Technology and Teaching Innovation Task Force

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INTRODUCTION

Vice Chancellor Susan Jeffords charged the Technology and Teaching Innovation Task
Force with recommending ways to enhance UWB's use of learning technologies, with
specific attention to the following questions:

- What regional, national, and international models could be instructive for UWB?
- What unique opportunities might we have, given our location, interdisciplinary
  curriculum, and proximity to relevant industries?
- How can learning technologies benefit from and in turn benefit other aspects of
  the 21st Century Campus Initiative?
- How can learning technologies be used to enhance our ability to meet the needs
  of a diverse range of students?
- How can learning technologies be used to expand access to students from
  around the state who would otherwise have no access to a UWB education, with
  consideration for both geographic and transportation cost barriers?
- What options for distance education might enable UWB to offer educational
  opportunities beyond the physical campus, including locations such as Mt.
  Vernon or Bellevue? This may include software systems or teaching methods.
- How might learning technologies play a role in delivering a high-quality education
  in an environmentally sensitive manner?

To respond to these questions, the Task Force convened four subgroups:

- Faculty Development
- Online Learning
- Tools and Infrastructure
- Student Support

The individual subgroup reports are appended to this report.

PRINCIPLES

The Task Force members determined that the following principles should guide UWB
decisions regarding technology and teaching innovation:

1. Pedagogy should drive technology decisions rather than the reverse.

2. Teaching excellence is primary. We should make no decision based on expediency or efficiency if such action will threaten teaching excellence.
3. Vision, priorities, strategy, and goals should be established through a campus-wide planning effort with administrative leadership, in consultation with faculty and academic support staff. The administration should also provide appropriate resources to help implement these strategies and goals. Faculty and support staff should take responsibility for tactics to implement those goals in individual (physical and virtual) classrooms.
4. Faculty development is paramount for the successful integration of technology into teaching and learning and the implementation of new technology initiatives.
5. Proposals for new programs, degrees, centers, etc., should include consideration for pedagogical innovation that utilizes technology.
6. Assessment should be built into every newly adopted technology to help inform future decisions.

SHORT-TERM RECOMMENDATIONS (within a year)

1. Change the TLC Director position to an Assistant Vice Chancellor position, such as Assistant Vice Chancellor for Teaching and Learning, which reports to the Office of Academic Affairs. This position would also be included at administrative functions such as Academic Council. This change would emphasize UWB's commitment to teaching and learning by reflecting a shared leadership model in Academic Affairs, with teaching and learning on the same administrative level as information technologies and the library. Qualifications include:
   a. knowledge of and administrative experience with all teaching and learning issues, including teaching with technology;
   b. a track record of obtaining and implementing grants that involve faculty development and online learning;
   c. knowledge of and experience with advanced assessment and evaluation methods to satisfy funders;
   d. a Ph.D. and a record of publications in the field to help gain the respect and cooperation of the faculty.
2. Elevate Manager of Learning Technologies position to Director level, reporting to the Assistant Vice Chancellor for Information Technologies. Formalize a dotted line relationship to the Teaching and Learning Center. Integrating Learning Technologies with the TLC would coordinate and expand faculty support and enhance the focus on teaching and learning when using technology.
3. Hire an additional Learning Technologies staff member to support emerging media-rich programs, curricular innovation, and new modalities of curriculum delivery.
4. Provide funding for in-depth faculty learning communities. Learning communities have been shown to be highly effective in helping faculty learn and adapt new technologies and methodologies. In the past, the Worthington Technology Award helped fund a number of successful faculty institutes on online learning and digital storytelling. The Worthington has been repurposed, leaving no consistent funding for teaching and learning communities. Following the lead of many

prominent institutions, UWB should develop and fund an annual faculty development institute to be administered by the TLC and/or Learning Technologies.

5. Coordinate all faculty development resources through Academic Services for sustained support of teaching and research initiatives. We recommend specifically that the Administration support faculty development models with demonstrated track records of success within the UWB culture.

6. Encourage the development of blended learning courses (traditionally involving approximately half of credit hour time devoted to online learning). These can be an excellent half-step towards developing a full online learning strategy. However, blended learning also involves substantial investment in faculty development, course design, tech support, etc.—just not as much as a full online learning program. Instructors' experience with web-enhanced courses (use of discussion boards, posting class assignments, etc.) should not be confused with experience in blended learning courses; the former provides instructors with familiarity with the technology, but not the pedagogy, course design, support issues, etc.

7. Use existing infrastructure and free, web-based tools during this time of economic uncertainty. Any new resources that become available in the next two years should be focused on staffing to provide faculty and staff support rather than on additional hardware or software infrastructure.

8. In consultation with interested faculty, designate Information Technologies as the unit responsible for selecting the specific tool to be supported within each toolkit category (full list in the sub-group report below). This would include:
   a. Establishing a process to continually assess how the toolkit is meeting needs, looking at new tools and new categories of tools, and making annual recommendations for changes.
   b. Having IT coordinate with and include faculty representation in the tool evaluation process.
   c. Convening a faculty advisory group to assist the Learning Technologies staff in the selection of an appropriate "tool box" of Web 2.0 and other tools to support a range of teaching and learning goals. Selected tools will be supported by IT staff; faculty development will focus on uses of these particular tools.

9. Establish focus groups in collaboration with ASUWB, Student Technology Fee Committee members, and Student Activities Fee Committee members to better understand students' experiences with online learning, including hybrid courses, and how they would like to be supported for learning technologies.

10. Conduct research on best practices for supporting students with learning technologies.
   a. Contact UW's Educational Outreach and our colleagues at Washington State University for advice regarding best practices for supporting students.

