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# Internet2 as Support for Opportunities to Learn

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## ABSTRACT

How does an institution consider change? In many organizations a process of strategic planning is used. At Bradley University, part of our strategic planning involved completing a first attempt to identify how we can effectively use high-speed connectivity to enhance our teaching and to support scholarship. By using an approach that carefully considered relevant research and experiences, we have identified numerous ideas to expand learning opportunities for our educational community and to provide better support to scholars. Through this process, we have developed recommendations for using high-speed connections based on best practices in teaching and learning and for promoting change.

## Introduction

Laboratories not bounded by walls. Classrooms that know no physical boundaries. An ethos of collaboration that is pervasive in the minds of students, faculty and staff when they consider opportunities for teaching and learning and for scholarship. This is the view of our work at Bradley University that is enhanced by the availability of high-speed connectivity options including Internet2 (I2). To help focus our vision, we developed a strategic plan that followed a process of decision making that was purposefully inclusive and flexible regarding possibilities for using I2 or other broadband connections.

Often, strategic planning takes too narrow a view of the area being addressed and does not consider information that is relevant to the task at hand. When planning for the use of new technologies in higher education, we also run the risk of having our ideas routed by questions of grades of wiring or types of access grids and issues of security before answering the primary questions regarding effective use. The process that should be followed when looking at the integration of a technological advancement into academia is one that considers broad goals based upon simultaneous, careful consideration of relevant scholarship on best practices in instruction and on motivating and supporting change. Our views on learning are a starting point for making decisions that will affect efforts to better meet the institution's mission. "Without a reexamination and change in beliefs about the nature of knowing, there will be no substantial change in the enterprise of education; we will stay in a vicious cycle" p. 242 [1]. Regardless of whether one views teaching through the lens of executor, (one who manages curriculum design and delivery through researched based instructional practices), of facilitator, (one who emphasizes personal growth of students), or liberationists, ("one who frees and opens the mind of the learner, initiating him or her into human ways of knowing and assisting the learner in becoming a well-rounded, knowledgeable, and moral human being" p. 242 [2]), what is known about enhancing students' opportunities to learn is another starting point for planning.

The strategic planning process also recognizes the importance of flexibility when trying to look forward in an arena that changes incredibly quickly. What Fullan points out is true for institutions and is equally true for individuals. The more we understand change the more we recognize that change cannot be manipulated or predictably processed with certain results. We can use knowledge of the dynamics of change to help promote positive approaches to achieve desired results, but we cannot guarantee goals will be met through a prescriptive set of steps [3].

The availability of I2 provides a clear impetus to follow a broad view process of strategic planning. When transmission of data is at speeds that allow one to be virtually in two or more places at one time, the way we view teaching and learning and scholarship can and should change. It is important that we thoughtfully, yet expeditiously, seize this opportunity to move what we do into new and exciting venues.

## Strategic Plans

I2 and Teaching and Learning

Teaching and learning can use new networks such as I2 in a variety of ways, all of which allow faculty and students to broaden instructional interactions to new places with far more collaborators than was previously possible and/or pragmatic. With continuing progress being made to integrate networks, universities are positioned to have worldwide classrooms and a global faculty. The list that follows is not inclusive of all of the ways we believe the Bradley University faculty, staff and students will use our enhanced access to the world. High-speed networks are so new and

evolutionary that it is impossible to predict all the ways creative people will envision to take advantage of this connectivity to promote teaching and learning. The ideas presented here are our current consensus resulting from using a method of strategic planning that is similar to Wiggins and McTighe's [4] backward design approach for developing curriculum. An approach where one starts with ends in mind and works through a process to determine the means to reach those goals. The list does provide some initial destinations that we believe should be traveled along this new electronic highway system.

- Expand course offerings in existing programs.
  By partnering with other institutions, students can enrol in courses not currently available due to insufficient potential enrolments at any one place, but supportable when the populations are combined. Similarly, new courses can be offered by hiring faculty around the world that have expertise in areas where we have sufficient students to create sections, but lack the faculty to teach the classes. Expand program offerings. Many institutions, either due to size and/or resources, cannot support major or minor programs because the specialized nature of the area is only of interest to a limited number of students. Even when the student numbers are adequate, the institution is not able to hire faculty with the expertise to support all aspects of the program. Using sufficiently robust connections, institutions can pool both their faculty and their students and make new programs of interest available.

- Incorporate into courses additional opportunities to meet with experts in the field and other individuals with experiences related to the courses' objectives.
  McDonald, Mohr, Dichter and McDonald [5] present ideas illustrative of the importance of using outside sources. While resources are available to bring speakers to campus, factors of time and costs associated with bringing guests into our classrooms often make reduce our ability to best utilize the our national and international connections. We are not able to provide our students as many chances as we would like to, to interact with individuals located at a distance who have experiences and expertise that would enhance the students' opportunities to learn. I2 is an effective means of overcoming many of the obstacles associated with having special visitors come into our classrooms.

- Provide new settings that extend collaborations that support students' clinical experiences.
  Many professional programs either require and/or are enhanced by placing students in the field. However, distance can prove to be an obstacle to finding both the best and enough placements. Supervision is a key issue. The use of I2 can allow for supervisors to visit with and observe students in the field from afar.

