
Learning Ecosystem Assessment and Review of Needs (LEARN) for Iowa State University

By:
Phil Hill
email: phil@mindwires.com

Molly Langstaff
email: molly@mindwires.com

January 29, 2014

TABLE OF CONTENTS

Introduction and Executive Summary.....	2
Scope	2
Summary of Research Methods.....	3
Organization of Reports.....	4
Glossary of Terms.....	4
Executive Summary	5
Faculty Findings.....	8
Educational Technologies	8
Barriers to Teaching Excellence.....	9
Online & Blended Learning.....	10
Motivators / Barriers	11
Classrooms & Technology.....	11
Other Notable Findings	12
TA Findings	13
Educational Technologies.....	13
Online and Blended Learning.....	13
Technology Support.....	14
Student Findings	15
Educational Technologies.....	15
Online and Blended Learning.....	16
Technology Support.....	17
Synthesis of Issues.....	18
Educational Technology	18
Support for Educational Technology	18
Classrooms and Technology.....	19
Online and Blended Learning.....	19
Recommendations.....	21
Appendix A: LEARN Glossary of Terms and Definitions	24
Appendix B: Instructional Support Staff Findings	28

INTRODUCTION AND EXECUTIVE SUMMARY

Iowa State University is facing a “perfect storm” of increasing student enrollment, growing faculty numbers, maximized use of current physical facilities, and the strong desire to maintain the high level of quality education that Iowa State provides its students. In the fall of 2012, support staff for ISU’s Learning Management System began exploring the possibility of reviewing the current system (Blackboard). As discussions with faculty began, it became apparent that there was a greater desire to holistically discuss its usage with regard to all aspects of the learning and teaching environment. With that, a process was developed to analyze the needs of the entire learning ecosystem. The results of the needs assessment will inform the long term-direction of physical and electronic classrooms and guide how investments are made in the future at ISU.

The process used for the LEARN needs assessment was designed to ensure community involvement. Through a series of engagements with administration, faculty, support staff, and students, the LEARN process was intended to lead to:

- A long-term direction regarding ISU’s learning management system (LMS)
- A more informed online learning presence
- A long-term plan for technology use in ISU classrooms

For more information about LEARN, please visit the project website at <http://learn.provost.iastate.edu> .

Scope

The purpose of the assessment is to understand and quantify the needs of Iowa State faculty, students, and other stakeholders related to the overall physical and electronic learning/teaching environment and how it can support Iowa State’s ongoing commitment to institutional excellence. The assessment should provide a foundation, along with internal data, assessments and experience, for future decisions that will better position this environment to enable ISU’s ongoing commitment to excellence.

Specific needs include:

- Developing a comprehensive and sustainable multi-year plan for classroom technology
- Investigating the future evolution of the learning management system (LMS), and determining how Iowa State should position itself in the long term

- Identifying strategies to streamline faculty support across campus
- Supporting innovative instructional methods, and exploring the impact of new delivery or pedagogical strategies such as blended learning, flipped classrooms, and open education resources. These innovations, when coupled with new hosting paradigms (e.g., cloud-based service) could improve instructional efficiency, expand reach and enrollment capacity, and enhance learning for both on- and off-campus students.

Summary of Research Methods

A unique challenge of providing technology services within an academic institution is ensuring that the right systems and services are deployed: the IT practices that will make users' lives easier, and consequently will help the institution succeed in its academic mission to provide and continually improve the quality of education. Traditional technology-focused assessment processes (focusing on the technologies themselves more so than any other component) are not really designed to solve user problems. Thus, institutions should evaluate their unique needs, rather than just look at the specific technologies being offered by vendors. Understanding where systems are being deployed, who uses them, how they need to integrate with existing and future systems, and what specific educational tasks they improve or automate is important to deploying a successful set of IT practices.

Based on the above challenge, we have focused our assessment on the perspective of real technology users, leaders and providers. From April 2013 through October 2013, we conducted a series of one-on-one interviews and focus groups among the following constituencies:

- Full-time and adjunct faculty
- Support staff
- Library staff
- Provost Office and Deans
- Senior administration
- Students – undergraduates, graduates and TAs

In addition, we conducted surveys of students, faculty, and TAs to gain a broader understanding of key issues. The surveys consisted of three sections — Educational Technologies, Online and Blended Learning Environments, and Technology Support — with a total of 35 questions, including

some that were adaptive to reduce the number and complexity of the inquiry. Where referenced in this report, survey numbers have been rounded to the nearest 1%.

We gathered input from instructional support staff through interviews and focus groups. In a separate but parallel effort, the Steering Committee conducted a survey of staff. The list of staff invited to participate in the survey was manually generated (unlike the faculty, TA and student surveys which were electronically generated from existing university-list-generated resources). In addition, a small number (26) responded to the survey. The results of the survey should be considered in light of these circumstances. Appendix B includes a summary of the input collected from Instructional Support Staff.

Organization of Reports

First, we lay out the Findings from the interviews and surveys, organized by major constituency group. This section is followed by a Conclusions and Synthesis section which follow from the assessment.

In addition, there are three supporting documents available from the project website, <http://provost.iastate.edu>:

- ISU Focus Groups Report - capturing the focus groups and one-on-one interviews;
- ISU Faculty Survey Summary Report - capturing the faculty survey results; and
- ISU Student Survey Summary Report - capturing the student survey results.