11. Develop a model to ensure adequate infrastructure is provided for new initiatives and programs.

LONG-TERM RECOMMENDATIONS (beyond one year)

1. Prioritize the faculty development incentives recommendations, and implement as many as possible in the next biennium. Convene a group or task force to develop such a model. This task force would include faculty, Learning Technologies, Academic Services staff, and other appropriate people. Examples of faculty development incentives include:
   a. time for development (course release, summer salary, funding for TA or RA) ;
   b. rewards for developing expertise/creative use of technology which could include internal mini-grants, student hourly help or other such type of funding ;
   c. recognition in promotion, tenure and merit reviews for scholarship in teaching and learning areas such as integrating technology into teaching;
   d. annual awards for technology teaching innovation creation (possibly the TIC Awards?) to showcase technology use in effective student learning;
   e. a faculty fellows program in which a faculty member would get release time to work on faculty development projects, which would enhance faculty development, create new collaborations and develop faculty mentors.
2. Add a faculty development advisory function to the GFO structure, perhaps by emphasizing such a function for the Instructional and Research Support Committee (IRSC) or establishing a separate GFO committee dedicated to teaching and learning.
3. Determine an appropriate national technology survey for UWB students to obtain data on student technology use and attitudes.
4. Develop a distance education goal for the next five years. Any long term recommendation for a delivery method would be dependent on the strategic direction defined by that goal. A second task force may be necessary to plan the implementation of the distance learning goal.
   a. Initial implementation of an online learning initiative should be through an existing program that has established strengths (collaborative faculty, interest in online pedagogy, established student interest in online courses, strong reputation, etc.). Small-scale incremental implementation has hidden costs to faculty and students, and ultimately to the success of online learning at the campus. Further, it is much harder to achieve long-term efficiencies. Therefore, small-scale implementation should be accomplished in a way that facilitates scaling upward if and when necessary; i.e., plan for greater scale from the beginning rather than implement in a piecemeal fashion. Additional recommendations for the initial implementation of online learning are in the online learning section below.
   b. The pilot program faculty and staff should be formally involved in planning for "scaling out" on-line learning to other programs.

c. The faculty should identify potential curricular areas that could be delivered on-line as self-sustaining programs.
d. Establish clear learning goals for Teaching and Technology Innovation initiatives and implement a system of assessment that will document learning outcomes/cost-benefit analysis/instructor satisfaction.

APPENDIX A: SUB-GROUP REPORTS

FACULTY DEVELOPMENT

> "Faculty Development is both a comprehensive term that covers a wide range of activities ultimately designed to improve student learning and a less broad term that describes a purposeful attempt to help faculty improve their competence as teachers and scholars."
> - Eble & McKeachie (1985)

The rapid onset of new technologies and teaching methodologies, the changing nature of the student, and the increasing number of new teaching initiatives greatly increase the need for faculty development. The Horizon Report 2009 lists as a critical challenge the need for new learning models that can help teach information, visual, and technological literacy to younger generations. Research shows that faculty development has a profound effect on enabling faculty to improve their teaching and research, develop new active learning pedagogies and incorporate technology into traditional curriculum (Sorcinelli, 2006; Ali, 2006).

Faculty development allows faculty to think deeply about their teaching and students and provides the opportunity to engage in a collegial community. Investing in faculty development provides large benefits for the institution as well since not only individual courses but also institutional culture and values get changed, helping an institution better meet the needs of students. Faculty development in technology helps the institution be flexible in meeting the new and evolving demands in higher education.

Yet there are significant challenges that can often undercut faculty development initiatives, stunt the adoption of new methodologies, and inhibit institutional change:

- Lack of a reward or incentive structure for faculty, including use for promotion and tenure
- Lack of time for faculty to engage in faculty development projects
- Uncertainty of institutional priorities or values
- Uncertainty of the value of certain pedagogies such as distance learning
- Lack of resources for in-depth and sustained faculty development initiatives

A number of studies have looked at best practices for faculty development with technology and other areas, including the Consortium Benchmarking Study "Today's Teaching and Learning: Leveraging Technology" and Virginia Polytechnic Institute and State University's "Faculty Development for the Net Generation." Some key faculty development principles from those studies include:

1. **Effective faculty development requires time, focused study, collegial dialogue and incentives.**

     a. Sufficient time must be provided by the institution for planning and implementation of technology-based teaching initiatives.

     b. Best-practice organizations keep their focus on teaching and learning issues, not the technology itself (though faculty need to gain minimum comfort levels with technology before attaining deeper educational benefits).

2. Faculty development must be part of a larger institutional commitment to lend credibility. It also must work within the institutions' culture.

     a. Best-practice organizations have steadily moved toward strategic investments and firm criteria for funding projects.

     b. Best-practice organizations do not wait for or depend on external funding for their faculty instructional development initiatives.

3. Faculty development works best when there are a variety of programs, models and methods offered.

     a. Curriculum redesign is not taught to faculty members but rather emerges through project-oriented faculty development initiatives.

