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Whattya Mean it’s Not All About Me?
Involving Undergraduate MIS Students in
an Analysis of a Tablet PC Initiative

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Abstract
Institutions of higher learning have understood for many years that in order stay competitive, they must have technology-based initiatives in place. Since the mid-1990’s, there has been a trend toward student laptop lease/buy programs. Beginning in the early 2000’s and until recently, many colleges and universities have begun to experiment with tablet PC computing requirements. More often than not, incoming freshmen have few choices. Typically the university tells the students and their parents which computing platform and manufacturer they have chosen for them and the students are required to purchase or lease that computer at the university’s designated price. Students rarely understand how or why the university has chosen a particular platform and often resent having to pay, what they perceive as, premium prices for their total computing package. This paper introduces a team-based project that was assigned to a 200-level undergraduate Management Information Systems (MIS) class. The purpose of this project was to have the students look at the decision-making process as it impacts not only students, but the university’s faculty, technology support, and finance.

Keywords: Tablet Computing, Laptop Computing, MIS Pedagogy, Higher Education

1. INTRODUCTION
Merrimack College, located 30 miles north of Boston, is a comprehensive 4-year undergraduate college, with a population of 2200 students. Approximately one-third of incoming freshmen are business majors. In order to maintain a competitive edge, in 1999 the Business faculty voted to require all incoming Business majors to lease or purchase a laptop computer. While the faculty was anxious to rollout the laptop program as soon as possible, the first rollout wasn’t until the 2002-2003 academic year. The faculty feared that because of the delay in launching the laptop initiative, students would opt for more technology-savvy colleges or universities.

According to Lim (n.d.), many educators fear that the growth of information technology will leave them behind. Lim describes the University of Minnesota at Crookston as “the first laptop university in the nation” after implementing a “ubiquitous computing environment” in 1993. In a 2003 news release, Bentley College, a Boston-area university that specializes in business education, stated that they were, “among the first colleges in the U.S. to require students to have laptop computers, beginning in 1985” when they required their students to purchase “luggable” computers. Clearly there are many colleges and universities who have required their students to buy or lease PCs for several years and the number continues to grow.

In 2004, Educause conducted a core data survey about campus information technology (IT) environments at 890 colleges and universities in the U.S. and abroad. They looked at several areas that are relevant to planning and managing IT in higher education. The section on faculty and student computing took a look at student computer requirements in doctoral, masters, bachelors and associate degree programs. They noted that there was a “significant increase overall
in student ownership from 2003 to 2004...with the mean increasing from 64% to 67% and the median number increasing from 75% to 80%.” Approximately fifty-two percent of the bachelors degree programs recommended, but did not require, students to buy or lease a PC in 2004 (EDUCAUSE, 2005).

In academic year 2002-2003, Merrimack College’s Girard School of Business rolled out their laptop program. The rest of the campus chose not to participate. The students were required to lease the computer for two years and get a “refresher” computer at the start of their Junior year. The price of the lease included technical support. The lease program continued in academic year 2003-2004. The following year, the students were given a choice of leasing or buying the laptop. However, in 2005-2006, the Business students were required to purchase IBM/Lenovo ThinkPad X41 Tablet PCs. There was no refresher option; the X41 would be their computer until graduation.

The students used their X41s heavily in their computer applications course. The faculty who taught this course spent much of their time troubleshooting PC problems. By the end of the semester, the faculty and college’s tech support concluded that the major problems were actually bandwidth-related, not PC related. However, the students were convinced that their Tablet PCs were to blame and demanded to know why that particular model was chosen. They had questions about the pricing and support structure as well.

