Winter 12-19-2001

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Gary J. Brunswick

Suvojit Choton Basu

Sameer Prasad

Lei-da Chen

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Gary J. Brunswick (Contact Person)
Director of Business Affairs / Associate Professor of Marketing
Walker L. Cisler College of Business; Northern Michigan University
1401 Presque Isle Avenue
Marquette, Michigan 49855
gbrunswi@nmu.edu
906-227-1261 (voice)
906-227-2930 (fax)

Suvojit Choton Basu; Sameer Prasad
Department of Management
College of Business and Economics
University of Wisconsin-Whitewater
Whitewater, WI 53190-1790
basuc@uww.edu ; prasads@uww.edu
262-472-3964 (Department)

Lei-da Chen, Ph.D.
Assistant Professor
Information Systems and Technology
College of Business Administration; Creighton University
2500 California Plaza
Omaha, NE 68178
(402) 280-2614 (voice)
lchen@creighton.edu

ABSTRACT

This paper presents the preliminary observations of the Technology-Learning-Communication (TLC) initiative at Northern Michigan University. The authors have spent the last year conducting interviews to gather critical information on the impact of mandatory laptop requirement on the various stakeholders of the university. The motivations, processes, changes, and initial feedback from various individuals and groups are presented. It was found that such a technology-focused endeavor requires various structural as well as procedural changes. In fact in some facets the university has to transform itself into a highly cohesive and efficient business organization where procurement, distribution and inventory control become a part of the organization culture. The study also finds that need for well-defined metrics relating to outcome of the project need greater attention. This study provides valuable insight to other universities and decision makers. It is anticipated that this interesting case study will be available in its entirety in early 2002.

MAKING A CASE FOR TLC AT NORTHERN MICHIGAN UNIVERSITY

In late 1998 a study conducted by a Canadian company asked teenagers to indicate their personal Internet use. Like most other studies on this topic the results were quite astounding:

Sending and receiving e-mail	96%
Searching the Internet using search engines	88%
Downloading files and software	77%
Searching for topics using web guides and indexes	73%
Reading current news	72%
Searching for phone numbers	62%
Looking for weather forecasts	57%
Looking for health information	56%
Looking for local restaurants etc.	49%

Source: http://www.media-awareness.ca/eng/issues/stats/usenet.htm#Teens on the Net

Since this study was conducted in 1998 it is obvious that a significant portion of current university students are drawn

from a similar teenage population. This in turn exerts a tremendous pressure on the universities to provide a technology infrastructure to support such high level of demand. Numerous universities have resorted to heavy investments in technology related activities, introduction and increase of technology fees, availability of 24-hour computer labs, investments by corporate sponsors, help desk expenditures and so on. Despite great attempts on the part of the university to address the computing need of its student population, very few have been successful. The two often cited reasons can be linked directly to the obsolescence of technology equipment and the problems with computer access.

Like other universities, Northern Michigan University (NMU) was facing this exact situation in 1997 and had begun to adopt a more proactive strategy to quell this demand for computing and Internet access. NMU's vision for education in the 21st century was that of a learning environment that embraced technology to enhance student access, promote the development of independent learners, and encourage student faculty communication and collaboration. To meet these objectives a TLC team was initiated with representatives from administration, faculty and student body. A careful, well-mapped process of investigating the possibility of a technology-focused transformation, labeled TLC Initiative, began to take place. The core issue in this TLC initiative was the introduction of a laptop program that ensured students and faculty had a standard set of tools. The team began by visits to other universities, presentation by hardware vendors, and negotiation with software vendors, support issues, financial implications, funding, human resource issues all began to be examined. After two years of research, a pilot phase was initiated in Fall 2000. The university completed the pilot and implemented the TLC plan, including the mandatory requirement of laptop computers for all incoming full-time students in Fall 2000. The university had also invested a in remodeling and building new classrooms to facilitate laptop/network use by faculty and students. Network ports were made available in lounges, study rooms, laboratories, residence halls, faculty and staff offices. Also a philosophy encouraging the use to electronic documents were encouraged. A help desk and a walk-in service center to handle laptop maintenance problems were established. It was decided that the laptops would be rolled over every three years.

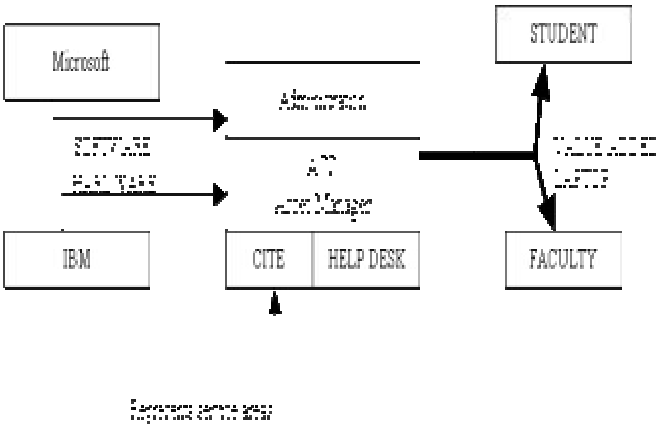
THE TLC INITIATIVE

Given the scope of the TLC initiative, there are numerous facets to examine. The rest of the paper is arranged in the following manner: first some items pertaining to overall issues in the initial stages of the TLC are discussed; this is followed by a brief discussion on financial issues, the next segment addresses issues relating to students and laptop support and in the last segment we present our observations of this initiative.

