Journal of Literacy and Technology
Volume 10, Number 2
ISSN: 1535-0975

What Students, Professors, and IT Staff Had to Say About the Laptop Program at a Four-Year Hispanic Serving Institution

First Author: Angelina I. T. Kiser, Ph.D.
Assistant Professor
University of the Incarnate Word
CPO #27
4301 Broadway
San Antonio, TX 78209
210-829-3176
akiser@uiwtx.edu

Second Author: Annette Craven, Ph.D.
Associate Professor
University of the Incarnate Word
CPO #141
4301 Broadway
San Antonio, TX 78209
210-805-3564
craven@uiwtx.edu

Volume 10, Number 2
ISSN: 1535-0975

Introduction

As technology continues to expand and change in our world, institutions of higher education must be able to incorporate that technology into their programs in order for graduates from all disciplines to be well prepared to enter the workforce. The process must be ongoing with the support of students, professors, technology staff, and administration in order for it to be successful. Any technology initiative must also be aligned with the mission, goals, and objectives of the college or university.

Technology literacy is now a necessity for students from all college majors. Therefore, it is essential that all students understand its importance and how it relates to their fields of study. By initiating a laptop program, the university in this study has given every student an equal opportunity to learn the essentials of technology. It has certainly been a daunting task to ensure that the program is utilized by professors so that student learning is enhanced. Additionally, students share in that responsibility so that they have a part in the learning process. Lastly, the information technology (IT) staff has the responsibility of providing training and support services to both professors and students.

These three groups, students, professors, and IT staff, must work toward a program that produces technology literate students who are well-prepared to utilize their technology skills. Each group shares equally in ensuring the success of the program. It is important, therefore, to ascertain the concerns of each of those groups. It is only after gathering that valuable information that the program can continue to successfully progress. Technology is an evolving paradigm, and colleges and universities must constantly strive to provide the best available technology resources to their students so that those students are well equipped with sufficient skills to make

Volume 10, Number 2
ISSN: 1535-0975

them successful. To understand what changes may be necessary within a college or university environment, it is a critical component of the continuous improvement process to get the perspectives of students and staff so that the IT personnel are able to adequately respond to their needs and policymakers can plan for the future.

The purpose of this study was to examine the impact on learning and teaching processes of a laptop program that evolved over a 10-year period from the initial discussions in September, 1999 through full implementation, evaluation and improvement at a private, faith-based, postsecondary Hispanic Serving Institution (HSI) in south central Texas. During fall 2008, the University of the Incarnate Word (UIW) students, professors, and technical staff were interviewed to ascertain their perspectives of the laptop program and its related challenges. The researchers are full-time faculty in the university's school of business and the study was guided by the following research questions:

1. What are the key components of the institution's laptop program?
2. What are the IT personnel functions? What challenges do they face? How has the role of the IT personnel changed since the laptop program was implemented in 2001?
3. What challenges do students perceive as part of the laptop program?
4. What challenges do professors perceive as part of the laptop program?

This study is significant because of its emphasis on providing technology access, training and development to a student population that is predominantly minority, first-generation college students. More than 50% of the student body relies on financial aid to pay for their college education, and at the time the laptop program was first considered, most students had only limited prior access to computer resources. Core computer literacy courses were essential to

Volume 10, Number 2
ISSN: 1535-0975

close the gap between the *a priori* level of technology skill of an incoming freshman student and the *a posteriori* level of technology skill of a graduating senior. Students in the school of business of the UIW are now graduating with nationally normed technology exam scores of 90% or higher.

Review of the Literature

Technology should enhance both the learning and the teaching environments. The Winona State University at Rochester campus implemented a laptop program and found that the mere accessibility to laptops was not enough to support and transform pedagogy (McVay, Snyder, & Graetz, 2005). Previous studies have shown that the attitudes of both students and professors greatly impact the success of a technology program (Al-Khaldi & Al-Jabri, 1998; Liaw, 2002). The perceptions of university students are vital to the issues surrounding laptop initiatives (Cutshall, Changchit, & Elwood, 2006). As college and university campuses across the United States implement laptop programs, each should take steps to ensure the success of the program to both students and professors.