The students, by-and-large, did not like the Tablet PCs; as a result, there were many complaints. The MIS professors, including those who taught the computer applications classes, were on the receiving end of most of the complaints. Because the MIS and applications classes are technology-based, the students felt free to air their grievances to their technology professors. Among the complaints were:

- Price of the tablet too high
- Computer is too slow to start up, shut down and process data
- External CD/DVD drive inconvenient
- Lack of support
- Faculty not using tablets in class
- Computer crashes often (result of bandwidth problem)

2. THE PROJECT

Students are required to take Management Information Systems (MIS) as part of their business core. The only pre-requisites are the computer applications class and the Introduction to Business class. The MIS class was a mix of second semester Freshmen and second semester Sophomores. The faculty was determined to empower the students by giving them a project that would enable them to understand the decision-making process that took place which resulted in the choice to move toward the mandatory purchase of the X41 Tablet PCs for business students.

In the Spring 2006 semester, three Management Information Systems professors assigned their eight sections a team-based project that would encourage them to look at the tablet PC decision making process from the perspectives of the faculty, student, administration and technical support staff. The student’s unhappiness with the X41 seemed to be exacerbated by negative-speak among their peers. They were not able to see beyond their world, to look at the initiative from an enterprise perspective, as opposed to strictly an end-user perspective. In this project the students were asked to “think outside of the box” and to focus on essential components of a paradigm shift in technology and higher education at Merrimack College.

A cooperative learning model, which is situated within the social constructivist paradigm, was utilized. The goal was to have students work on the problems in teams having both personal and team accountability for conceptual understanding (Virginia Tech Educational Technologies, n.d.). Cooperative learning is defined as “the instructional use of small groups so that students work together to maximize their own and each other’s learning” (Fellers, 1996).

Teams of four students in each class were self-selected. They were to look at the major impacts of the tablet initiative on all aspects of the college: the library, classrooms, dorms, work habits, study tools, teaching
and learning, etc. In addition, a similar analysis was to be completed on another educational institution of their choice that had conducted a comparable initiative, including lessons learned. The student project focused on three aspects of this undertaking:

- **Student**
  - Impacts on study, research, learning, projects, etc.
- **Faculty**
  - Impacts on class preparation, delivery, student-teacher interaction, review of assignments, grading, etc.
- **Administration & Support**
  - Impacts on budget, help desk, technical support, technology training, network, shared systems and data, backup, etc.

A recommendation on how to promote a long-term technology cultural change at Merrimack College was required. Possible discussion points could have been technology commitment, systems, support, technology philosophy, investment priority, and development focus. The paper was to conclude with specific recommendations.

The college’s ultimate goal was to bring about a reengineering of the entire institution to support a ubiquitous computing environment throughout the college campus. The project was intended to expose students to the challenges related to achieving this goal with an eye toward using technology to enhance learning.

Key project evaluation points included coverage of each of the stakeholders (student, faculty, and administration & support). For writing style and technique, the students were required to follow a writing rubric that was published on the faculty’s Blackboard sites. Criteria included: introduction, conclusion, organization, mechanics, tone, presentation and citations.

**Student benefits**

One of the learning outcomes of this project included the understanding of computing issues in higher education from an enterprise perspective. The goal was to get teams of students to understand the computing needs and issues of all constituencies involved in the decision making process. It required them to understand some of the issues that had to be addressed during the project development which were outside of their own student-world. This could be compared to looking outside one’s department in business to the computing needs and issues faced by the rest of the enterprise.

The project enabled the students to take the MIS concepts that they learned in class during the semester and apply them to a “real world” issue in which they had great interest. The students were able to integrate both business and technical knowledge including:

- Team work
- Research and writing skills
- The system development life cycle

In addition to the above, the students were given an opportunity to see that laptop/tablet initiatives at other universities had many of the same rollout problems (the students initially tended to blame all of the issues on the College). They were also able to discover and share ideas about what did and did not work with the technology rollout at other institutions.

One purpose of the project was to integrate the MIS foundation knowledge acquired in class with a “real world” problem. Each semester, the students in the Intro MIS course are given a different term project. Given the student’s dissatisfaction with the tablet rollout, we chose to have them do both an internal and external analysis of the laptop/tablet rollout. This correlates to textbook chapters on the SDLC, hardware, software, and enterprise computing; in addition to writing across the curriculum, which is a requirement of this course.