Glossary of Terms

Early in discussions, we realized that ISU faculty and staff had varying opinions and ideas about certain words, labels and their definitions. To ensure a common base for our discussions, MindWires staff, with input from the Steering Committee, developed a glossary of terms. Appendix A includes the full list of terms and definitions. These terms are also posted on the project website at <http://provost.iastate.edu>.

Two terms – blended course and online courses – were shared with focus group participants and were included in the surveys.

Below are selected terms from the list that were especially important in developing a common language during the project.

Online course	A course that is deliberately designed for online learning, with at least 90% of the learning activities scheduled for online methods. The class would only meet in person at the beginning of the term or not at all.
Blended course	A course that is deliberately designed for blended learning, with at least 25% of the learning activities scheduled for online methods and at least 25% scheduled for face-to-face methods.
Distance learning	General term for any type of educational activity in which the participants are at a distance from each other -- in other words, are separated in space. They may or may not be separated in time (asynchronous vs. synchronous). Online learning is one form of distance learning.
Flipped classroom	Courses that move the traditional lecture, or content dissemination, away from face-to-face hours and into online delivery outside of class time. The face-to-face class time is used for practice and actual application rather than for introducing the content being studied. The instructor then has time to help students face-to-face with specific problems.
Smart classroom	A traditional lecture style teaching space that has available technological equipment that can be used to aid and enhance instruction of a course. Typical equipment includes projectors, network hookup, dedicated computer, smart boards and audio-visual aids.

Executive Summary

The increasing enrollment at Iowa State has stretched all aspects of campus life, from faculty workloads, to physical facilities, to support services. This growth has created challenges and opportunities.

The existing physical plant is being stretched to provide the spaces for classrooms, studios and labs needed for teaching and learning the burgeoning enrollment. Some colleges are in the early stages of curriculum redesign to meet these challenges and are trying new approaches, including online courses and flipped classrooms. However, these changes are small and experimental and are not being shared broadly across campus.

Enrollment growth has also stretched faculty and staff. Faculty feel there is simply not enough time to meet all of the demands on their time, including time to explore new educational technologies and approaches. They are most concerned about maintaining the ISU brand of “high touch, high quality” education for which ISU is known. Colleges and departments have implemented obvious changes to meet enrollment needs – for example, hiring lecturers to teach additional sections –

and are now faced with exploring more non-traditional approaches, such as blended and online learning.

Based on the recent physical plant assessment, colleges have begun to redesign spaces for active learning intended to improve student learning. On the down side, these redesigned spaces reduce the number of seats available when, in fact, more seats are needed to meet class sizes. The redesigned classrooms are controlled by individual colleges and thus reduce the number of spaces available to the general university pool.

Students report broad usage of learning technologies such as LMS and classroom presentation systems, although the primary usage of the LMS is for administrative and not academic usage. In contrast to faculty, students expressed a desire for more consistent usage of technology across the university. For example, a consistent message from the student survey and focus groups was for one LMS to be used in all classes, with all faculty using the basics of the tool and using a consistent course layout. Within online or hybrid classes, many students expressed a desire for faculty to design the course appropriately for that medium and to keep materials up-to-date.

The following bullet points highlight key issues and trends identified during the assessment:

- In our experience, Iowa State stands out from most peer institutions in the extent of the following attributes:
 - **Broad adoption of the centrally supported Learning Management System.** The LMS is used broadly by faculty and students and viewed as the electronic place to go to find and share information about a course. It is rare to find such broad adoption at a diverse research university.
 - **Consistent classroom technology.** Technology provided by the University's supported pool of classrooms is highly consistent across the campus. These classrooms provide the basic elements needed for a Smart Classroom – projectors, network hookup, dedicated computer, smart boards and audio-visual aids. It is rare to see such broad, fairly consistent, classroom technologies within public research universities.
 - **Mission- focused.** The "high touch, high quality" brand for Iowa State is supported and promoted by faculty across the university. They cite it often as their common goal for the university. It is rare to find such a consistent acknowledgement and support of a university mission within research universities.

- All colleges cite growing enrollment as one of their top issues. The most important challenge is to maintain the ISU brand of "high touch, high quality" education for students. Most colleges are exploring new approaches to meet the challenges of providing instruction to more students.
- The physical facilities are stretched to accommodate the enrollment. And, at the same time, colleges are redesigning spaces for active learning – a good thing – which reduces the number of seats available – not such a good thing in the face of growing enrollment.
- General Assignment classes provide basic technology such as Internet access and display technology). Recently (past 3-4 years), the current budget model has given colleges more control of funds and the ability to redesign and remodel selected classrooms to meet diverse needs. These new classrooms, in turn, are creating an increasingly wider expectation of classrooms among all faculty. Scheduling of General Assignment classrooms to allow for increasing number of students and course sections is a growing problem.
- Time is the number one issue for faculty, whether it is finding time to explore new technologies, time to develop online courses, or time to resolve technology issues in the classroom between class changes.
- The centrally provided Learning Management System, Blackboard, is used widely by instructors and students, and is used mostly as an administrative tool or "file cabinet." Reliability of the educational technology tools is the most important concern for faculty and students.
- Online courses are a small, but growing, part of Iowa State's course offerings. Students appreciate the flexibility in scheduling an online course and often use online courses to supplement on-campus courses to keep on track for graduation. Opinions about online learning vary greatly among colleges and faculty. Faculty generally are open to online learning but many believe that it is not appropriate for what they teach, how they teach, and the type of student they teach. Both faculty and students are concerned about the quality of online learning and ensuring that it matches the quality of face-to-face teaching and learning. Faculty often cited the "high-touch, high quality" reputation of Iowa State as critical to its continued success and question how online learning will help or hinder this reputation.