Based on these studies, there are a number of recommendations that, if implemented, can help enhance faculty development at UW Bothell, improve teaching and learning with technology and support key elements of the 21st Century Campus Initiative:

1. **Make faculty development with technology and other teaching and learning areas an institutional priority at UWB.**

a. To enhance faculty development with technology, we propose a new collaboration model in which the current position of Manager of Learning Technologies would become Director of Learning Technologies, who would report to the Assistant Vice Chancellor for Information Technology and have a dotted-line reporting relationship to the Director of the Teaching and Learning Center. Integrating Learning Technologies with the TLC would coordinate and expand faculty support and enhance the focus on teaching and learning when using technology. Learning Technologies would also continue to be part of the department of Information Technologies to promote effective academic support for faculty and students. This new reporting model would be evaluated two years after implementation to ensure that it is the best model for providing excellent faculty development support.

b. With the ever-increasing use of technology in existing and new programs, we recommend that an additional Learning Technologies staff member be hired to adequately support emerging media-rich programs, curricular innovation, and new modalities of curriculum delivery.

c. We recommend that the TLC Director position change to an Assistant Vice Chancellor position that reports to the Office of Academic Affairs. This position would also be included at administrative functions such as Academic Council. This change would emphasize UWB's commitment to teaching and learning by reflecting a shared leadership model in Academic Affairs, with teaching and learning on the same administrative level as information technologies and the library.

d. We recommend adding a faculty development oversight function to the current GFO structure.

e. We recommend that the head of faculty development be a recognized leader who can champion faculty development issues, develop grants, provide innovative support structures for new initiatives, and promote innovation in diverse faculty development topics ranging from teaching with technology to service learning and assessment. To increase effectiveness, this person should have significant faculty experience.

2. **Restore and enhance funding for in-depth faculty learning communities**. Learning communities have been shown to be highly effective in helping faculty learn and adapt new technologies and methodologies. In the past, the Worthington Technology Award helped fund a number of successful faculty institutes on online learning and digital storytelling, yet the Worthington has been repurposed, leaving no consistent funding for teaching and learning communities. Following the lead of many prominent institutions, UWB should develop and fund an annual faculty institute. Such an institute would build on the successful UWB teaching technology institutes developed by Carol Leppa, Andreas Brockhaus, and Jane Van Galen. This could then be the basis for creating a faculty technology learning community to share best practices and develop publications.

3. **Provide faculty incentives and rewards**.
   a. Time for development (course release, summer salary, funding for TA or RA)
   b. Rewards for developing expertise/creative use of technology which could include internal mini-grants, student hourly help or other such type of funding
   c. Recognition in promotion, tenure and merit reviews for scholarship in teaching and learning areas such as integrating technology into teaching
   d. Annual Awards for Technology Teaching Innovation Creation (possibly the TIC Awards?) to showcase technology use in effective student learning
   e. A faculty fellows program in which a faculty member would get release time to work on faculty development projects, which would enhance faculty development, create new collaborations and develop faculty mentors

4. **Have the administration clearly outline teaching and teaching with technology priorities**. Coordinate resources through the faculty development office for sustained support of these teaching and research initiatives.

5. **Recognize the need for infrastructure support for new technology initiatives**. Innovation requires appropriate technology support so that faculty can concentrate on how best to incorporate technology into teaching.

6. **Continue to support and enhance the variety of training modalities for faculty to provide "just in time" support.** "When faculty request professional development, we should provide exactly what they need precisely when they need it" (Taylor & McQuiggan, 2008). Training opportunities could range from one-on-one and mentoring to multi-day sessions to classroom workshops to online self-paced modules to web repositories.

7. **Participate in national and other student and information technology surveys**. Studies such as the ECAR Survey will help provide useful data on UW Bothell students and their use of technology.

8. **Establish and/or continue memberships with pertinent higher education educational technology organizations such as ELI (Educause Learning Initiative).**

ONLINE LEARNING

Given the limited time available, we chose to focus on broader policies and practices rather than specific technologies and implementation strategies. It should be also noted that the conclusions of this report suggest that making such decisions are a secondary step to decisions regarding which academic program(s) will pilot online learning, the securing of necessary administrative and staff support, etc. Where applicable to an issue, the report does comment on specific technologies, strategies, etc. All of the recommendations are based on the "best practices" literature regarding online learning, which is fairly consistent and largely without controversy. The best practices literature suggests the following:

1. The administration should take a clear position about its relationship to the online education strategy, and should take a leadership position in implementing it. The administration should be clear about:
    a. The degree of commitment of financial resources to all aspects of the strategy (faculty development, technology start-up and maintenance costs, course design and technology support, administrative and academic support costs, etc.).
    b. The connection between campus mission and online strategy.
    c. The importance of gaining faculty support for the strategy, and buy-in from the targeted programs (see below). This includes the need to provide full training and course design support, ongoing tech support for classes, and recognition of the implications for tenure, promotion and merit.
    d. The centrality of faculty development to the success of any online learning program, including, if possible, instructor involvement in an online course where they experience the process as students.
2. Initial implementation should be through an existing program that has established strengths (collaborative faculty, interest in online pedagogy, established student interest in online courses, strong reputation, etc.). Small-scale incremental implementation has hidden costs to faculty and students, and ultimately to the success of online learning at the campus. Further, it is much harder to achieve long-term efficiencies. Therefore, small-scale implementation should be accomplished in a way that facilitates scaling upward if and when necessary; i.e., plan for greater scale from the beginning rather than implement in a piecemeal fashion.
3. The first academic program to pilot an online learning curriculum should not take on any additional resource burdens. Instead, the administration should cover all necessary costs, with the understanding that the participants in the initial program will serve as resources for next program, and infrastructure, technology, course design can be scaled out and thus efficiencies will be gained for the entire campus.
4. First phase should be designed with the intent of scaling out as many aspects of the program as possible, with minimal customization for the specific pilot program

in terms of type of tech support, hardware needs, etc. However, the program should be designed with attention to the specific pedagogical needs of the program.

5. Once the strategy is determined, the administration should develop a reasonable estimate of short-term and long-term costs, as well as fixed and variable costs. All successful online learning strategies demand higher up-front costs in terms of time, energy, institutional focus, and money in comparison to long-term costs (see notes on efficiencies, below). These costs, if the strategy is successful, can be viewed as investments that will help lower costs in the future. However, the administration should not underestimate the need to maintain funding for ongoing costs like hardware and software upgrades, academic support services, help desk turnover and training, etc.