**The panel**

There were 175 students involved in this project. The MIS faculty realized that we could not have representatives from 44 teams call individually on the college’s various stakeholders. Therefore, a panel was organized. Invited panelists included:

- Three Divisional Faculty Deans from Business, Liberal Arts and Science & Engineering
- Dean of the College
- CIO  
- VP for Fiscal Affairs  
- VP for Admissions/Enrollment Management  

Also invited to attend were the business school Instructional Technologist, librarians and business school faculty.

The panel was scheduled from 4-5 p.m. on a weekday when no daytime classes were scheduled and before the student's dinner hour; it was our view that this hour would accommodate the majority of the students and panelists. Student athletes or those who had work commitments needed to be represented by one or more of their team members. Two weeks prior to the panel discussion, each group was required to submit two questions they had for the panelists to their professors. The questions were compiled, categorized and sent to the panel via email (See Appendix A).

One of the MIS professors was the moderator. After the introduction of the panel, each panelist was given 5 minutes to discuss the role they played in the tablet initiative. If time allowed, they answered questions of their choice that had been previously submitted to them. After the panel presentation, a general question and answer forum was open to the floor. The moderator was prepared to use the questions that the students had submitted prior to the panel event should there be no student participation in the Q&A.

Students actively participated in the Q&A without intervention from the moderator. The panelists answered the student's questions thoroughly and with candor. As time went on, we were slightly disappointed that the audience's questions became more student-centric. In addition, as we had feared, one hour for panel presentations and Q&A was not enough given the number of student attendees. However, many of the panelists stayed behind to answer student questions one-on-one.

3. RESULTS

The student reports ranged from 7-12 pages in length. They were to report on their findings from student, faculty, administration and tech support perspectives. In addition, they were to report on the computing initiatives at the college or university of their choice. Their paper was also to be informed by library research. Based on the evidence, they were to provide a conclusion and make recommendations for improvement to our college's technology initiative.

The students discovered that many factors had to be evaluated to make recommendations and decisions for technology initiatives in higher education. In addition to the various constituencies at Merrimack College, the students had an opportunity to interview their counterparts at other colleges and universities. Some students discovered that things weren't so bad, after all, in their own collegiate environment. Some also discovered some initiatives that were more successful and others that were not as successful as their own.

Many of the 44 teams came up with strong recommendations. The majority of the recommendations centered on increased training for students and faculty; improved tech support; improved wireless access; campus-wide participation in the technology initiative; and better planning around the initiative in general.

Many of the teams offered recommendations that should give pause to faculty, administration and support. For example, one team stated, "We believe that the route Merrimack went with the IBM tablets was in good conscious, but of poor planning." Another wrote, "As a long-term promotion for a technological culture change, the institution must assure students that there is a value to the technology they receive, and that their education is bettered [sic] by it. Cultural change must start in the hands of the administration."

By and large, the MIS faculty was pleased with the student's recommendations. A summary of selected recommendations categorized by constituencies can be found in Table 1.
4. TABLE 1

Summary of Student Recommendations

Student

- Provide mandatory training during freshman orientation on how to use computer, set up passwords and how to use the college’s network
- More storage on college's network
- Teach students how to troubleshoot PCs
- The technology initiative should not only be launched for the business school, but campus-wide as well...science & engineering should be just as involved in this initiative, because learning within the sciences is visual and interactive, and the curriculum should reflect that