FACULTY FINDINGS

Faculty views were captured in interviews, focus groups, and a survey. The most important issues identified are highlighted below. More information is available in the Survey Summary report and in the Focus Group Summary report (available on the project website at <http://LEARN.provost.iastate.edu> .

Educational Technologies

- The educational technologies most used by ISU faculty are those facilitating presentation and communication about course logistics.
- Smart Classrooms are in demand with a frequent call for better maintenance of the systems and standardization of equipment in every classroom. Faculty cite concern over the lack of access and time to the classrooms where they are assigned to teach. The 10 minutes class change is not enough time to set up the equipment, learn to use it, or deal with equipment problems (for faculty and for classroom support staff).
- The Learning Management System, while broadly employed, is used mostly as an administrative tool or “file cabinet” with only 48 percent using it for collaboration functionality and 54 percent for class discussions. When asked what additional LMS features faculty would like to use, most of the comments were suggestions for improvement on existing features, reliability and efficiency of the system, or substitutions to features of the system.
- A recurring theme in various parts of the survey is that faculty do not need more technology tools, they need reliable, standard, better-designed, and functional tools. The LMS topped the list as both the “biggest frustration” and “biggest satisfaction” with technology at ISU. However, when asked “If you could make one change to how technology is used at ISU, what would that change be?” the LMS was not a frequent response. The educational technologies least used by faculty are social learning tools and online testing systems.
- Online content sources supplement physical course materials and lectures with 49 percent of faculty using online publisher resources, 60 percent using free open educational resources like Wikipedia and YouTube, but very few report using content from MOOCs.
- Recorded lectures were mentioned often during faculty focus groups. Faculty know that students like having them available and see both positive and negative aspects. They see value in enabling students to review lecture material and to see the lecture when they are unable to attend class. However, faculty are concerned students will stop attending class and only view

the recorded lecture. Faculty expressed concern about the additional effort required to produce taped lectures and the need to learn and use specialized equipment.

Support for Academic Technology

- There is broad satisfaction with academic technology support services at ISU, with less than 10 percent dissatisfaction in most categories. Generally, faculty are more satisfied with their college support desk than with central services support, and are more likely to call on them when they need support.
- While faculty are pleased with the overall quality of help desk support and the professionalism of the staff, they feel there needs to be more timely support and that the support teams are understaffed and spread too thin.
- Satisfaction in training is highest when conducted on a one-to-one basis. Respondents commented equally with a variety of complaints and compliments. The compliments fell into two categories, 1) general comments of satisfaction with the services provided, and 2) compliments specifically for the CELT and ITS teams. The complimentary comments were either very general or uniquely specific and no themes emerged. The complaints and suggestions for improvement were predominately about slow time to response, lack of problem resolution, and poor customer service skills by help desk staff. The strongest theme was about the satisfaction with CELT support.
- Centrally provided workshops are too general to be helpful to most faculty; attendees spend 60 minutes to get 10 minutes worth of relevant information. Faculty are generally looking for just-in-time support.
- Faculty would like to see more information on what could make teaching online better and how to assess various teaching methods.
- Faculty would like to see more sharing and communication about what others are doing on campus.

Barriers to Teaching Excellence

- Faculty are not incentivized or rewarded for integrating technology into teaching. It takes considerable time and effort to do it well and faculty must take this time from other activities.
- Faculty would like to see new standards for what constitutes "teaching excellence" and standards for developing courses and materials using technology.

- Stability of technology and systems is essential. Faculty invest significant time and effort to learn and use technology. They want that investment to pay off for before the technology changes. "I lose a week of my life whenever the technology changes."

Online & Blended Learning

- Experience teaching an online course varied by college, with 50 percent or more of the faculty reporting experience teaching an online course in the Colleges of Agriculture and Life Sciences, Engineering, and Human Sciences, while the other colleges reported experience in online teaching of less than 30 percent. Experience teaching in a blended learning modality was low across the board with less than 35 percent reporting experience teaching at least one course, except the College of Human Sciences at 52 percent.
- For those with experience teaching an online course, satisfaction varied widely by college affiliation. The College of Human Sciences reported the greatest satisfaction teaching online, while the College of Design had the least satisfaction. Again, blended courses had higher satisfaction rates than online courses across the board.
- While experience teaching online and blended courses is low overall, the majority of the faculty are willing to consider teaching an online or blended course in the future (75 percent would consider teaching an online course and 84 percent would consider teaching a blended course). Of the faculty who would not consider teaching online or blended courses, most took the time to write an open-ended response explaining why they would not consider online modalities, citing the following reasons:
 - Many believe that online instruction is not appropriate for what they teach, how they teach, and the type of student they teach.
 - Many simply prefer the experience of being face-to-face and the personal interactions of classroom teaching.
 - The loss of non-verbal cues would be detrimental to their ability to teach.
 - Lack of belief in online learning; they think it is an inferior modality.
 - Others cite an increase in workload, the perceived inefficiency of an online system, and a lack of time to develop and administer an online course.
- Although a majority of faculty would consider teaching an online or blended course, they do not believe that the learning outcomes of online and blended modalities are equivalent with a face-to-face course (44 percent and 32 percent, respectively).

