Faculty		Students	
	Count	Column N %	Count	Column N %
I'm the person that usually needs help for even minor technical problems. I can not usually help others with technical problems.	14	3.3%	145	5.3%
I can usually solve most everyday problems, but often need help for anything more complicated. I can help others with some technical issues.	222	53.0%	1281	46.6%
I can figure out issues and problems for all but the most difficult of problems. I can help others with most technical problems.	139	33.2%	999	36.3%
Others regularly come to me for tech advice, I seldom, if ever, need technical help.	44	10.5%	324	11.8%

Table 3: *Importance of a Learning Management System*

	Faculty	Students

		Count	Column N %	Count	Column N %
How important is it for the University of Maine System to have an online course management system available?	Not important	54	13.5%	154	5.6%
	Somewhat important	108	27.1%	561	20.5%
	Quite important	118	29.6%	729	26.7%
	Very important	119	**29.8%**	1288	**47.1%**

Table 4: *Ratings of university-provided technical help*

		Faculty		Students	
		Count	Column N %	Count	Column N %
Overall, the current University-provided technical support is?	Highly inadequate	20	6.0%	53	2.0%
	Inadequate	111	33.1%	225	8.5%
	Adequate	196	**58.5%**	2071	**78.3%**
	More than adequate	8	2.4%	296	11.2%

Table 5: *Student and Faculty ratings of students' software skills*

	Faculty	Students
	Mean	Mean
Using course required software	5.71	6.33
Personal software (e.g., social networking, non-work apps)	6.84	7.02

Although these quantitative "gaps" between the experiences of students and faculty may warrant additional attention, they do not reflect the more substantive similarities and differences observed between faculty and student quantitative ratings and narrative responses to the survey. There were a number of broad themes for which faculty and students reported similar experiences. For other themes, these two groups expressed differing perspectives. These similarities and differences are highlighted in the following sections.

Key Similarities. Faculty and students expressed similar viewpoints on a broad range of topics. Both faculty and students identified the need for better designed and executed online course offerings. Specifically, faculty identified the need for additional

supports, training, time, and resources to develop and implement higher quality online course offerings. Student comments also reflected a desire for better-designed courses, with a number of students suggesting that faculty learn how to better use the tools and to learn how to teach online.

Both students and faculty expressed concern that the overall quality of courses may be compromised in online formats. The comments reported in both the student and faculty survey reports show the frustration many respondents have with teaching and learning in the online environment.

Faculty and students reported the time associated with online courses often exceeded that required in typical face-to-face offerings. This additional time was often unrelated to the course content and was attributed to preparation and / or access of materials in an online environment.

Both faculty and students acknowledged the benefits of increased access to online courses for distance learners and other non-traditional students. The number of respondents focusing on this benefit to distance / online course offerings was heavily outweighed by those expressing concerns over course quality.

Neither students nor faculty saw technology itself as a barrier to course quality or student learning. The concerns expressed by both groups centered around the implementation of that technology in online settings. Specifically, both students and faculty noted the need for better designed courses, courses in which the instructor and the students were highly engaged, and technologies that facilitated learning. The lack of face to face contact was cited as a barrier by both groups.

Both faculty and students acknowledged the value of an online course management system to house supplemental materials, discussion boards, and other resources. This was true for online, hybrid, and live course settings. While students (overall) rated BlackBoard more highly than did faculty, both groups recognized the inherent value in a central repository for course information and learning materials. Faculty were less satisfied with BlackBoard as the single-source solution than were students.

Some students and faculty expressed concerns about the motivation to expand online offerings as a way to generate revenue and increase enrollment without adequate consideration of course quality.

Key differences. Despite the many points of agreement, faculty and students did report substantially different views on other issues related to IT support, LMS systems, and the preparedness of students. They also differed substantively on the specificity of their feedback for UMS policymakers.