6. All aspects of the student experience, including training, tech support, admissions and advising, hardware/software needs, etc., need to be considered carefully and integrated into the strategy. Instructor training and support issues, including the degree of involvement of full-time faculty, should also be seen as a student learning and satisfaction issue. Students have a right to expect that online courses will be treated as equally important as traditional courses taught by full-time faculty.

7. Costs should include the need for expanded academic services specific to the online learning experience, for both instructors and students. In particular, it should be noted that online learning students may not have access to a traditional library, and in any event may have different information literacy needs, depending on the course. This also applies to writing and quantitative skills support.

8. A separate administrative position is needed to support funding and implementation of an online learning program and the expanded use of technology in general. Although there are numerous funding sources for online learning initiatives, they usually demand innovative methods and/or specific targeted underserved student populations, and rigorous evaluation of the initiative. For UWB, one option would be an expanded Teaching and Learning Center Director position elevated to that of Assistant Vice Chancellor. This person would supervise the Educational Technology position, and eventually one or more course designers, grant administrators, etc. This person would report directly to the Vice Chancellor for Academic Affairs. This person's qualifications should include:
   a. knowledge of and administrative experience with all teaching and learning issues, including teaching with technology
   b. a track record of obtaining and implementing grants that involved faculty development and online learning
   c. knowledge of and experience with advanced assessment and evaluation methods to satisfy funders
   d. a Ph.D. and a record of publications in the field to help gain the respect and cooperation of the faculty.

9. Different types of online learning pedagogies and course designs come with varying degrees of costs and benefits, especially the difference in fixed costs and

variable costs. Virtually all successful online courses come with substantial upfront fixed costs (faculty training; course design; hardware and software purchase, if necessary; etc.) Institutions can gain some efficiencies in fixed costs by using trained faculty members as peer mentors, having trained instructors repeat the same course or similar courses, using course design templates, etc.

10. Variable costs provide a different set of issues when looking for efficiencies. Highly interactive courses (usually limited to 20 to 25 students) do not have many built-in variable cost efficiencies, because of the amount of time required to teach each course, and the need to add instructors as additional students are added using strict ratio formulas. These courses are also more expensive because of the lower student-faculty ratio compared to the UWB norm. One tactic for containing variable instructional costs for these courses is to hire low-cost labor (graduate students, part-time faculty, emeritus professors, etc.), either as a higher proportion to full-time faculty or exclusively. Private for-profit institutions gain efficiencies through completely standardized content and low-cost labor who receive training and incentives to stay with the institution but no employment protection. None of these options would appear to be acceptable to UWB.

11. Using students as teachers (most often, in collaborative learning settings) is one way to increase student-instructor ratios without increasing instructional time (or maintaining student-instructor ratios and decreasing instructional time, thus making the experience more palatable for instructors). Web 2.0 technologies are particularly suitable to this pedagogical approach, although established technologies (such as Blackboard) can be employed as well. However, it is important to note that successful implementation of these strategies usually requires special training of faculty and expertise in online collaborative learning course design. Further, students who come to a course without established intellectual capacities (that is, courses without pre-requisites or other requirements) require initial training and relatively heavy intervention strategies early on, and ongoing monitoring. Students who come to a course with shared advanced capacities can take on much more of the teaching activities, although again investment in course design and instructor training is required.

12. Unless UWB is willing to take on the increased costs of highly interactive courses unaided, it should identify efficiencies and/or stable revenue streams to offset them. One source of additional revenue would be to develop self-sustaining programs in popular fields promising graduates higher income and/or greater employment opportunities upon graduation. Further, as they are often graduate programs, they can usually depend on greater levels of informed participation from students, and can integrate students' real world experience into the course design, thus lowering demands on the instructor's time. However, there are moral/ethical implications (equitable access, changing employment markets, etc.) that need to be considered. Further, these types of programs are limited in number, and usually require a higher level of production values, technological sophistication, etc. because of the expectations of participants involved.

13. Another possible source of fixed- and variable-cost efficiencies is to offer courses that demand limited instructor involvement based on course design. These

include lecture-based courses (streaming or text-based lectures) and computer-assisted learning courses, which integrate research on student learning in the course design and often have interactive components, usually involving tutorial and assessment loops. The former requires lower up-front costs than the latter, but research suggests they are less effective in short-term and especially long-term student learning.

14. Blended learning courses (traditionally involving approximately half of credit hour time devoted to online learning) can be an excellent "half step" towards developing a full online learning strategy. However, blended learning also involves substantial investment in faculty development, course design, tech support, etc.—just not as much as a full online learning program. Instructors' experience with web-enhanced courses (use of discussion boards, posting class assignments, etc.) should not be confused with experience in blended learning courses; the former provides instructors with familiarity with the technology, but not the pedagogy, course design, support issues, etc.

15. UWB needs to implement assessments of student learning outcomes, satisfaction and retention, instructor effectiveness and satisfaction, cost-to-benefit ratios, etc., from the start. The history of online learning programs is littered with institutional disaster stories that have cost hundreds of thousands of dollars and immeasurable amounts of time and energy while alienating students and faculty.

Conclusion

Online learning provides numerous advantages for students and the institution. There are some advantages for certain faculty members, but in general, faculty view online learning as an imposition and a time/energy cost (at least initially), and need to be compensated for both in order to achieve their positive involvement with online learning. In a well-run online learning initiative, faculty, staff, students, and administrators do not bear costs of wasted time and energy. In the cases noted above, students generally do not bear the additional costs of online learning. Therefore, an institution needs to be realistic in its budgeting for both short-term and long-term costs and be sure of its funding sources when it launches its online learning initiative. The best practices literature does not provide a strategy for a quick, inexpensive and successful online learning strategy, but it does provide suggestions for successful online learning strategies that make the best use of faculty, administrative, student and institutional time, energy and money while delivering clear advantages to all stakeholders.