Utilizing laptop computers in an academic classroom has shown to have a positive impact on educational outcomes (Finn & Inman, 2004; Varvel and Thurston, 2002). Integrating technology into the classroom involves four major components: (a) the students, (b) the professor, (c) course content, and (d) the technology tools (McKeachie, 2002). Students and professors must work together to transform the traditional classroom into one that utilizes technology to positively impact the learning process. The use of that technology must have a clear academic purpose (Mereba, 2003). Technology should not be used simply because it is

Volume 10, Number 2
ISSN: 1535-0975

available. If students do not make the connection between the technology and the curriculum, a disconnect occurs that disrupts the learning progression. Using technology for the purpose of learning should not merely promote learning, but it should create learning productivity (Mereba, 2003).

As new technology emerges, there must be personnel who can provide support in training and infrastructure. The changing landscape in information technology has seen the advent of restructuring within IT departments, an increased demand for training and technical support for students, professors and staff, as well as training for IT personnel. A study by Johnson (2001) to explore challenges facing academic technology departments indicated that 74% of the respondents stated that there had been some sort of restructuring or reorganization of their department. The trend continued as was indicated in a study by Pike (2004), which reported that 77% of the respondents saw a significant change in their responsibilities within the technology units. As technology changes, so do the roles and responsibilities of those involved, which include students, professors, staff, and IT personnel. To remain updated with these changes, IT personnel must provide necessary hardware and software support along with maintaining an infrastructure that allows the technology to be used as it was intended and with the utmost efficiency.

Context of the Study

UIW is located in San Antonio, Texas. It was founded by the Sisters of Charity of the Incarnate Word in 1881 and was one of the first institutions chartered by the State of Texas in 1909. It has evolved from a K-12 environment to a university providing degrees at the

Volume 10, Number 2
ISSN: 1535-0975

bachelors, masters and Ph.D. level. Use and availability of technology within the UIW programs has evolved with the growth of the institution. At UIW, the four-year HSI examined in this study, students may be enrolled in one of three delivery forums: (a) traditional campus programs, (b) adult completion programs, and (c) virtual university programs. Several disciplines are offered in all three delivery systems, including business, education, and nursing programs. Programs are offered at both the undergraduate and graduate levels in all three delivery systems, though not in all disciplines. Main campus students may either commute or live in residence halls on campus, and many of the students are first-generation college students. The focus of this study was strictly on students, professors, and IT staff from the main campus where the laptop program was originally initiated.

In September, 1999 the university charted a different course by hiring its first ever Chief Information Officer (CIO). One of the first initiatives the CIO began was discussion of becoming a laptop university. An advisory council was created and the top three concerns of employers—communication, critical thinking, and technological competence—were addressed in terms of how enhanced technology support could contribute to improved learning outcomes in these areas while also making our students more competitive in the global marketplace. Three universities using ThinkpadU at the time were researched—Concordia University, Minnesota; Greenville College, Illinois; and West Virginia Wesleyan College. The advisory council felt the best approach would be full implementation which would allow for full cultural change and help avoid a digital divide. Five implementation considerations were discussed:

1. Support—planning and project; management; infrastructure; help desk; training; impact on students and faculty; service maintenance; and asset management.

2. Faculty Development—training and support both in and out of the classroom and with research initiatives.
3. Teaching & Learning Integration—productivity tools, internet access, instructional delivery, communication, curriculum integration, and collaborative research.
4. Hardware & Software Standardization—configuration, classroom integration, and refresh plan.
5. Financial Implications—financial aid for students and insurance considerations for faculty issued equipment.