Students focused more on faculty teaching effectiveness as a function of that individual faculty member than faculty did of themselves. That is, students tended to focus on the performance of an individual faculty member as the reason for online course quality, whereas a greater proportion of faculty members focused on the lack of supports, availability of technologies, etc. as the primary barrier to increasing online course quality.

Faculty wrote far more detailed comments than did students, and provided much more specific suggestions, ideas, and feedback for improvement than did students as a group. Students' comments tended to focus more on individual course experiences.

Faculty expressed concerns about the preparedness and skill level of students enrolled in certain online courses. In a parallel fashion, students expressed frustration with the engagement and teaching practices of some online instructors.

Conclusions and next steps. As a result of the Faculty and Student surveys, UMS policymakers have access to a rich set of data about the perceptions of the major stakeholders in the teaching and learning process in across Maine's public universities. Each survey report contains detailed information about the use of technologies, its impact on teaching and learning, and extensive narrative feedback from faculty and students from across Maine.

The extensive conclusions from these reports are a logical starting place, followed by a discussion of how those findings support (or run counter) to the current priorities within the UMS. For example, in the case of online courses, there is substantial evidence from faculty and students there exists a need for additional pedagogical and technical supports for faculty developing online course offerings. Similarly, the evidence from these surveys (and faculty focus groups) suggests there presently exists a great deal of expertise within the system. However, that expertise is not evenly distributed across campuses, and those individuals are not often afforded the time or opportunity to share their knowledge with others.

Appendix J

EDUCAUSE Top 10 IT Issues: 2013

The following ten issues are those identified in 2013 by EDUCAUSE as receiving the most attention in IT departments in higher education. They illustrate the need for a developmental perspective and systematic implementation to align these trends with intentional course design, pedagogy and program design.

Top-Ten IT Issues, 2013

1. Leveraging the wireless and device explosion on campus

2. Improving student outcomes through an approach that leverages technology

3. Developing an institution-wide cloud strategy to help the institution select the right sourcing and solution strategies[ii]

4. Developing a staffing and organizational model to accommodate the changing IT environment and facilitate openness and agility

5. Facilitating a better understanding of information security and finding appropriate balance between infrastructure openness and security

6. Funding information technology strategically[ii]

7. Determining the role of online learning and developing a sustainable strategy for that role

8. Supporting the trends toward IT consumerization and bring-your-own device[ii]

9. Transforming the institution's business with information technology[ii]

10. Using analytics to support critical institutional outcomes[ii]

    i. *Grajek, S. (Educause Review, June 3, 2013)*
    ii. *Also one of the 2012 Top-Ten IT Issues*

Appendix K

2013 Teaching Through Technology Task Force
Membership

In the final year of this initiative the following individuals comprised our membership. This was a set of individuals representing a diverse set of perspectives. Their good will, expertise and contributions to this study are greatly appreciated.

Cao, Zhongling	Student Representative (UMFK)
Doore, Brian	CRE Principle Investigator
Elliott, Kenneth	Project Manager (UMA)
Gibson, Joyce	Dean (LAC campus of USM)
Grillo, Michael	Professor of Faculty (UM)
Handley, Allyson	Co-Chair and President UMA
Killmeier, Matthew	Assoc. Professor of Communication and Media (USM)
Marrs, Stuart	Vice Provost and CAO Liason
Maxwell, William	Adjunct Faculty Muskie School (USM)
Montgomery, Joella	Director of Teaching and Learning Collaborative (UMF)
Mosley Jr, Ronald	Prof. of Business Admin and Law (UMM), AFUM President
Nutty, David	University Librarian (USM)
Page, Shallee	Assoc. Professor of Chemistry and Biochemistry (UMM)
Rice, Raymond	Chair of the College of Arts and Sciences (UMPI)
Schmelz, Mark	Director of Labor Relations (UMS)
Thompson Jr, Richard	Chief Information Officer (UMS)
Torrens, Melinda	Graduate Student (USM)
Trudel, Leo	Assistant Professor of Business (UMFK)