Motivators / Barriers

- The top three motivators to teaching an online or blended course included flexibility in the schedule, the ability to work from home, and to meet the demand of students who like online and blended courses.
- The top three barriers to teaching in these modalities included lack of time, funding and technical skills to develop an online or blended course.
- A concern of some faculty is that developing and teaching online is added as an overload and is not rewarded through either salary or promotion.
- Opinions vary widely on the value of online teaching & learning. Some believe ISU is missing a market by not offering online courses. Others believe that ISU should not compete with nationally recognized online programs who dominate this market. For these faculty, online is not ISU's strength.
- Faculty are concerned about the quality of online and question whether the topic / content they teach is appropriate for online teaching & learning. Faculty believe that online labs are no substitute for hands-on, face-to-face lab experience.
- The ISU brand is "high touch" and faculty are concerned that online courses do not support this brand. ISU students pay for an "on campus" experience, so faculty assume that is what they want, not online.

Classrooms & Technology

- The growing student enrollment has stretched the physical facilities to their limits. Classrooms are dated and are minimally maintained. Faculty cannot rely on technology being available or, if it is available, being in working order.
- Faculty expect technology in the classroom and expect it to work. Faculty aren't looking for more technology, but better ways to use what is already in the classroom. The fear of the technology failing makes some faculty avoid using it.
- Generally, classrooms provide the basic "smart classroom" technology. However, faculty described classrooms as not on par technologically with other institutions and not well maintained. There needs to be a higher minimum bar for standardization of an equipped classroom.

- In the face of increasing online offerings, faculty believe ISU cannot “de-prioritize physical space. Face-to-face, hands-on experience is what differentiates ISU.” The University needs to continue to invest in classrooms and teaching spaces.

Other Notable Findings

With several open-ended opportunities to comment, faculty raised issues not explicitly asked in the survey. Some used the opportunity to lobby for a thoughtful conversation about the role of technology in education. Others raised policy issues surrounding the use of technology in education and the move toward online modalities.

TA FINDINGS

Teaching Assistants were surveyed using the Faculty Survey instrument, and some of the graduate students participating in the student focus group also had teaching responsibilities. Teaching Assistants may teach or assist teaching or class administration but most are also still active students. Therefore, their views may reflect either a student role and/or a teaching role. TA participation in open-ended survey questions was weak on many questions. One TA commented that TAs generally don't plan to teach in the future and have little or no role in decisions about teaching at ISU.

For detailed information on survey results, see accompanying the Surveys Summary Report.

Educational Technologies

- The educational technologies most used by the TAs are those facilitating presentation (though to a lesser degree than faculty) and communication about course logistics, the LMS.
- Teaching Assistants more frequently use social networking sites, collaboration tools, and content from MOOCs than do faculty members but allow mobile device use by students less frequently.
- Smart Classrooms are used less by Teaching Assistants than by the faculty, which may be due to their role.
- The Learning Management System, while broadly employed, is used mostly as an administrative tool or "file cabinet" with only 50 percent using it for collaboration functionality and 50 percent for class discussions reflecting the pattern of use by faculty.
- Online content sources supplement physical course materials and lectures with 49 percent of faculty using online publisher resources, 60 percent using free open educational resources like Wikipedia and YouTube, but very few use content from MOOCs.

Online and Blended Learning

- Experience teaching in online and blended modalities was low (12 and 16 percent respectively).
- Although a majority of the TAs would consider teaching an online or blended course, they do not believe that the learning outcomes of online courses are equivalent with a face-to-face course (41 percent). Yet, they are more optimistic about blended learning with only 18 percent disagreeing with the premise that blended and face-to-face can achieve equal learning outcomes.

Technology Support

- There is broad satisfaction with technology support services amongst TAs, with less than 10 percent dissatisfaction in most categories.
- Generally, TAs, like faculty, are more satisfied with their college support desk than with central services support, and are more likely to call on their college help desk or a colleague down the hall when they need support.

STUDENT FINDINGS

Student views were captured in focus groups and a survey. The most important issues identified are highlighted below. More information is available in the Survey Summary report and in the Focus Group Summary report.

Educational Technologies

- Students would like to see improvement in ISU's software systems: to ensure the ERP systems, like registration, use more current interface design; have high reliability across campus; and provide more integrated tools.
- Students would like to see instructors receive more training on using technology effectively. Two specific areas mentioned were use of Blackboard and lecture capture.
- Students would like ISU to adopt standards and policies to ensure high quality of instruction, including keeping online classes fresh and best practices for using online instruction.
- The educational technologies most used by the faculty as reported by the students are similar to those reported by faculty with near universal use (greater than 90 percent) of presentation software applications, a learning management system, e-mail, and equipment in a Smart Classroom. The only differences noted in the reporting between the two groups were in the following categories:
 - use of classroom response systems (students report 48 percent, faculty report 29 percent)
 - use of live synchronous video systems (students report 8 percent, faculty report 26 percent)
 - use of online library resources (students report 40 percent, faculty report 67 percent)
- The Learning Management System, while broadly employed, is used mostly as an administrative tool or "file cabinet" with only 50 percent using it for collaboration functionality and 52 percent for class discussions. When asked what additional LMS features students would like to use, most of the comments were suggestions for improvement on existing features, mostly surrounding the grade book and calendar features. While the LMS appears high on the list as both the "biggest frustration" and "biggest satisfaction" with technology at ISU, the students view the problems differently than faculty.
- Students like using Learning Management Systems with the affordances of aggregated materials and information about their courses. Over 75 percent log in and check the LMS daily or multiple times per day. Many wish that all of their professors used an LMS. However, they