A sixth consideration emerged once the laptop program was put into place. As students progressed through their degree program, it was important that the curriculum for the majors incorporate advancing use of technology. A good way to assess student achievement of technology performance objectives is to choose and use a psychological model of learning as a basis for measurement (Arreola & Aleamoni, 2000). Three professors in the school of business (Craven, Caldwell & Tiggeman, 2001) created a matrix of levels of business student computer literacy by utilizing the stages of Bloom's Taxonomy as follows:

Cognitive Level	Computer Literacy
Knowledge	Demonstrate recall of hardware components, program functions and commands, and basic computer utilities
Comprehension	Identify appropriate program or function for assigned task. Prepare a word processing document or spreadsheet or database. Acquire information using internets & intranets. Demonstrate understanding of how and why programs are useful with respect to subject matter.
Application	Apply technology to develop discipline-specific reports, presentations and spreadsheets.
Analysis	Perform the functions of analysis, classification, investigation, exploration and recognition of discipline-specific material through the use of technology.
Synthesis	Use technology to plan, organize, integrate, design and build discipline-specific products such as business plans.

Evaluation	Assess and evaluate information as a result of the application, analysis and synthesis of information gained via the use of technology.

By assessing learning outcomes using instruments and techniques that addressed each of these levels, business professors were able to determine the impact of student technology access and utilization over time.

The laptop program officially began in 2001, with UIW becoming the first IBM ThinkpadU in Texas; the campus is now fully networked and wireless. The university decided that every undergraduate student would come to the school with a laptop or purchase one from UIW. The first year of the program, freshmen were not required to have laptops. If students did not purchase their laptops from the university, they had to apply for a waiver, which allowed them to bring in their own laptops. Eventually, the waiver requirement was dropped because of the vast amount of paperwork. However, unless students have wireless connections of their own, they must visit the Help Desk on campus to get connected to the UIW wireless network.

The decision to allow students the option to purchase their laptops from other sources than the university was one of the first major challenges. Opening the door to the possibility of multiple brands of laptops meant IT had to consider the implications of service and faculty had to consider the implications of a variety of software packages (Word vs. WordPerfect, for example). There were, and continue to be, many advantages to purchasing the laptop from the university. Technology Support Services loads the computer with software and updates that support the curriculum and assists with both software and hardware issues that students may encounter. Those students who choose to bring their own laptop from another vendor also

Volume 10, Number 2
ISSN: 1535-0975

receive Help Desk support; however, that support is limited to university provided services (wireless access, Blackboard Course Management System issues, and email support).

According to the UIW website (http://www.uiw.edu, 2008), the school's Technology Division is divided into five units that are responsible for the delivery of all technology as well as related services to the students, faculty, and other employees. Infrastructure Support offers network computing and telephone services. Technology Support Services manages all campus computer labs and provides technical support through a Help Desk. Instructional Technology's main support is training of faculty, students, and staff. Information Management Services plans, creates, and manages database environments to enable effective, productive, and secure use of information resources. Lastly, Institutional Research gathers and maintains data that can then be transformed to useful decision-making tools.

Method

Qualitative methods were used to gather data for this study. According to Patton (2002), qualitative methods are utilized to ascertain what people do, think, know and feel by observing, interviewing, and analyzing documents. Qualitative methods are appropriate when researchers seek to understand the depth of participant responses rather than a broad overview of responses from multiple participants. Qualitative research is not intended to be generalized, and the literature review revealed no other comparable studies appropriate for use in this research.

The researchers (faculty in the UIW School of Business) sought to understand how business students enrolled in a core curriculum computer literacy course, business faculty and university IT personnel perceived the laptop program at UIW and what challenges they faced. Focus group interviews are well-suited for groups of people who share a common experience and

have knowledge of the phenomenon under study (Kelly, 2003, p. 50). Therefore, separate focus groups were held with 12 students and 4 technology personnel, and email communication and phone interviews were employed with 7 faculty members. These methods allowed the researchers to ask for clarification and additional information when necessary. Institutional Review Board permission was obtained, participation was voluntary, and all identifying information for the participants was kept confidential. This was not a blind study.