Faculty

- Redefine the Mission of our Business School. Refocus their mission statement to one that stresses the importance of preparing students for leadership and service in an information-driven, global society.
- The Business School faculty should prepare a long-term plan that outlines the exact route that is going to be taken to ensure the commitment behind the initiative
- Faculty should be provided with the same technology as the students
- ...teachers to incorporate more resources into the classroom, making a once dull learning environment into a challenging and exciting place.
- The technology initiative at Merrimack College needs to begin by providing training to a large percentage of the faculty. Through this training, the faculty will be able to learn of all the capabilities of technology which apply to a class or subject, and will be trained how to utilize them in order to create the best possible learning environment.
- The implementation of online and hybrid (online and classroom setting based class) courses

Administration & Support

- Guidelines for efficient training need to be implemented
- Campus-wide wireless; increase power and connectivity in library
- Create a campus-wide initiative, requiring that all incoming students (not just business students) to be required to buy the IBM X41 Tablet PC
- A better tablet PC that has a larger screen and an internal CD/DVD drive
- Better trained employees must be hired in tech support that does not just re-image the computer to fix problems
- Fix computers in a more timely manner
- Tech support program that includes vendor assistance
- Update the college website with up-to-date information on the Tablet PC Initiative. Site should inform prospective students about the laptop/tablet program, the use of Blackboard in the classroom and hours of tech support
- IT Support services to have an inventory of laptops available for exchange anytime a student walks in with a problem that requires additional support. IT center provide fully charged batteries 24/7 for exchange to support anytime, anywhere learning
- Computer Literacy seminars to offer unlimited training in computer fundamentals and commonly used software applications; sessions for every level (beginner, intermediate, or advanced). Students, faculty, and staff can sign up for monthly available sessions or schedule other training
- Increase bandwidth
- As technology changes, the initiative must change as well and must be reevaluated and compared constantly to make sure that Merrimack is the front runner among many of the surrounding business schools.
5. RECOMMENDATION

Many colleges and universities have implemented a laptop or tablet PC initiative with great success. The most successful were those who involved the students before implementation (Bentley College, 2003; Hewlett-Packard, 2004). It would be safe to assume that few colleges and universities got it right the first time around.

With proper planning, faculty could use technology initiatives as teaching tools. Students would have the opportunity to get involved in the planning from several aspects of the business enterprise: technology and support, marketing, finance, and operations. The students could discover first-hand that major projects are more successful if they have "management" champions and buy-in from the "employees". From an admissions and marketing perspective, they would gain first hand knowledge as to what are the wants and needs of the "customers". Opportunities exist to allow students to work with faculty to understand pedagogical needs as well.

But, as they say, hindsight is always 20/20. However, there are still opportunities for student learning post-implementaion. In addition to assigning the project as outlined in this paper, teams of students could be assigned to work with Information/Tech Services to understand what impact technology initiatives have on their staff. If IT is outsourced, the students have an opportunity to understand the terms of the contract and how the university needs to work within the constraints of the contract.

Another team of students could be assigned to work with college's finance department to understand the financial implications of the technology initiative, including lease vs. buy decisions. Yet another team of students could be assigned to work with other students, which might include focus groups and survey design, implementation and analysis. In the end, the student could present their findings to each other in class to add value to their individual project findings.

In order to improve the existing project, the students should be required to offer faculty and administration 2-3 alternatives including one recommendation. Part of the report might include a feasibility study. Finally, the report would include a project rollout plan. At the end of the semester, the teams would present their findings to their peers; faculty and administration would be invited to sit in on the presentations.

6. CONCLUSION

It is important to help students discover that technology decisions are not made in a vacuum. Understandably, they tend to see many issues from only their perspective. The MIS project enabled the students to "think outside the box" beyond their personal concerns with their PCs. The project enabled them to see the tablet PC initiative through the eyes of the faculty, information services and administration, including finance and admissions. By having the students research other university's technology initiatives, they learned what those institutions might be doing better and, as a result, were able to make recommendations for improvement. They also learned that other universities have their own problems with such initiatives, too. They discovered what other students liked and disliked about the recommended platforms on their campuses. In essence, they learned that Merrimack College is just like many other universities who are striving to incorporate state-of-the-art technology into their teaching and learning.