want faculty to use only one LMS, not Blackboard and Moodle and the instructor's own web site. Students report that nearly 70 percent have courses using multiple learning management systems. Students report weariness of trying to figure out the interface and functionality for multiple sites. And if the University could settle on one LMS, they seek uniformity in the appearance of each course site. However, these comments paled by comparison to the amount and insistence on the need for better Internet and Wi-Fi connection, in general and to the Learning Management Systems. Crashes, slow response, and the inability to complete assigned homework due to poor network infrastructure are the most frequent complaints and the biggest area for improvement from the student's perspective.

- Students appreciate the functionality of Smart Classrooms and generally believe it enhances their learning.
- While there were numerous ideas for more technologies to enhance learning, a common refrain was for more recorded videos of face-to-face lectures posted online. Students value the flexibility in time and space of online technologies and appreciate the ability to see a lecture they missed or the ability to review a lecture to gain more clarity or study for an exam.

Online and Blended Learning

- ISU students view online courses as a supplement to their coursework. They consider enrolling for online courses primarily due to availability (only way they could take the course); distance, time & convenience; to shorten time to graduation; as a summer activity from home. They do not consider online courses for "core" courses or those that require heavy interaction, for example, labs.
 - From Surveys: The top two motivators to taking an online or blended course were 1) flexibility in the schedule and 2) the ability to work from home. The top three reasons to not take an online or blended course are, 1) lack of motivation in an online or blended environment, 2) technical obstacles, and 3) lack of feedback from an instructor.
- Although a majority of students would consider taking an online or blended course, many do not believe that the learning outcomes of the online modality are equivalent with a face-to-face course (44 percent). When the same question is posed about blended learning having equivalent learning outcomes as face-to-face courses, almost 70 percent of the students are neutral, neither agreeing nor disagreeing. This may reflect their lack of experience in taking blended courses or not understanding what is meant by the term (an issue raised in the faculty survey, despite a definition).

- Students who would not consider taking online or blended courses, explain why they would not consider online modalities, citing the following reasons.
 - A preference for a face-to-face modality
 - A lack of interest in the modality
 - Meta-cognitive awareness that face-to-face classes are required for self-motivation
 - A desire for peer and instructor collaboration and discussion

Technology Support

- While there is not broad satisfaction with technology support services, there is likewise little dissatisfaction.
- Students prefer to seek help from a friend (70 percent), online (57 percent), or their instructor (56 percent) rather than from ITS Central Services (23 percent) or their college held desk (6 percent) and are satisfied with the results.

SYNTHESIS OF ISSUES

Looking across stakeholder groups we see the following synthesis of issues.

Educational Technology

The centrally provided LMS, Blackboard, is used pervasively by faculty, and students report accessing the LMS at least daily. Faculty acknowledge that an LMS is an essential tool to support their courses and would like to see improvements to features such as the gradebook and tools to support team work. Reliability and availability of the LMS is of primary importance to faculty and students. Faculty weigh the investment of learning and integrating a new educational technology tool against the potential benefit of features and functionality, so any new tool should provide obvious improvements to faculty. Faculty often expressed the desire to have a broader campus conversation about educational technologies and their effective use on campus and how the LMS fits in the suite of tools faculty need.

Faculty cite a large investment of time to prepare and maintain online materials. Given this investment, faculty want to be able to use these materials for multiple years. As one faculty asserted, "Every time we change to a different [LMS] system, I lose a week of my life." Students, meanwhile, are content with the systems, but want the materials done well and kept up-to-date.

While students very much appreciate the LMS as a place to aggregate materials and information about their courses, they would also prefer that faculty use only one LMS. (Instructors are currently using a combination of Blackboard, Moodle, and instructors' own web sites.) Students are required to figure out multiple interfaces, multiple sign-ons, keeping track of URLs for each course, and differing functionality.

With such heavy use of these technology tools, availability of these tools is of utmost importance to faculty and students. Students especially complained about crashes, slow response, and the inability to complete assigned homework due to poor network infrastructure.

Support for Educational Technology

Faculty appreciate the support services provided but support staff and would like to receive more of these services. Faculty believe, however, that staff are spread too thin. Just as the growing enrollment has stretched physical spaces, it has also stretched support services. Enrollment has increased, the number of faculty has increased, but there's been no corresponding increase in support services. (In some cases, staffing has been reduced.) Support staff are spread too thin and cannot meet the growing demands of the campus. Instructional support staff are busy supporting

the current technologies and thus can only provide minimal support and assistance to explore and integrate new academic technologies.