- Advance the creation of and means for students and faculty to integrate into learning a more extensive set of information resources.
  This area can take many forms. Huge databases are available, but, prior to I2, the size of files made for long downloading times, which in turn caused faculty to have more reluctance in accessing this information. Also, archival records of special events that occurred in the delivery of courses in past years, such as guest lectures and demonstrations or the recording of other university events, have either not been created or are not being shared and used. A deterrent has been a similar issue related to speed of retrieval and related concerns with the quality of images and audio. Now that these concerns are muted by enhanced connectivity, the creation of localized archives and the encouragement of appropriate use of primary source information from this database can be supported.

- Originate new experiences that widen familiarity with and understanding of issues related to diversity and globalization.
  There appears to be a near infinite list of possible places our students and faculty can visit using I2. The intent is not to replace actual travel. Actually being there will always allow for the richest experiences with new places and people. However, for many reasons, actually going there is not always possible and electronic travel and cross-cultural contact via I2 is a desirable alternative.

- Work with local television studios to produce programming to support course offerings.
  By taking advantage of the digital capabilities at many studios, especially those in the public sector, audio-visual materials can be produced that provide new ways for students to engage course content. The programming, transmitted via I2, may well have value as intellectual property. The development of these materials would also involve elements of collaborative scholarship.

- Develop additional laboratory investigations that require distance use of specialized equipment.

As inquiry is promoted and integrated into instructional plans, the investigations best suited to explore the questions being posed may require equipment not available on campus. Often, actually obtaining the equipment cannot be supported because of limited resources or limited future need for the apparatus. It is not a justifiable use of resources. However, in many instances, partners who own the equipment could make remote access available through I2 and the active involvement of students in answering real-world questions can move ahead.

- Generate new collaborative course projects that have students working at different sites.
  Course projects that are completed by teams of learners are of growing importance. Collaborative efforts address both the preferred way many individuals learn and prepare our graduates for expectations found in the workplace to work in teams. Using I2, these teams can include students (and faculty) from multiple sites. This increases the possibility of cross-disciplinary collaborations and promotes consideration of more divergent sets of knowledge and beliefs.

- Increase opportunities for collaborative, creative activities and scholarship.
  Across the full range of creative and performing arts, I2 provides a rich array of possibilities for distributed performance and joint ventures in the creation of visual arts. The work of creative performers and artists do not have to be limited to a single stage or studio.

Scholarship

It is clear from the list above that bandwidths such as Internet2 are an electronic stream that extends our connections and collaborators. This fact charges us to widen our scholarly pursuits to advance knowledge -- pursuits that have a clear potential to also positively affect our teaching. We must see the university as a part of a virtual center for research and creative production with I2 providing an avenue of connectivity. For this to occur several things must happen.

- Develop further the group of scholars at the university who see possibilities and value the chance to engage in research and creative production with an extended scholarly community.
  An important first step is to build a foundation for scholarship that is enhanced by high-speed connectivity. Opportunities for faculty, staff and students to reconsider their role as scholars should be designed and delivered. These windows to explore a vision of collaborative scholarship should include both formal and informal meetings and WEB-based discussions and information.

  A group of visionary experienced individuals who can support others as they consider ideas for collaboratively connecting with other scholars should be developed. These champions of I2 should receive on-going support for their service to the university. The Champions should also work with ideas related to integrating teaching and learning and scholarship with the use of I2.

- Identify new and existing relationships, including where common interests in scholarship can be pursued in a collaborative manner.
  Closely related to the last bullet, there is a need to explore ways to connect scholars at multiple sites so they can meet in a more personal manner. This allows for the development of the relationships valued when project teams work in a common place that were difficult to build prior to easy, high quality video conferencing.

- Create common laboratories where the tools of scholarship are shared.
  Linking resources can promote the development of future projects that in the past have not been pursued because of inadequate technologies, equipment and materials at a single site. A virtual laboratory can eliminate unnecessary redundancies in acquisitions and should expand scholarship agendas.

- Leverage opportunities for grants to support scholarship by taking advantage of I2 connectivity between the university and other possible partners.
  Clearly related to the items above, a broader community of scholars engaged in collaborative research and creative production provides for more competitive responses to funding opportunities.

- Take advantage of the ease of access to data available through I2.
  Access to information is important both to developing project ideas and for sharing of information during the course of a project. While possible through other means, the use of I2 allows for efficiencies in transmitting

large data sets and other large collections of information. By taking advantage of this, scholars can consider opportunities that were more difficult to implement in the past.

**Conclusion**

Conducting strategic planning in an area that is both very new and has a quickly evolving future poses quite a challenge. Considering the best ways to take advantage of the availability of Internet2 to our university created just such a situation. Concurrently, we have carefully considered educational goals and available connectivity resources. By being mindful of relevant informational sources as we begin to establish the use of I2 on our campus, we have been able to clearly identify a number of pragmatic strategic outcomes that are attainable. Only in this uncertain future will we be able to judge the quality of our planning efforts. Yet, because we started from desired outcomes and because we based all of our work around what scholars have told us about change and the nature of teaching and learning, we feel we have identified a list of quality, supportable outcomes. Along with many others seeking to enhance teaching and scholarship at their institutions, we are now ready to thoughtfully explore effective and purposeful use of I2.

**Acknowledgements**

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