TOOLS AND INFRASTRUCTURE

Introduction

The Tools and Infrastructure subgroup framed its analysis of potential tools to support teaching and learning at UW Bothell within three broad questions:

1. Whether in classes held on campus or offered through some form of distance education, how can UWB employ technology tools to enrich teaching and learning? Rather than looking only at tools that would enable faculty to digitize conventional pedagogies (such as video delivery systems or platforms for document exchange), we looked particularly at tools that would enable students and faculty to learn in new and potentially richer ways with tools that support collaboration, communication, and creation in new ways.
2. How can UW Bothell best serve the needs of students who, increasingly, are growing up immersed in digital media and who take for granted their active engagement in online communities? We recognize the tremendous potential for learning within the plethora of social and professional digital networks; at the same time, we recognize the responsibility of universities to educate students to be critical, skilled participants within new media.
3. How can UW Bothell move forward into new digital learning technologies at the very time that we face serious resource constraints? Where can we leverage free/low cost tools and where must we strategically plan for more systematic investment in learning technologies for our campus?

Our discussion and recommendations attempt to address these questions.

Current support structure for online learning and learning technologies

Information Technologies (IT) staff resources to support online learning are mostly limited to the Manager of Learning Technologies, Andreas Brockhaus, who helps faculty members incorporate technology into their pedagogy. Much of his time is spent supporting the use of Blackboard, but he has also helped faculty use blogs, wikis, digital storytelling, and many other technologies.

Some resources maintained by IT or others at UW Bothell are already available for use in online learning. The following list provides brief information about some of those resources. It does not include the large variety of web-based tools already in use by faculty and students.

- Blackboard – a course management system that serves as a home page for a class, often used as the main point of contact between instructors and students. Approximately 65 percent of courses at UW Bothell use Blackboard during any given quarter. Faculty can post course materials and announcements,

communicate with students, and facilitate discussions. Students can access course materials, submit papers, work in groups, and communicate with faculty.

- Email – asynchronous communication between students and faculty, used to exchange papers and quickly ask non-public questions relating to the course.
- E-Reserves – allows faculty to share copyrighted and non-copyrighted material.
- Library off-campus access – allows off-campus access to subscription library resources.
- UW Bothell file servers – allows faculty and students to share and upload files from any computer to the UW Bothell network (http://www.uwb.edu/computing/students/remotestudentfileserver.xhtml)
- Visual Resources – http://www.uwb.edu/vr/ for viewing copyrighted and non-copyrighted images.
- Quantitative Skills Center Online Service – conducted over Blackboard (http://www.uwb.edu/qsc/onlinetutoring.xhtml)
- Writing Center Online – conducted over telephone and online submission form (http://www.uwb.edu/writingcenter/online/)
- Catalyst WebTools – web tools available to UW faculty and students; may be used for online grade submission, course homepages, surveys, and other uses (http://catalyst.washington.edu/web_tools/index.html).

Current resources to support new initiatives

By implementing a single set of tools supported by IT's Learning Technologies, we could focus on providing orientation and training to faculty in the use of those tools. Student workers could be trained to help with basic technology questions, leaving the Manager of Learning Technologies to work with the pedagogical aspects. This would likely provide adequate resources for a small pilot project to test the online learning waters in a limited way. Any institutional commitment to online learning would need to include additional resources for user support in addition to infrastructure and technical support.

Trends in learning technologies and online learning

The higher education online learning arena is undergoing great change, with new tools and technologies in constant development. More and more tools are freely available on the web, decreasing the need to purchase and maintain systems locally. Many students come to us already accustomed to online networking and communication. There is a trend in higher education to take advantage of that experience students already have and connect them to the rich learning networks now thriving in the new Read/Write Web 2.0 landscape, where academics, professionals, policy-makers, citizens, and students all interact through rich user-generated media.

Every year the New Media Consortium collaborates with the EDUCAUSE Learning Initiative to publish the Horizon Report, a review of emerging trends in technologies related to teaching and learning and key trends and challenges affecting the practice of teaching and learning. The 2009 Horizon Report can be found at http://net.educause.edu/ir/library/pdf/CSD5612.pdf.

Key Trends Reported in the 2009 Horizon Report

- "Increasing globalization continues to affect the way we work, collaborate, and communicate." Growth in available tools means that teaching and learning transcend traditional borders, taking education outside the classroom and beyond the borders of our communities.
- "The notion of collective intelligence is redefining how we think about ambiguity and imprecision." Students want to be active participants in learning. They are used to easy access to content and knowledge, and technology gives them the ability to contribute to the growing body of knowledge available on the web. With so many voices, there may be multiple right answers to problems.
- "Experience with and affinity for games as learning tools is an increasingly universal characteristic among those entering higher education and the workforce." Traditional educational methods are not engaging students enough. They expect more social interaction and active participation.
- "Visualization tools are making information more meaningful and insights more intuitive." Visual literacy is becoming more important, but is just evolving as a field.
- "As more than one billion phones are produced each year, mobile phones are benefiting from unprecedented innovation, driven by global competition." The way we view computing resources is changing. Most students now (or soon will) carry a powerful computer in their pockets, and universities would do well to consider how to leverage these resources in times of shrinking budgets for campus technologies. Our strategic planning for tools and infrastructure should be mindful of tools that students bring to the table, even if such tools have not traditionally been conceptualized as learning tools.