The participants in this study were chosen based on purposive sampling. The researchers selected the criteria; those intensely involved with the laptop program; and then stratified the sample into students, professors, and IT staff. The three homogenous subgroups provided depth and detail with regards to their roles and challenges with UIW's laptop program. The students from the Computer Literacy class were business majors who had been at UIW for at least two semesters, the professors were from the various business disciplines and used the laptops to varying degrees, and the four IT staff consisted of the CIO and staff from infrastructure support and technical support services.

Students (n=12) and faculty (n=7) were asked to address the positive and negative aspects of the laptop program, while the technology personnel (n=4) were asked what challenges they faced in their roles within the Technology Division. Once the data were collected, the researchers used qualitative coding techniques to determine the common themes that emerged from each group.

Results

Student Group

It was discovered in a study conducted by Demb, Erickson, and Hawkins-Wilding (2004) that hardware configuration choices and price were both factors for laptop initiatives. Eight of the 12 students who participated in the focus group at UIW felt that purchasing their laptops from the university was better than purchasing them off campus. One student stated, "You can roll the cost of the laptop into your tuition and then it might be covered if you have financial aid." Another echoed that same thought, "When you get the laptop through the university they just include it in your tuition." However, those students who did not purchase their laptops from UIW felt that the lower price off campus justified not having the technical support. A sophomore student said, "I paid a lot less for my laptop off campus and I haven't had any problems with software or hardware support. I just bought the extended warranty when I bought it."

While the cost of buying a laptop from the university is more than buying one off campus, the hardware and software support that comes with the university laptop is a great help to students. The support includes hardware warranties and free software upgrades. For example, when UIW moved from Microsoft Office 2003 to Microsoft Office 2007, students with university laptops were given free upgrades that were loaded by IT personnel. A student declared, "Getting a laptop, here at the University, helps out when something is wrong with it, they help you fix it at the Help Desk." Consequently, students must decide between the higher price for more technical support and the lower price that comes with less technical support.

Another challenge that the student focus group voiced concern about was the rate of connectivity and response time. The students felt that at certain times during the day, the system was too slow to accomplish the tasks they were working on during class. Comments included, "There is slow internet connection here at UIW.", "Sometimes in the dorms, the internet

connection is out." and "The system is too SLOW." They felt that the system needed upgrading in order to handle the large volume of users. The university has consistently increased its bandwidth to handle the increase in system usage. However, many students may not realize that the way the system is being used ultimately affects its efficiency. For example, some students who participated in the study stated that they had seen other students downloading and watching television shows or movies during class time. This type of system usage puts a major strain on the system and causes it to run much slower. Therefore, if those students were using the laptops for their intended use, the system would run as it was intended.

The most pervasive concern for students in this focus group was the lack of laptop use by their professors. Students felt that if they were required to have laptops, then professors should be required to integrate them into the curriculum. One student commented, "There are even some teachers who don't even allow you to bring your laptop into the class." This concern was echoed by several other students in the study. One student stated, "It seems many professors are still mostly against the use of a computer in class, especially with access to the wireless internet." Unfortunately, whether or not laptops will be used or even allowed in the classroom is the most common theme for both students and professors. Students want professors to utilize the laptops in class, while professors are becoming frustrated that the students bring them to class and then check email, play games, etc. The focus group did, however, acknowledge that how students use the laptops in class could be distracting to other students as well as the professors. All the same, students want them to be used if they are going to be a requirement.

Faculty Group

For many faculty members, moving to a laptop environment is a paradigm shift as they move from a teacher-focused environment to a learner-focused environment (Hall & Elliott, 2003). Student-centered instruction changes the role of the instructor and empowers the students as they explore, experiment, and discover on their own (Brown, 2008). Integrating the laptop into the classroom changes how instruction takes place. No longer do the instructors simply supply information to the students through lectures and notes. The students take on more responsibility for their own learning since they now must seek out additional information via online sources from the internet.

The greatest obstacle to higher education's use of the Internet is apparently faculty and staff development (Ma & Runyon, 2004). This challenge was present at UIW for some of the faculty who took part in this study. While some people are very comfortable with new technologies and are able to quickly master a software package, others do not fall into that category and instead seem to struggle with incorporating technology into their classrooms.