The project had them take pause and think outside their own world to understand that technology decisions cannot be isolated; faculty, information services and administration must work together to come up with the right technology solution and implementation plan. If asked, students can offer viable recommendations to faculty and administration. Their research not only benefits them as they see the project through the eyes of the entire enterprise, but it benefits the university as it strives toward continuous improvement of its IT initiatives.
7. CITATIONS


Appendix A

Student Questions by Category

Laptop/Tablet Initiative Panel

Configuration

1. What motivated you to choose tablets instead of laptops? What benefits are there?

2. What else do these tablets have to offer besides being able to take written notes?

3. What can we expect for new technologies and upgrades to the tablets in the near future?

4. What upgrades in technology are being planned for the future and how will these affect the business school and its students and professors?

5. What educational advantage do you feel Merrimack College business students are receiving by having the IBM ThinkPad X41 Tablets?

6. Why do the new computers have external disk drives?

7. What steps, if any, is IT taking to improve the speed and efficiency of the new laptops and network?

8. Are you looking to find a way to cut back on the amount of programs needed next year, to possibly allow our computer to work faster?

9. How is the research going with the tablets? Are the freshmen that will be attending Merrimack next year going to receive tablets along with the juniors as an upgrade?

10. What was the process in deciding IBM over other leading competitors?

11. Why did you decide to choose the tablet over a regular laptop?

12. This computer seems to be weak as we have heard of students whose computers have cracked. We have seen other computers being advertised for their durability, why did you pick this computer compared to the others on the market with regards for their durability?

13. When choosing a Lap Top program what criteria do you take into consideration? Did you ask the students their opinions on the matter and which laptops they would prefer?

14. What benefits does IBM have over their competitors like iMac, Sony and Dell?

15. What are the advantages for business students of having a tablet versus a non-tablet laptop computer?

16. For what academic purpose did you choose to switch from the think pad to the tablet? Would you say they are better in the classrooms then the think pads and do you in any way regret your choice, if so why?

17. Will the sophomores be receiving new laptops or the new tablet PC’s as they become juniors?

18. What initiatives is the college taking to upgrade the IT/laptop program?
Support

1. What are your plans for increased student tech support?

2. Will the employees in ITC be fully trained in the maintenance of these tablets?

3. Do you feel students are utilizing the new technology to its full educational potential or are the laptops and tablets being abused and misused?

4. When you chose the IBM ThinkPad, as the computer to be distributed to the business students, what did they offer in terms of IT service? Did they offer you a person who would physically be on campus to deal with any IT issues with the computers? Or were you own your own in regards to servicing the computers?

5. Is re-imaging really the way to fix computers, or a quick fix?

6. How is the panel addressing current issues students are having with the tablets and what is likely to be done to prevent future problems of a similar nature?

7. Is the IT department having more technical and hardware related problems with the new tablets than previous IBM think pad notebooks, if so what are some of the problems?

8. In the past, things were made wireless, what future IT developments do you plan to have in the future to make Merrimack College stay ahead in all the new technology?

9. Do you think Merrimack College should make wireless available through-out the entire campus? If so, how could we go about doing this? Do you think this would give us a big competitive advantage?

10. Did you implement new systems of backing up data, such as the Merrimack H-Drive? Was the H-Drive around before the new Lap-Top programs?

11. What are the future plans for technological advancements here at Merrimack? For example, will wireless be expanded to the dorms in future years?

12. Do you expect to incorporate any virus protection topic in classes so that students know how to protect themselves from viruses on the internet?

Finance

1. How will the new technology program impact Merrimack’s budget? After initially buying the laptops for the business program, how is the $750 fee/ semester per student invested into the Girard School? If the program fails, what are the alternatives?

2. How has the tablet impacted Merrimack College financially? Is MC saving money by switching to the tablet or is the college having trouble affording all the necessary components that go along with making the school wireless and laptop based? How will each student be financially affected by this transformation to a technological institution?