Generally, there is confusion among faculty about where to look for support services. Support is spread across local, college services and multiple central services (ITS, CELT, Library, Classroom Scheduling, FP&M). This makes it confusing to faculty to know where to seek help both to fix what's broken and to explore new pedagogical approaches.

Classrooms and Technology

Iowa State's classrooms are meeting the basic technological needs needed by faculty. General Assignment classes generally provide basic technology (projectors, network hookup, dedicated computer, smart boards and audio-visual aids).

However, faculty report that classrooms are not up to state-of-the-art spaces found at other institutions. With the current campus discussions about online ISU offerings, faculty fear that the physical teaching and learning spaces will be neglected.

Faculty are also frustrated by the scheduling of General Assignment classrooms. Classes are assigned to spaces based on number of students / seats and do not take into account the other aspects of the space. Faculty frequently asked for tables and chairs that are not bolted to the floor so that they can use small groups in the classrooms.

Faculty would like to be involved in designing classrooms to ensure these spaces meet their needs and are designed to allow them to try new pedagogical approaches.

Online and Blended Learning

Online learning at Iowa State has many different definitions and no common language is used across the campus to discuss online approaches. Early in the assessment process, we developed a glossary of terms (see Appendix A) to help address this issue. In particular, the definitions for online and blended learning were introduced at the beginning of each focus group and were included in the surveys.

Since responsibility for distance / online learning transitioned from Extension to individual colleges after 2008, each college has been figuring out independently what approach, if any, they will adopt for online learning. Only recently have colleges begun to share and discuss with each other online initiatives. To date, little has been shared across colleges about lessons learned and opportunities for collaboration.

Colleges vary greatly in how they view online. Some see it as an important source of new tuition revenue and an important service to offer to keep pace with peer institutions. Others see online as a threat to Iowa State's "high touch, high quality" brand and not appropriate for the content they teach.

However, all who participated in the assessment (faculty, staff and students) did agree that a critical issue is the quality of online instruction. A common concern for faculty is how to use online / blended approaches effectively. Some faculty are trying new pedagogical approaches that use technology. However, most are unsure of how to effectively use the technology and want to use the scarce resources they have wisely.

For faculty, time is a key barrier. Developing new pedagogical approaches takes time, time which is not explicitly rewarded by either promotion or tenure. So, they ask, why should I spend the time to develop online courses?

Iowa State students view online courses as a supplement to their coursework and appreciate the flexibility in time and space provided by online resources. Students share the concern over quality of online teaching and would like ISU to adopt standards to ensure quality and to provide training to faculty on how to use technology effectively.

RECOMMENDATIONS

Continue and enhance the support and infrastructure for the ever-present LMS

Iowa State's Learning Management System (Blackboard for the campus-wide tool) is used universally by faculty and staff and has more widespread adoption than other schools we have worked with. Given the heavy reliance on the LMS, the University should dedicate the necessary resources to ensure its availability and reliability, and to provide support and training to assist faculty in making the best use of the LMS.

Based on feedback during the assessment process, the key attributes of any LMS adopted by Iowa State are:

- **Ease of use.** Because faculty and students use the LMS on a daily basis, ease of use is a key feature. Campus users must be able to access and use the LMS with minimal training.
- **Inter-operability.** The LMS should work seamlessly with other Iowa State enterprise systems, such as class registration (to automatically populate students enrolled in the class) and grades (to submit final grades from the LMS). Integration with systems such as video asset storage and users' document storage can be effective and efficient for both the users and the university.
- **Reliability.** Although most comments about LMS reliability centered on problems occurring a couple of years ago, faculty and students still consider system reliability as one of the top priorities.

Build an academic technology community

Throughout the LEARN assessment, faculty and staff expressed their appreciation of the opportunity to engage in the process and hear from others — other faculty, as well as staff and administrators — about the teaching and learning ecosystem at Iowa State. Faculty commented on the "silo" nature at Iowa State, which can lead to a lack of communication between faculty and colleges. The LEARN process has created the foundation of an on-going discussion across campus about academic technology, teaching and learning which should be fostered.

Continue the campus discussion about online learning at Iowa State

During the assessment process, participants were eager to discuss online learning and its role at Iowa State. We recommend continuing the dialogue started during the assessment and addressing some key issues:

- Develop common definitions for terms and ideas. The list developed for the project is a good starting point and should be shared and modified based on the ongoing conversation.
- Share with the campus discipline-based examples from peer institutions on how online is being incorporated and used to enhance teaching and learning. These examples can be the foundation for discussions among faculty, staff and administrators about how online learning will meet Iowa State's institutional goals.

The near-term goal of campus dialogue is to develop a shared vision for the role of online and hybrid education initiatives - what the strategic goals should be for online learning, what guiding principles should inform collegiate and departmental initiatives, where online learning is most appropriate and where it is least appropriate, and how the institution should support development and teaching of online courses.

Need for Multi-media Support

Recorded lectures were mentioned in nearly all of our interactions with faculty, staff and students, and is more prevalent at Iowa State than other campuses we work with. Students appreciate having access to the lectures to review the materials and in those instances when they are unable to attend class. Faculty support these uses of video but are concerned about students eventually not attending class in favor of viewing the recorded lectures. Faculty also expressed concern about the time to learn to use video recording equipment and techniques.