The most prevalent challenge, voiced by five of the seven faculty members, was keeping students from accessing the web, checking, email, playing games, etc., while instruction was being delivered. Numerous statements were made, including, "One big con of the laptop is keeping students on the lecture/classroom activity.", "Students misuse the laptop during class, surfing rather than note taking." and "I have seen students emailing and surfing the web while I am trying to teach." Classroom management can become a greater issue for university and college professors when technology is introduced into their educational settings. While new technologies allow college and university professors the opportunities to change their traditional organizational and instructional practices (Ouzts & Palombo), those same technologies may also

Volume 10, Number 2
ISSN: 1535-0975

present the professors with new challenges in maintaining a classroom in which the students remain focused on the lesson that is being presented. For example, at Duke University where faculty control the use of laptops in class, some faculty members banned their use because they just could not control what the students were doing with the laptops during class (Chanen, 2007).

The use of technology in the classroom may not always be an easy transition for college professors. A professor stated, “I still don’t have a lot of time to investigate new discipline-specific software packages that would help me update my courses.” Learning new software can be a daunting task, and since in some cases it is specific to a particular course, there may not be on-campus training. Therefore, the professor must find training elsewhere or learn by himself/herself. This leads into another concern for professors. Training in, learning and practicing new software is quite time consuming. A professor commented, “I need to have more training, but I don’t have any time.” There are already so many demands on the professors, it becomes difficult to find the time to learn the software so that they become comfortable enough with it that they are willing to integrate it into their curriculum. The fact that technology is constantly changing makes this an even greater challenge.

It is vital that the IT infrastructure of a laptop university be able to support everyone’s needs. Technical and infrastructure support was the third major theme that professors thought was a challenge to using laptops in the classroom. As one professor stated, “Power supply is an issue. The students bring their own extension cords and then I have cables snaked across the room.” Three other professors also made comments concerning the lack of enough electrical outlets for the student laptops.

Volume 10, Number 2
ISSN: 1535-0975

The system must also perform fast enough so that valuable class time is not taken from the professors. Professors, like students, expressed concern for the high response time for connectivity. For example, one respondent indicated, “I no longer give online quizzes. It takes up too much class time.” Another professor, although very pleased with the end results, indicated that due to the amount of time it took for technical support to load the discipline-specific software, she fell two weeks behind schedule. These types of situations may discourage professors from using valuable technology tools in their classrooms.

Technology Division Group

At the center of any technology initiative is the IT department. This is certainly the case at UIW where the IT department has undergone tremendous growth and transformation in order to effectively and efficiently deal with system issues that revolve around the use of the laptops on campus. Although different from students’ and professors’ challenges, the IT personnel have challenges that can and do affect the entire university. As one member of the IT focus group stated, “We try to stay ahead and not just play catch up.”

One area of concern, which is a factor wherever there is Internet availability, is that of security. When students purchase university laptops, they come with firewall and anti-virus software. However, when the students purchase laptops from somewhere other than UIW, the firewall and anti-virus software often expires after a short period of time. The focus group of IT personnel stated that one of the ongoing problems with laptops not purchased from the university is that students let the firewall and anti-virus software lapse on their laptops, yet they are still connected to and using the UIW wireless network. These same students then bring their laptops to the UIW Help Desk in need of assistance.

Volume 10, Number 2
ISSN: 1535-0975

On the other hand, there is the challenge of ongoing support. Students can inundate the Help Desk with laptop problems, but as one IT staff member stated, “Some students will not bring in their laptops for maintenance or repair because they do not want the IT personnel to see what is actually on the laptops.” The students then have infected laptops, and they share resources with others, which may lead to the virus being copied from one laptop to another.

The delivery and product supply chain can definitely be a problem for the IT department. There have been times when either entire laptops or parts did not arrive in time for the beginning of the semester. Consequently, students did not receive the laptops in time for their classes. When this delay in arrival occurs, the IT training personnel get behind schedule for laptop orientation and training for new students. The problem creates a chain reaction that takes even more time to correct.