The Horizon Report also lists the following critical challenges facing colleges and universities over the next five years:

- "There is a growing need for formal instruction in key new skills, including information literacy, visual literacy, and technological literacy." Writing and research skills have changed, and students need to be technologically adept in order to collaborate. See MIT's New Media Literacy Project at http://newmedialiteracies.org/ for more specific delineation of new key skills.
- "Students are different, but a lot of educational material is not." We need to adapt to current student needs and learning styles. Assessment needs to change as well.
- "Significant shifts are taking place in the ways scholarship and research are conducted, and there is a need for innovation and leadership at all levels of the academy." Assessment for tenure and promotion may need to change in order to reflect new practices.
- "Higher education is facing a growing expectation to make use of and to deliver services, content, and media to mobile devices." There is an opportunity for reaching students in new ways.

There also seems to be a current trend to collaborate on and to standardize learning management systems. Many schools rely on a learning management system such as Blackboard to provide a common course tool. Many of them are evaluating options and thinking about doing things differently. At UW, a wide variety of learning management systems are in place, with different schools and colleges making different purchasing decisions and supporting different products. There is an effort underway to think about the possibility of standardizing some online learning options at UW. UW is also examining options with cloud computing, in which we would make legal arrangements with web-based software providers for services such as file storage. UWEO is examining options for a new course management system, as well. And right now the Legislature is looking at a bill that would encourage Washington colleges and universities to collaborate and standardize on similar products. We need to keep an eye on all of these activities. If there is a possibility that we can collaborate with other institutions or join a consortium for learning technologies, we should consider it seriously.

Recommendations

In developing our recommendations we looked at course functions that are common across most courses. We have not addressed technology needs for particular specialized courses or degree programs. The following components of online teaching and learning were identified.

Students need to:

- Access common course materials
- Access supplemental course materials (e.g. extended readings/professional resources/websites/archives)
- Organize, synthesize, and analyze information from the field
- Collaborate with peers to learn material (discussions, sharing information and resources)
- Receive ongoing feedback on emerging thinking from peers and faculty
- Pose basic procedural and logistical questions of faculty and peers
- Collaborate with peers to create class projects (papers, projects)
  - These may increasingly involve multimedia and other digital products, e.g. annotated digital video of a science investigation rather than a written lab report
- Conduct original research
- Demonstrate competence with basic "skills" in a field
- Demonstrate what has been learned in a variety of ways:
  - exams
  - products
  - (group and individual)

- o multimedia
- o written
- o aesthetic
- o performance
- "Meta-learning" via portfolios or other "over time" documentation
- self-evaluation
- Archive projects and learning for grad school/job applications

Faculty need to:

- Disseminate basic course information:
    - o "print"
    - o digital
    - o lecture and supplemental lecture materials/notes
- Organize and provide access to supplemental course materials (e.g. extended readings/professional resources/websites/archives)
- Monitor students' ongoing understanding over the term and intervene when necessary
    - o privately
    - o collectively
- Direct students to the tools and resources that they need to be successful in the course
- Assess a variety of learning goals
    - o writing
    - o speaking
    - o foundational knowledge
    - o ability to apply knowledge to tasks requiring evaluation and creation
    - o collaboration
    - o skills of a particular domain
- Pose questions to scaffold learning
- Monitor academic integrity
- Retain artifacts of student learning for accreditation reviews

We recommend the development and maintenance of a set of tools designed to address these common teaching and learning functions in online learning, some pieces of which are already in place and others are recommendations for future considerations.

- Recommendation for short-term implementation
    - o The task force recommends that we use existing infrastructure and free, web-based tools during this time of economic uncertainty. Any new resources that become available in the next two years should be focused on staffing to provide faculty and staff support rather than on additional hardware or software infrastructure. There are issues related to "free" tools that should be noted.

- ▪ <u>Hidden costs</u>. Although there often is no cost for hardware or software licensing associated with these tools, the user support cost can be considerable and harder to define. Although some faculty members are already using these tools, they are doing so with very little technical support, and they are generally acting as technical support for their students. Support for these tools can include resources like user community support options, in which users turn to people outside the UW Bothell community for help and suggestions. Broadening the support for these tools will require additional resources.
- ▪ <u>Stability and access</u>. Since these tools are web-based and not hosted by UW or UW Bothell, we have no control over their accessibility or stability. They could be down during important class times. Their business model might change, and with it their basic functioning. They could disappear without notice. We do not believe this means the products should be avoided; it does mean faculty should be aware of the potential impermanence of data.

- • <u>Recommendation for tool selection</u>
  - o Information Technologies should be responsible for selecting the specific tool to be supported within each toolkit category. A process should be established to continually assess how the toolkit is meeting needs, look at new tools and new categories of tools, and make annual recommendations for changes. IT will coordinate with and include faculty representation in the tool evaluation process.

- • <u>Recommendation for long-term implementation</u>
  - o Moving into a broader arena of distance education will require substantial resources as well as a change in campus vision. The direction of that vision should determine the strategy for developing a long term plan for distance education. The task force recommends that the campus develop a distance education goal for the next five years. Any recommendation for a delivery method would be dependent on the strategic direction defined by that goal. If, for example, our campus goal is to have a set of degrees available entirely online, the infrastructure required would be very different from that required to meet a goal of 50 percent of courses being available as hybrid classes.

<u>Toolkit Recommendations</u>

The options listed here are those with an established history of use in supporting teaching and learning in K-16+ education. Some methods will work better for some programs than others. For example, students in the Education Program are likely to use freely available wikis and blogs in the careers, making those tools very appropriate for their use. In other programs, group tools available through an LMS might be the most

important feature of distance education. The decision about which tool to use should be based on pedagogy rather than technology, and we should keep in mind that we are preparing people for life-long learning supported by digital social and professional networks, and for the forms of communication and collaboration that they will be expected to employ in the workplace.

- **Learning Management System (LMS).** UW Bothell has been using Blackboard for nearly ten years, and it addresses many of the course functions listed above. We recommend that IT do an analysis within the next two years, in coordination with faculty representation, to determine the future of our LMS. Should we stay with Blackboard Basic, move to Blackboard Enterprise, or move to another platform? We need to pay close attention to work being done at Seattle to standardize LMS offerings.