Iowa State seems focused on classroom lecture capture without considering appropriate video production alternatives or support for faculty. As use of recorded lectures and other video technologies grows, Iowa State will need to develop services to support this usage, including:

- IT infrastructure to capture, store and retrieve video assets, and
- Faculty support to assist faculty in learning and using video

ISU faculty and staff are likely assuming that classroom lecture capture will work for any video component (online, hybrid, face-to-face) without realizing that online and blended courses can need more professional video segments. One of the key results of the recent interest nation-wide in online learning, particularly driven by the introduction of Massive Open Online Courses (MOOCs), is that students increasingly expect professionally-produced and engaging multi-media content. Classroom lecture capture is but one type of multi-media content needed in this medium. This growing set of expectations points to the need for a multi-media group (either centrally or at the collegiate level or both) that includes proactive studio and video production support.

Special Focus on Classroom Switch-over

Faculty repeatedly described the challenge of managing the 10-minute class time change being a real limitation on effective use of technology. Given the broad adoption of classroom technology, within a 10-minute time period the faculty leading the ending class need to disconnect any computers while taking questions from students who want further discussion at the end of class. At the same time and on the same equipment, the faculty leading the beginning class must try to get into the room, connect computers and / or start needed software applications, determine if all technologies are working, and be prepared to start teaching. Any problems where the technology does not work makes the problem much more difficult and frustrating.

While there might be a tendency to evaluate classroom technology design or course scheduling separately, we recommend that the university take a holistic view of the 10-minute class time change issue. The university should create a task force or sub-committee to broadly address methods to alleviate the problems with the 10-minute class time change and make the process more efficient. The scope for this group should include:

- Classroom technology design and reliability
- Technology support - knowing whom to call, ensuring support is available, enabling self-support
- Consideration of alternative approaches to improve efficiency of repair and updating of classroom technology (computers and software), such as a staging area to allow parallel disconnecting and connecting of computers and setup of software applications

APPENDIX A: LEARN GLOSSARY OF TERMS AND DEFINITIONS

The following definitions were developed for the LEARN project in order to provide a common base for terminology in discussions. The definitions for “blended course” and “online course” were also introduced during focus groups and included in the surveys. These definitions are also available on the project website at <http://learn.provost.iastate.edu> .

Term	Definition
Asynchronous learning	Learning that can happen anytime, anywhere; students do not all have to receive content simultaneously.
Blended course	A course that is deliberately designed for blended learning, with at least 25% of the learning activities scheduled for online methods and at least 25% scheduled for face-to-face methods.
Blended learning	Blended learning is any time a student learns at least in part at a supervised brick-and-mortar location away from home and at least in part through online delivery with some element of student control over time, place, path, and/or pace; often used synonymously with Hybrid Learning.
Cloud computing	Computing services delivered from external service providers, even if the services are run by an associated organization at the institution. Cloud services technically are both multi-tenant and SaaS (automatically provisioned, available on an as-needed subscription).
cMOOC	Based on the connectivist theory (Siemens), a cMOOC is "a gathering of participants, of people willing to exchange knowledge and experience for each to build upon." In contrast with xMOOCs, the core of the course (content, activities, artifacts) is built throughout the course by all participants, instead of delivered to learners as a highly-structured sequence. cMOOCs are generally more of a grassroots effort, using freely available online services such as blogs, wikis, and social media to connect all participants and enable conversations that lead to knowledge generation.
Competency-based education (CBE)	CBE is based on the broader concept of outcomes-based education (OBE), which starts with the desired outcomes and moves to the learning experiences that should lead students to those outcomes. OBE can be implemented in face-to-face, online, and hybrid models. In the narrower concept of CBE, the outcomes are more closely tied to job skills or employment needs, and the methods are typically self-paced.
Course management system (CMS)	See "Learning Management System." A CMS is organized around a course while, technically, an LMS should be organized around a learner. Most modern LMSs are actually CMSs.

Distance learning	General term for any type of educational activity in which the participants are at a distance from each other -- in other words, are separated in space. They may or may not be separated in time (asynchronous vs. synchronous). Online learning is one form of distance learning.
e-Learning	Learning content or interaction that is facilitated electronically, such as delivery of digital content or use of threaded online discussion.
ePortfolio	Curated digital representation of a person's work and skills, including work samples, digital badges, or testimonials. Many people use web 2.0 tools like blogs and social media to showcase their competencies, as the use of ePortfolios is becoming an industry standard in certain professions, such as computer sciences.
Educational technology (ed tech)	The theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning. Alternatively, the study and ethical practice of facilitating learning and improving performance by creating, using, and managing, appropriate technological processes and resources.
Hybrid learning	See "Blended learning"
Instructional design	The practice of creating "instructional experiences which make the acquisition of knowledge and skill more efficient, effective, and appealing." The process consists broadly of determining the current state and needs of the learner, defining the end goal of instruction, and creating some "intervention" to assist in the transition. Ideally the process is informed by pedagogically (process of teaching) and andragogically (adult learning) tested theories of learning and may take place in student-only, teacher-led or community-based settings.
Learning management system (LMS)	Software that provides an integrated suite of online resources and communications capabilities in support of traditional courses and can also serve as a platform for fully online courses. Many LMS implementations are integrated with student information systems (SIS).
Learning platform	An integrated set of interactive online services that provide teachers, learners, parents and others involved in education with information, tools and resources to support and enhance educational delivery and management.
Learning spaces	Anywhere that students gather to learn. These can be in physical locations (e.g. classrooms) or virtual locations (e.g. LMS); can be formal learning spaces (e.g. classrooms or labs) or informal (e.g. library or coffee shops).
Flipped classroom	Courses that move the traditional lecture, or content dissemination, away from face-to-face hours and into online delivery outside of class time. The face-to-face class time is used for practice and actual application rather than for introducing the content being studied. The instructor then has time to help students face-to-face with specific problems.