As the laptop program has evolved, the IT staff has become concerned with the storage and disposal of old equipment and data. Some students exchange their laptops and do not want to keep their old ones. The focus group members stated that it is not as easy as simply placing the old equipment into a dumpster. There are Environmental Protection Agency regulations that require special disposal authorizations. Therefore, UIW has to pay a third party to properly dispose of the old equipment. Measures must also be taken to ensure that data that is stored on the laptops is properly deleted. Obviously, this has become a greater concern as the laptop program gets older and continues to grow.

Lastly, a challenge that is faced not only by technology personnel at UIW, but everywhere that technology is used, is the fact that it is always changing. There are increases in services, and demand always seems to be ahead of capacity. As one respondent stated, “We try

Volume 10, Number 2
ISSN: 1535-0975

to stay ahead and not just play catch up." The UIW technology staff has to constantly look to the future and plan well enough in advance so that it does not fall behind the next new wave of technology. The university must also ensure that the technology meets the needs of the professors and students so that the best possible teaching and learning can take place. As Mereba (2003) stated, "One thing certain is the constancy of change brought by technology that is pushing higher education in the direction of new frontiers."

Discussion

In the 2001 study by Craven, Caldwell and Tiggeman, ***Best Practice Recommendations*** were noted to have evolved as a result of the UIW School of Business experiences with technology in the classroom:

1. Computer literacy should be evaluated early in the student's educational career.
2. Technology should be incorporated into every business class environment.
3. Technology should be available to faculty and students in more than one form and more than one location.
4. Technology training and tutoring should be available to faculty and students throughout the academic year.
5. A supportive technology infrastructure for both hardware and software needs should be available on a 24x7 basis.

The results of this study confirm these recommendations and give us good reason to stay the course in our pursuit of access to cutting edge technology for our faculty, staff and students. Creating a technology-enhanced environment that meets the needs of students is paramount in today's global world. As educators, professors must continue to integrate technology into their

Volume 10, Number 2
ISSN: 1535-0975

curriculum and ensure that the integration is meaningful to the students.-Students and professors, those most involved in using the laptops, provide valuable information to the IT staff and university personnel who will ultimately make future technology decisions. As the university progresses toward future technology initiatives, this type of study could be utilized to again ascertain the concerns of the end users.

If everyone involved with the laptop program can see the benefits and be able to effectively and efficiently use technology, learning will be more beneficial, and students will be much better prepared to enter the workforce. However, it is not just the professors' responsibility to properly use technology. Students must take responsibility by staying on task in the classroom and properly using the wireless network they are using. Better decisions can be made system users when everyone is well informed and adequate training is provided.

The laptop program at UIW has been through many changes. For example, the IT department has changed the laptop model from IBM to Gateway to Dell since the program's inception in 2001 and continues to explore the best model for the best price for the university population. While this may seem to some to be a problem, the changes were actually to make the program better as the most reliable vendors were sought out. A problem initially, the changes eventually made the program run more smoothly. This is only part of the role of the IT department. The staff seeks to make sure that the system remains secure, that enhancements are made to ensure that it can handle the growing number of users, and personnel remain up-to-date on new technologies.

Although not without its problems, the laptop initiative at UIW has also had a positive impact on both students and professors. During this study, the students related to the researchers

Volume 10, Number 2
ISSN: 1535-0975

that they were grateful for having the laptop and the advantages it has for them. One student commented, “The ability to take notes in a typed format allows for neater notes as well as quicker as I type much faster than I write.” Other students expressed that the laptops gave them more opportunities to learn. Some statements included, “Current software packages are being utilized,” and “The laptop is a good source for communication. I also like doing research during class.” The professors made similar statements such as, “I can easily communicate with my students via Cardinal Mail and Blackboard.”, “I can give online tests that are instantly graded and provide instant feedback to my students.”, and “I can engage the students with creative lessons.”