- **Wikis.** *Function:* Compile text, media, documents, links and other course materials in an easily-editable website. Multiple users can edit pages; wikis can be made public or shared only with invited users. Photos can be displayed directly on pages, and video and audio can be played directly from wikis, and most have relatively generous storage for other media and documents.

   Options:

   - PBWiki: Basic wikis
   - Wiki Spaces: Basic wikis
   - Wetpaint: more social network features such as discussion forums, member profiles

   Examples:

   Faculty can use a wiki to organize course materials, as in this example:
   - [ProfessorJones's Wiki](#)
   - [Medical Education](#)

   Wikis can also be used to organize individual or group student projects as in this example:

   - [Digital Ethnography](#)

- **Blog.** *Function:* Webpage updated regularly by user or users. At least part of the site is typically organized chronologically, as new information is added. Add-ons permit the inclusion of automatically updated content from other websites, embedded media, and comments/ questions from readers. Photos can be displayed directly on pages, and video and audio can be played directly from wikis. Most have relatively generous storage for other media and documents.

   Options:

- Blogger (a Google product): currently allows direct uploads of small original video
- Wordpress: includes options to create multiple pages, has more sophisticated tools for monitoring traffic to and from the blog.

Examples:

Faculty can use more feature-laden platforms to organize course materials by creating multiple "pages" for different kinds of course content.

- [Bryn Mawr](#)
- [History and Theory of Emerging Media](#)

Students can use blogs to manage ongoing research projects, reflect on course content, or engage in dialogue with course peers or a more general public.

- [Anthropology](#)

- **Video/web conferencing**. *Function:* Students and faculty (one on one or small groups) can communicate via free video conferencing software, exchange large files via these systems, and typically, can also take and record notes of the conversation via "chat" functions. Faculty may, for example, run a small group tutorial with students needing clarification of a course point, or students can see and talk with one another while collaborating on the creation of a final group presentation for a course. In on-campus classes, "guest speakers" from across the world can Skype in to present to the students and discuss with them.

  Options:

  - Skype

- **RSS aggregator.** *Function:* Faculty and/or students "subscribe" to content as it is updated on the web and content is sent to their own computer. Users can subscribe to blogs or wikis for automatic notification when new content is added, or can subscribe to news feeds from newspapers or other outlets on particular topics.

  Options:

  - IGoogle
  - Google Reader
  - Netvibes

Examples:

- For a course assignment, students can subscribe to all articles in the New York Times, The Washington Post and in international newspapers on a particular topic and have that content "delivered" to one website accessible on their own computer.
- Faculty can create "widgets" on course Blackboard pages that will automatically update content from their aggregators with readings from selected environmental blogs, from policy groups updating content on their websites, or from news organizations. Readings are therefore constantly updated throughout the quarter.
- An example of a faculty member updating aggregated blog posts from professional learning communities to a course BB site. This content is updated several times a week:

- **Social Bookmarking.** *Function:* Students can form research groups and share bookmarks and annotations. Faculty (or students) can "tag" and annotate the sites that they bookmark and have these sites automatically load onto a special tool in Blackboard, Wikis, or Blogs for immediate course access.
  Faculty (or students) can set Diigo to automatically send new bookmarks in given categories to blogs. Users can easily find other web resources bookmarked by others doing similar research—they enter a social network of individuals looking for similar resources when using the tool.

Options:

- Diigo
- Delicious

Examples:

- In an introductory physics course, students are assigned to group projects that must include research on the internet for content that extends course lectures. Each group member creates a Diigo account and rather than bookmarking sites on his or her own computer, bookmarks to the Diigo site. The students create a group on the site and thereby all have access to one another's bookmarks and annotations.
- In a literature course, a professor bookmarks sites related to her own research throughout the quarter. By tagging these specifically for sharing with the course, these bookmarks can appear automatically on a widget on a course website or Blackboard page as they are updated.

- **Collaborative writing tool.** *Function:* Document-sharing and collaboration.

  Options:

  - Google Docs
  - Zoho Writer

  Example:

  - Three education students are assigned a group project involving the planning of a curriculum unit. Each of the students must also solicit feedback on this unit from a clinical faculty member and from his or her master teacher. Rather than e-mailing drafts of this document among all nine of these individuals, all work on one single Google Document on the web. Each can edit the document, comment on it, view earlier versions, determine who has made which revisions, view one another's comments, and eventually print his or her own copy of the final document.

  - **On-line presentation tools.** *Function:* Allows collaboration between users on creating PowerPoint-like slide presentations that can be shared on-line.

    Options:
    - Google Docs Presentations
    - Zoho Presentations
    - Slide Rocket
    - 280 slides (no collaboration, but on-line presentation creation and sharing)

  Examples:

  - Students working on a final presentation in a business course can collaborate across time and distance on their final slide show with Google Docs. Each can edit slides, add content, and collaborate on the overall construction of the presentation via a built-in "chat" tool.

- Faculty can create presentations accessible via the web (either by URL or embedded in a Blackboard or other course website, as below).

- **Video access.** *Function:* Each of these provides code that, when simply copied and pasted into "widgets" on BB, wikis and blogs, allows users to access a player and view the video directly from the course website.

  Options:

  - YouTube
  - Vimeo (higher quality video)
  - Google Video

  Examples:

    - MIT has placed a series of introductory biology lectures on YouTube. YouTube videos can also be embedded in any BB or other course wiki or blog:
      http://www.youtube.com/watch?v=_m4Gvu90Ydw

- **Web-based portals.** *Function:* Multiple sources of web-based content (created by students enrolled in a course or from outside sources) are compiled in a single portal

  Options:

  - iGoogle
  - Netvibes

  Examples:

  - Digital Ethnography (http://www.netvibes.com/wesch#Digital_Ethnography) is a Netvibes.com page where student blogs, the course wiki, social bookmarking, a course calendar and other content are all accessible on one customized web page.