Massive Open Online Course (MOOC)	A MOOC is a model of educational delivery that is, to varying degrees, massive, with theoretically no limit to enrollment; open, allowing anyone to participate, usually at no cost; online, with learning activities typically taking place over the web; and a course, structured around a set of learning goals in a defined area of study. The range of MOOCs embody these principles in different ways, and the particulars of how MOOCs function continue to evolve.
Online course	A course that is deliberately designed for online learning, with at least 90% of the learning activities scheduled for online methods. The class would only meet in person at the beginning of the term or not at all.
Online service provider	Organizations (mostly for-profit companies, but with at least one non-profit variation) that help non-profit schools develop online programs. These providers, also known as online enablers, online program management or school-as-a-service, provide various services for which non-profits institutions typically do not have the experience or culture to support. Some examples of the services include marketing & recruitment, enrollment management, curriculum development, online course design, student retention support, technology hosting, and student and faculty support.
Open educational resource (OER)	Content licensed in a manner that provides users with the right to make more kinds of uses than those normally permitted under the law, at no cost to the user. Of primary concern are four rights: 1) Reuse: the content in its unaltered/verbatim form 2) Revise: adapt, adjust, modify, or alter the content itself 3) Remix: combine the original or revised content with other content to create something new 4) Redistribute: share copies of the original, revisions, or remixes
School-as-a-Service	See "Online service provider"
Smart classroom	A traditional lecture style teaching space that has available technological equipment that can be used to aid and enhance instruction of a course. Typical equipment includes projectors, network hookup, dedicated computer, smart boards and audio-visual aids.
Repository	Structured online database of learning objects contributed by users. Repositories usually allow users to add metadata to the learning objects in order to make them more organized and findable through search mechanisms. Many open educational resources and open access journals depend on repositories for file storage and retrieval.
Synchronous learning	A real-time, instructor-led online learning event in which all participants are either in same location or logged on at the same time and communicate directly with each other. In this virtual classroom setting, the instructor maintains control of the class, with the ability to "call on" participants. In most platforms, students and teachers can use a whiteboard to see work in progress and share knowledge. Interaction may also occur via audio- or videoconferencing, internet telephony, or two-way live broadcasts.

Web-enhanced course	Any course tied to the traditional classroom, with no reduction in the number of class meetings, but involving some sort of computer usage, say as in a software simulation, or design software for art or engineering applications but still anchored to the normal time spent in classes would fall in this category. Also in instances where usage of internet technology is not used to supplant any classroom activity or time spent in the classroom, but rather augment it. Traditional courses and web-enhanced courses are very similar, indistinguishable in most cases, and therefore they appear in a single category. These traditional, web-enhanced courses are not normally considered to be e-learning courses.
xMOOC	The MOOCs arising out of the Stanford, Harvard and MIT models that have been popularized in national media. Coursera, Udacity and edX are the primary examples. These MOOCs are modeled on traditional course materials, learning theories and higher education teaching methods. For example, they usually are organized around lectures and quiz-type assessment methods. Also these courses typically use little distributed content that's available on the Web outside the platform. Most course content is prerecorded video lectures which are posted on the courses' home page.

APPENDIX B: INSTRUCTIONAL SUPPORT STAFF FINDINGS

Instructional staff views were captured in interviews, focus groups, and a survey. The survey was conducted in a separate but parallel activity by the Steering Committee. The list of staff invited to participate in the survey was manually generated (unlike the faculty, TA and student surveys which were electronically generated from University resources). In addition, a small number (26) responded to the survey. The results of the survey should be considered in light of these circumstances.

The most important issues identified by instructional staff are highlighted below. More information is available in the Focus Group Summary report and the *Survey Results Summary* report (see the project website at <http://learn.provost.iastate.edu>).

Educational Technologies

The educational technologies most supported by the instructional support staff are presentation software, the LMS, and document sharing.

Technology Support Issues

- Staff would like to see more opportunities to increase sharing of ideas and experiences between college support units and central services. Staff are overworked and spread too thin; communication is not a priority.
- Staff believe that central support services are spread thin and need more staff. One consequence of this is that central support staff are not able to respond as quickly as colleges are to explore new technologies and services. As a result, colleges end up adopting their own technology solutions, and then are reluctant to adopt central services when available.
- ISU has added students and faculty but has not increased support services. Staff advocate for more resources to provide support for faculty and staff.

Online and Blended Learning

- Staff believe that faculty are expected to integrate technology but are not given encouragement or support to acquire the needed training.
- As perceived by staff, the major barriers to faculty teaching an online or blended course include
 - Lack of necessary technical skills
 - Time necessary to learn how to use technology

- Lack of time to develop a course
- Lack of necessary online teaching skills
- Staff express concern that there is no unified brand for ISU online courses, and that colleges and departments are developing independent approaches.