Some results of the study were expected while others were not. For example, the issue of students using the laptop for non-academic purposes was not a revelation. Also, the extent of the problem and the fact that some professors were no longer allowing laptops in the classroom were definitely unanticipated; however, this has forced faculty to consider whether the use of laptops in the classroom is appropriate for all disciplines and courses. While employer feedback now demonstrates increased satisfaction in technology skills of recent graduates, an unfortunate piece of employer feedback is the perceived diminished oral and written communication skills of those same recent graduates.

The university laptop initiative was intended to change the classroom environment to incorporate more technology and give students more access to information while in the classroom. However, for some, the classroom management issue became a problem to which some professors did not seek a viable solution other than to ban the laptops in their classes. A study of the Winona State University laptop program found that merely having a laptop initiative

Volume 10, Number 2
ISSN: 1535-0975

did not directly lead its professors to integrate the technology into their curriculum (McVay, Snyder, & Graetz, 2005). Liaw (2002) also stated that, "No matter how capable the technology, its effective implementation depends upon users having positive attitudes towards the technology." The case of Duke University, mentioned previously, is a good example of professors developing negative attitudes toward laptops and eventually banning their use in the classroom (Chanen, 2007). Professors at Chicago-Kent College of Law and Stetson University College of Law have also experienced the problems with students using their laptops for non-academic purposes such as gambling and some have banned their use in the classroom (Chanen, 2007).

In any event, continuous improvement of technology programs in university settings includes the responsibility to question whether existing technologies are appropriate. Are laptops the answer? Is it time to transition to I Phones for communication among faculty, staff and students? Is it time to transition to the I Touch to preserve security in university intranet systems but allow portability of multiple applications which are discipline specific? Has the Amazon Kindle become the textbook of the future? Or, have we yet to see a palm-sized mechanism that combines all of these features while providing safe, secure transmission of data and synchronous communication capabilities? Only time will tell as we strive to continuously improve the way faculty teach and the way students learn.

Volume 10, Number 2
ISSN: 1535-0975

Conclusions

Each of the three groups in this study provided valuable feedback concerning the challenges they face in their specific roles. The following list is a summary of the challenges that emerged from students, faculty, and IT staff.

Students:
1. Costs associated with purchasing the laptops.
2. Poor connectivity and response time.
3. Professors do not utilize the laptops in class.

Faculty:
1. Difficulty in keeping the students from using the laptops for personal use during class.
2. Lack of time to learn the new software programs.
3. Slow connectivity and response time.

IT Staff:
1. Security issues.
2. Ongoing support.
3. Delivery and product supply chain.
4. Storage and disposal of old equipment.

Limitations

This particular study was conducted with professors from the School of Business at UIW and students who were taking the computer literacy course. Therefore, it might be beneficial to include a greater range of both professors and students. Professors from other departments might have some additional insights as to how they integrate the laptops into their curriculum and the challenges they have faced in creating effective teaching and learning with the use of laptops.

Although the curriculum for the computer literacy class encompasses only Microsoft Office application, the students in that class may have already had technology knowledge that others may not have possessed.

The sample size, while small, included a representative sample of the laptop program stakeholders. Common themes emerged as the data were collected and analyzed, and the researchers found that as the discussions continued, the same concerns continually emerged. While the focus on students enrolled in computer literacy is a consistent focus with the 2001 study by Craven, Caldwell and Tiggeman, including additional students from outside the School of Business into the focus groups could bring some added information to the discussion. Although there was only four IT staff who participated in the study, they represented different departments within the technology sector of the UIW campus, and they each brought thoughts from the personnel in their respective departments.

Implications for Future Research

It is always important for the different groups involved in an initiative to know how each group is dealing with issues that arise. Consequently, future research into the areas of concern for this particular laptop initiative could include talking to professors, students and IT staff about ways to improve the initiative as well as educating each group about how to most effectively make use of the laptops. Experimental studies could be conducted comparing the learning outcomes of course sections that utilize technology in the classroom and those that do not. Furthermore, additional research that utilized quantitative methods could be employed. A technology satisfaction, frequency of use and level of use survey would allow the university to

Volume 10, Number 2
ISSN: 1535-0975

obtain a wider range of information and to use that information to make improvements to the laptop program. If the results of that survey are then distributed to each group involved, those groups can work together to help resolve the issues that each group faces.