3. Why does the cost of the computers seem so disproportionate compared to their actual value?

4. This year’s business students were required to buy the computers while students in previous years were asked to rent them. Will students from this point on be required to buy or will the school return to renting?
5. Why do we have to get the laptop through the school, paying an annual fee, if we have to buy it at the end of our 4 years?

6. How do you think transfer students are affected by laptops either coming into the college or leaving and not getting the IT support paid for?

7. Why do we pay about 8,000 dollars for renting our school laptops? When we could buy personal laptops for a lot less. Why do we have to pay more to keep our laptops after graduating?

8. Is it fair to expect all students to purchase the newest technology (tablets)? What about the students who cannot afford one?

**Teaching/Learning**

1. We have already seen changes in the structure of courses due to technology such as online courses. In what ways do you see courses changing or developing within the next few years to implement new technology?

2. How has the tablet affected the faculty’s use and understanding of technology? Are the tablets more effective in the classroom or outside of this learning atmosphere? Have pedagogical styles improved within the classroom, or are the tablets causing a hindrance and being used by students for other purposes?

3. How does our faculty benefit from the students having these new laptops?

4. How does the tablet/laptop program benefit the business program for the school?

5. Part of the advantage to laptops was to allow students to take notes during class, have access to Blackboard and other academic resources. In some business classes, laptops computers are not allowed to be used in class, because of the potential distraction of wireless internet, IM, e-mail, etc. Wasn’t the point of the internet program to have access in class? Also, have student production/grades improved since the program been in place even though some teachers don’t let us use them in class?

6. If business students are forced to buy the tablets, why do many business classes not utilize them or prohibit them from class? Is this the intention of the program, or is this a flaw in it?

7. In what ways have the tablet laptop improved classroom learning for business students?

8. This year the freshman and faculty in the business school were issued tablet computers. How do you think it has impacted things like work habits in and out of the classroom? Do you have any information to back the benefits of this program up?

9. How do these new technological advancements affect the way that you prepare for class discussions? Did you have to make changes in how you prepare your information to deliver to the students? Do you group information differently now to fit the Power Point layout? Changes in lesson plans?

10. And with this change in technology, what do you think it will do for the credibility of our business school in the academic and professional world? Will we as a college be just staying current or striving to be ahead of the curve?

11. Do you find that more or less effort is put into your class preparation as a result of the ease of students for finding information and resources?
Library
1. What impact does the business school laptop program have on library usage?
2. What impact would laptop usage by the whole school have on library usage?
3. What do you anticipate the impact on the library will be?

All Areas / General
1. The business department has been offering the laptop initiative program now for x many years, and they are now offering it to non-business students. How successful do you think that this program has been, and have the advantages outweighed the money, and technical support that is needed to keep this program going?
2. As far as the new laptops are concerned, is there a forum, or will there be a forum that students can get involved and put in their input?
3. Are the costs for all the laptops, smart boards, and technology worth all that money for Merrimack College?
4. How are the new business laptop models working out, are the current freshman satisfied with them and will current sophomores be receiving them?
5. What are some of the challenges in implementing the technology used in the business program?
6. Do you think that now with these technological advancements that we can now compete more closely with larger, accredited business schools such as Bentley, BU, BC?
7. What do you think the future holds for the technology of the business school, do you think we will move to required PDA system where most devices are hand held, or will we continue to explore technology in the form of laptops and tablets?
8. How do you plan to keep up with the rapid change in technology? *meaning technology is always changing and now we have tablets but next year tablets may be old...
9. How would the college feel about creating a technology committee composed from students, faculty, and staff to oversee the technological aspect of the school? That is it will make recommendations, it will asses whether or not current technologies implemented in the college are working properly, it will speak on behalf of the student body, the faculty and staff.
10. What can be done to Merrimack College to make a technological advance organization, with tools that will foster innovation both from students and faculty?