

Laptop Requirement Usage and Impact in Graduate ILS Education

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A new requirement for personal laptop computer ownership was implemented for graduate information and library science (ILS) students. This study evaluates the impact and usage of laptop computers, and the real and envisioned benefits of laptop ownership during the first six months of the requirement's implementation. Online and email surveys were used for data gathering, and a combination of quantitative and qualitative data were collected. Student perspectives were emphasized, and institutional background were examined. It was found that students' reaction to the requirement and their usage of laptops was influenced by their previous experiences with computers, their computer skills, and their expectations of the academic program. Understanding of Institutional context of laptop implementation was found to be important for the success of the program.

1. Introduction

In Fall semester, 2001, all incoming students to the graduate programs in the School of Information and Library Science in UNC-Chapel Hill were required to possess a laptop computer. This study examines the impact and utility of the laptop computers through the first 6 months of the laptop requirement. A combination of quantitative and qualitative data were collected, and evidence from secondary sources such as university reports and class syllabus materials were also gathered.

For this study, we wanted to know:

- How did different groups of people, i.e. new students, current students and faculty react and adjust to the laptop requirement?
- What were the factors that influenced the implementation of this requirement?
- What kind of concerns emerged, and what changes have happened or may happen in the School as the result of the laptop requirement?

We believe answers to these questions are important to departments, schools and universities seeking to implement their own laptop requirement or to integrate related technologies into their curricula. As network access and computer ownership becomes ubiquitous in higher education settings, the match between planned and actual benefits of technology must be assessed. The role of computers in fostering educational objectives must be gauged, and practical issues such as support and laptop consistency need to be addressed.

2. Literature Review

Three general areas of writings can be identified from the literature on laptop programs in education. The first area includes administrative reports and reviews on the rationale, planning and implementation of laptop requirement in educational institutions (e.g. Remser, et al., 1995; Brown, et al., 1998; LeBlanc & Teal, 1998). The second theme concerns how portable computers can be incorporated into teaching (e.g. Kiaer et al., 1998; Watters, et al., 1998), and changes laptops can bring to teaching, learning and campus culture. Noted educational benefits related to laptop use include increased student motivation (Gardner 1994; Rockman, 1998; Fisher & Stolarchuk, 1998), a shift towards learner-centered approach in teaching (Holleque & Cartwright, 1997; Stevenson, 1998; Deden, 1998; Rockman, 1998; Newhouse, 2001), increased communication among students and

faculty (Holleque & Cartwright, 1997; Stefanone, et al., 2001), and higher school retention rate (Sargeant, 1997; Stevenson, 1998). Changes in faculty roles and activities are also reported (Holleque & Cartwright, 1997; McCollum, 1998). Another common theme identified in the literature covers issues or concerns emerged during the implementation process of laptop programs, such as additional cost to students and schools, distractions in class, faculty training and use of time to prepare courses, security issues, and the equity controversy of using costly laptops (DeLoughry, 1995; Young, 1998; Jameson, 1999, *The Laptop College*, 1999). However, research into the educational use of laptops has only recently begun, and universities are exploring ways to utilize portable computers on campus (Olsen, 2001). The long-term impact of laptop programs on education remains to be seen.

These themes from the literature share some common assumptions about portable computers, and in how stakeholders participated in the evaluation process. Laptop computers in the literature are often regarded as relatively stable, independent and fixed artifacts, serving as a determining factor causing changes to teaching and learning in education. This assumption fails to take into account the social context computers are to be operated in, and the interactions between the technologies and their institutions (Bijker, 1995; Orlikowski & Iacono, 2001). For instance, while arguing why the United States Air Force Academy optioned to require its students to purchase desktop computers instead of laptops, the authors provided reasons which were the inherited characteristics of laptops: higher cost, decreased capability, inability to upgrade, problems with durability and increased maintenance, and lack of security (Grier & Bryant, 1998). It failed to give much account of the institutional nature that influenced the decision, and makes one wonder why the same kind of laptops are required by many other universities.

Another assumption shared by the literature is that students involved are treated as passive recipients of laptop programs, waiting to be affected by the introduction of laptops in their lives. Students are treated as a unanimous group without many distinctions among themselves, especially regarding their previous knowledge of or experiences using computers or their assumptions and perceptions towards laptops and laptop programs. The knowledge, assumptions and expectations students

have about laptops may influence the ways they negotiate their reactions and actions during the implementation process (Orlikowski & Gash, 1994), and are thus important to understanding the adaptation process of a laptop requirement in education and possible changes it may bring.

In this paper, we will examine the laptop implementation in a higher education setting from the students' perspective. It is hoped that more understanding of student roles and reactions will be gained, and the match between real and perceived benefits observed, in order to better manage programs of similar nature.