From the results of this study, it is clear that a major problem facing the integration of laptops into the university classroom setting is being able to manage what students are actually doing with their laptops. A future study could include a more in-depth look at how professors are dealing with the problem so that students and professors can have positive outcomes with the use of laptops. Any new technology will have both advantages and disadvantages, and it is important to discover how to best use that technology and not dismiss it because of a disadvantage. Professors who have successfully implemented laptops in their classroom environments could provide insights into the methods they employ. Students could be another rich source of information. Since they have been exposed to numerous learning environments, they could offer their ideas regarding the use of laptops in the classroom.

References

Al-Khaldi, M. A., & Al-Jabri, I. M. (1998). The relationship of attitudes to computer utilization: New evidence from a developing nation. *Computers in Human Behavior, 14*(1), 23-42.

Arreola, R. A., & Aleamoni, L. M. (2000). *Assessing Student Learning Outcomes*, Center for Educational Development and Assessment, Workshop Resource Document.

Brown, J. (2008). Student-centered instruction: Involving students in their own education. *Music Educator's Journal, 94*(5), 30-35.

Chanen, J. (2007). Profs Kibosh students' laptops. *ABA Journal, 93*(11), 16-16.

Craven, A., Caldwell, R. & Tiggeman, T. (2001). *Technology Across the BBA, MBA, and MAA Curriculum*, The Proceedings: Selected Readings From the Society for Advancement of Management International Management Conference, 2001, pp. 449-458.

Cutshall, R., Changchit, C., & Elwood, S. (2006). Campus Laptops: What logistical and technical factors are perceived critica? *Educational Technology & Society 9*(3), 112-121.

Demb, A., Erickson, D., & Hawkins-Wilding, S. (2004). The laptop alternative: Student reactions and strategic implications. *Computers & Education, 43*(1), 383-401.

Finn, S., & Inman, J. (2004). Digital unity and digital divide: Surveying alumni to study the effects of a campus laptop initiative. *Journal of Research on Technology in Education, 36*(3), 297-317.

Hall, M., & Elliott K. M. (2003). Diffusion of technology into the teaching process: strategies to encourage faculty members to embrace the laptop environment. *Journal*

of Education for Business, 78(6), 301-307.

Kelly, B. T., (2003). Focus group interviews. In F. K Stage & K. Manning (Eds.), *Research in the College Context* (pp. 49-62). New York: Brunner-Routledge.

Liaw, S. (2002). An internet survey for perceptions of computers and the world wide web: Relationship, prediction and difference. *Computers in Human Behavior, 18*(1), 17-35.

Ma, Y., & Runyon, L. R. (2004). Academic synergy in the age of technology – A new instructional paradigm, *Journal of Education for Business, 79*(6), 367-371.

McKeachie, W. (2002). *Teaching Tips*. Boston: Houghton Mifflin.

McVay, G. J., Snyder, K. D., & Graetz, K. A. (2005). Evolution of a laptop university: A case study. *British Journal of Educational Technology, 36*(3), 513-524.

Mereba, T. (2003). Managing transformation: Aligning technology initiatives with instructional priorities. *Tech Trends, 47*(3), 42-44.

Ouzts, D. T., & Palombo, M. J. (2004). A study of perceptions of college professors. *Tech Trends 48*(5), 17-22, 82.

Patton, M. O. (2002). *Qualitative evaluation and research methods.* Newbury Park, CA: Sage Publications.

Pike, M. J. (2004). The trend to restructure media services reporting lines: Results of a study, *College & University Media Review, 10*(2), 11-42.

Varvel Jr., V. E., & Thurston, C. (2002). Perceptions of a wireless network. *Journal of Research on Technology in Education, 34*(4), 487-501.