TLC - The Early Years

Though the TLC initiative is barely a year old, the need to understand the pervasive nature of this project from a historical perspective is quite important. As mentioned earlier, despite of various types of technology funding, NMU struggled to upgrade computer labs and in some cases the equipment was 4-5 years old. Though new sources of funding solved some of these issues a more ongoing type of solution was needed. The initial discussion on the laptop initiative raised the question of cost since notebooks were quite expensive and also the question of platform quickly became a thorny issue.

After much deliberation the decision was made to go ahead with the TLC Initiative. Immediately some organizational structural changes were introduced. The main ones included the introduction of a new group labeled CITE or Center for Instructional Technology and Education was established to support faculty-staff, a Help Desk including a walk-in service center was introduced. Some very competent people were moved into some of these critical units and provided training where needed. The complete coordination and decision making on technology-related issues rested with the Director of Academic Computing Services (ACS). An interesting structural change was to include the Library services as an extension of this ACS group since it had been migrating to a more electronic-media subscription format. An initial oversight was rectified when ACS made a decision to introduce a new position labeled the Asset Manager. This was because one of the most challenging issues was to coordinate the inbound and outbound logistics of all this equipment. Even the issue of storage or inventory required attention since there was no precedent available on the issue of storing 2000 laptops. It must also be understood that each laptop had to be configured for the NMU computing environment and this implied the need to standardize the image on each laptop. In the figure below we have attempted to demonstrate some of the processes for TLC:



As indicated in the figure, the Academic Computing Services (ACS) negotiates the hardware (notebook and

accessories) with IBM. The software negotiations with the primary vendor, Microsoft, are handled by higher-level administration. This allows the pricing model for the laptops to be developed accurately. The cost of leasing a laptop computer along with the software is then passed on to the students in the form of a tuition fee. Currently this fee is at $385 per student per semester. This fee also includes the service provided by the Help desk and the walk-in service center. The ACS also provides several training sessions for faculty and students through the Center for Instructional Technology and Education. This TLC initiative has allowed the university to transform the laptop into a value-added piece of technology that is delivered to students.

Financial Implications

NMU is not the first university to implement such an initiative. But it is the biggest in terms of the scope and the magnitude (reach) of the project. Other universities such as Wake Forest University have implemented such laptop requirements in limited pockets of the overall university. Therefore NMU had to develop its own benchmarks and pricing strategies. The pricing had to also include items such as - maintenance, warranty, software, finance charges, support, insurance, hardware and other hardware-related charges such as networking. Based on feedback from other universities the TLC team at NMU knew it was dealing with four main issues:

- Timing – when to implement
- Size issues such as university and scope of TLC
- Public versus Private university – this had been implemented mostly in other private universities
- Best Value – how to determine the best value for the students

The TLC committee was convinced that the idea of a connected learning community was a good one but at what price tag? After extensive negotiations with hardware and software vendors and considering various scenarios the committee agreed to price the lease plan at $385. An immediate impact of this was to make NMU the fifth (5^{th}) most expensive university in the Michigan system, which comprised of fifteen universities. Though in terms of market position this was not too bad, it was an important consideration since NMU had been the lowest cost university among all of the fifteen schools. But it was decided that in the long term this was the best direction for the university to take.

Impact of TLC

It is somewhat premature to accurately measure the impacts the TLC initiative at NMU. Currently some attempts are being made to measure user satisfaction, productivity, knowledge sharing, effectiveness of instruction, technology support and so on. Perhaps the question of cost-saving (if any) should be of primary concern but that was not the main goal of the TLC initiative. During various interviews it was often mentioned that in the semester following the implementation of the laptops, the number of students participating in student government elections rose by a dramatic 10-fold factor. Faculty feedback is mixed though clearly the lines of communication between students and their faculty have increased. There is need however to carefully study the impact of this initiative on student enrollments.

Observations

While this case involves a whole plethora of areas that are currently been assessed it was somewhat premature to present every detail in this paper. Our goal here was to introduce the TLC initiative at a public university in Michigan. We wanted to raise awareness on the truly complex set of variables that have to be considered before implementation of such an extensive project. While the immediate feedback seems quite positive it is important to continue monitoring the implementation. This is where the true benefit of a case study can be leveraged since it allows researchers to examine the phenomena over a period of time. Based on our preliminary findings we can make the following general conclusions:

- Overall student feedback is positive though question of cost does surface
- On issues such as support and standardization of platforms, faculty seem to be placated for now
- Use of technology in classrooms has clearly increased and this can be observed in the tremendous growth in the use of web-delivery tools such as WebCT at NMU
- NMU was able to successfully develop storage and distribution strategies to deliver the "value-added" laptops to the incoming students. These processes have been clearly defined and improvements are being considered
- One of the biggest success is in increasing communication and computer competency among students
- Some administrative processes have become more efficient.
- Organizational structural changes have been successfully implemented.

While this case study is ongoing, currently an extensive survey is being developed to examine some of the more critical issues that have been highlighted throughout this paper. In time it is hoped that an instrument for measuring the impact of such technology initiatives can be developed. But the million-dollar question that can be asked is – does this technology initiative contribute to overall education value? Unfortunately we do not have an answer to that at this time.

References: Available on request.