- **Social networking.** *Function:* Users can create their own social networks that could be used by a class to create a kind of online learning community. These tools also allow a cohort of students to stay connected.

  Options:

  - Ning

Following strategic planning related to UW Bothell's online learning and distance education mission, the following products should also be considered:

- **Web conferencing/collaborative learning software**
  - Adobe Acrobat Connect
  - Elluminate
  - Wimba
  - NITLE

- **Lecture capture**
  - See http://net.educause.edu/ir/library/pdf/ELI7044.pdf

- **Virtual worlds and gaming**
  - For information on Second Life, see http://net.educause.edu/ir/library/pdf/ELI7038.pdf

Conclusion

We recommend that the selection of tools and infrastructure to support technology and teaching innovation be conducted in three phases:

1. Select a set of tools that can be used in online learning and distance education
2. Create a strategic plan for UW Bothell's vision of online education and distance education
3. Evaluate tools and resources required to reach the goals of that strategic plan

This report also includes a description of some of the tools that should make up the initial toolkit. (See Appendix B.)

STUDENT SUPPORT

Many students, especially younger ones, are already familiar with and adept at numerous technologies that can be used for teaching and learning. Nevertheless, we must note that students vary in their comfort with and access to these technologies, and supporting students must be a central consideration in selecting and developing learning technologies for UWB.

FOCUS GROUPS

We believe that developing support for students necessitates a more robust understanding of what students want, have, and need. To ascertain students' needs and desires for support for learning technologies, we recommend establishing focus groups to be formed in collaboration with ASUWB, Student Technology Fee Committee members, and Student Activities Fee Committee members. These focus groups would ask about students' experiences with online learning, including hybrid courses, and how they would like to be supported for learning technologies.

RESEARCH ON BEST PRACTICES

We also recommend conducting research on best practices for supporting students with learning technologies, perhaps led by a student researcher such as a graduate student in MACS or MAPS or an advanced undergraduate student. We also recommend contacting UW's Educational Outreach and our colleagues at Washington State University for advice regarding best practices for supporting students.

TECHNOLOGY SUPPORT FOR STUDENTS

Because Information Technologies' resources are limited, the campus will need to decide which learning technologies to adopt and for which ones we will offer support for students, as noted in previous sections of this report. If a decision is made to rely heavily on cloud computing—applications available to the public on external servers rather than hosted on our own—we might reduce the support required for students (and faculty) by supporting a single aggregator so that faculty members can maintain access to student work no matter what cloud application students use. Students can post work on a variety of applications with which they are already familiar, but faculty members can gain access to the work through a single interface. (See "Web-based portals" in the Tools and Infrastructure section of this report.) Western Washington University uses such a system. Perhaps UW Seattle would be interested in partnering with UWB on such an aggregator. In any case, we wish to emphasize the principle that pedagogy, not technology, should dictate the applications we wish to use.

ISSUES RAISED BEYOND STUDENT SUPPORT

- UWB should ascertain employers' attitudes toward online learning. Such information will help inform our decisions regarding tools to adopt, and will help foster support for innovative approaches among students and faculty.
- UWB should find out how many students are enrolled in online courses in the State of Washington to help determine the degree to which UWB should invest in distance education.

APPENDIX B

Technology and Teaching Innovation Task Force

Tools and Infrastructure Subgroup

Tools by Course Function

Course function	Web-based tools (no purchase price)	Existing/Already Supported	For Future Consideration Based on Strategic Decisions
Student Access to "print" materials		E-Reserves	
Student Access web-based course materials	Aggregators: IGoogle/Pageflakes/Netvibes Wikis with links/RSS Feeds Blogs with Resource Pages/ RSS or Bookmark Widgets	Links from within Blackboard	Lecture capture software Multipoint web conferencing tools
Student access faculty-generated teaching materials (digitized lectures/course notes)	Blogs with embedded media Wikis with embedded media	Blackboard	Lecture capture software Multipoint web conferencing tools
Faculty digitizing course materials: Video/audio	a. Streaming via YouTube b. Uploading to web for asynchronous viewing and listening viewing YouTube		Lecture capture software Multipoint web conferencing tools
Faculty digitizing course materials: digital slides, presentations	Slideshare Google Presentations Slide Rocket Prezi.com Zoho Show	PowerPoint uploaded to Blackboard	
Faculty digitizing course materials: documents	Google Docs Zoho writer UWB Library E-reserves	Blackboard	

Student collaboration: Discussion and analysis of course materials	Discussion features of - Ning - Wikis - Commenting in Blogs Video conferencing: - Skype	Blackboard	
Student collaboration: Course projects - Papers	Google Docs Zoho Writer	Catalyst	Document Management Systems
Student collaboration: Course projects - Presentations	Slideshare Google Presentations Slide Rocket Prezi.com Zoho Show	Catalyst	
Student collaboration: Course projects - Multimedia			
Communication: faculty to individual students Non-confidential (Logistical information, Q and A, announcements)	Twitter Mailman listserves Announcement features on Wikis Blogs	Blackboard	
Communication: faculty to individual students: confidential - Feedback on drafts of student work - Formal evaluation		Email	

Archive of student products - Student use (e-portfolios, grad school applications)		Catalyst	
Archive of student products - Program evaluation/ accreditation reviews			
Web Based Conferencing			Elluminate Wimba Adobe Captivate
Virtual Worlds/ Alternate Reality			Second Life