3. Study Background and Methodology

3.1 Study Background

Starting in the Fall semester of 2000, all incoming freshmen of the University of North Carolina at Chapel Hill were required to own laptop computers as part of the university's Carolina Computing Initiative (CCI) technology plan. The School of Information and Library Science (SILS) at UNC-CH adapted a similar program for its incoming graduate students a year later. The school has about 250 students studying for Master of Science in Library Science (MSLS), Master of Science in Information Science (MSIS), Certificate of Advanced Study and PhD. An undergraduate minor is also available, but this group of students are not included in the study. Brochures about the laptop program with the minimum requirements for software and hardware were sent to students when they were admitted. Two IBM Thinkpad models were recommended as the standard CCI computers, with on-campus support from the university's academic computing services division (ATN). This paper will examine students' reactions and laptop use during the first six months of the launching of the laptop requirement in SILS.

3.2 Data collection methods

An online survey was administered during the end of Fall 2001 semester to both first-semester students who entered the school with laptop requirement, and returning students with no such requirement. Email invitations were sent to internal mailing lists to solicit participants. An online Web-based form was used to

collect survey responses. If they consented, participants also received a follow-up email with open-ended questions seeking clarification and amplification of their survey responses. Questions asked in the survey included:

- Participants' demographic information such as their gender and degree sought;
- The kind of computer(s) they own;
- How they use their laptop computers;
- Their perceptions of laptop computers;
- Sources for help when they meet a problem and service they expect from the School;
- Their understanding of why the School made the requirement;
- Changes they have anticipated or experienced due to the requirement, especially in regards to the interaction among faculty and students inside and outside of class.
- Concerns they have about the laptop program in school.

One version of the survey was developed for first-semester students, and a slightly different version for students who had been in the School for a longer time. The main difference was a question asking about laptop purchase plans for new students. The data collection phase lasted for six weeks until the first week of January in 2002.

3.3 Data analysis

All data were stored and analyzed in MS Access and Excel. The quantitative survey replies were entered into the system and analyzed when received. For qualitative data, since we were examining participants within their social settings, and attempting to understand the phenomena through accessing the meanings participants have assigned to them, an inductive thematic coding scheme was developed (Flick, 1998; Orlikowski & Baroudi, 1991). A preliminary coding scheme was derived based on the survey questions and initial readings of the data. Two coders, one being a researcher in this study, coded a small portion of the dataset using the initial coding scheme. The scheme was then revised and used to code the whole dataset. After it was finished, the coding scheme was refined one more time with several changes to sub-categories. The whole qualitative dataset was coded again for the

changed categories and checked for possible errors. The researcher was the only coder, and notes were taken during the process. SPSS was also used for statistical analysis during the process.

4. Results

Twenty-five first-semester students and sixteen ongoing students completed the online forms, and twenty-eight of them completed the follow-up email survey. Table 1 lists the number of participants in each program of study in SILS.

Table 1: Number of participants in each program of study in SILS

Status	Program	Number	Email survey response
First-year students	MSIS	10	5
	MSLS	13	10
	PhD	2	1
	Sub-total	25	16
Returning students	MSIS	5	3
	MSLS	5	5
	PhD	6	4
	Sub-total	16	12
Total participants		41	28

Each email survey contained four broad inquiries, with several related questions in each inquiry. A sample email inquiry might have asked, "So you have a laptop purchased from elsewhere. Could you tell me what kind of machine it is, and how did you get it? Do you find it perfectly OK to use a non-CCI machine on campus?" or "You mentioned that you were excited about the laptop requirement when you first learned about it. What did you anticipate at the time, and what were you excited about?" Most answers had an average of 100 to 150 words per inquiry, though some contained more than 400 words, and some half a dozen.

Some interesting findings turned up in participants' responses, and are discussed in the following sections.

4.1 Discussion 1: to buy or not to buy

The School requires each new student to own a laptop computer. However, just as not all students buy the textbooks faculty have required, students were also investigating into whether or not to purchase a laptop, and if they did, what kind. Table 2 lists the kinds of computers participants reported owning at the time of the study, for instance, the first data line indicates that there are 7 first-year students who own both a non-CCI laptop and a desktop:

Table 2: Participants' computer ownership

Status	Number of students	Kind of computer owned		
		CCI laptop	Non-CCI laptop	Desktop
First-year students	7		v	v
	5	v		v
	3		v	
	5			v
	3	v		
	2	v	v	
Subtotal:	25	10	12	17
Returning students	8			v
	4		v	v
	3	v		v
	1	v		
Subtotal:	16	4	4	15

Note: v indicates participants own that kind of computer.

From Table 2, it can be seen that all participants in the study owned some kinds of computers. The ownership rate for desktop computers was quite high among participants. Over three-fourth of first-semester participants had their desktops prior coming to SILS, and some were upset because they had to buy another computer to meet the School's requirement. Students commented that:

Since I already had a desktop computer before starting school, I was disappointed to discover that I would have to spend so much money on a laptop.

I was frustrated because I already have a laptop (one I'm still paying for), although it's four years old and can't be upgraded to current standards.

The proportion of desktop ownership was even higher for returning students (94%). This can suggest that the use of computers is prevalent in the School. Even for those students who started the program with no personal computers, they will likely come to realize the importance and convenience of having one of their own, and try to get one.

Table 2 also indicates that not all first-year students followed the requirement and bought a laptop computer. When asked about their computer purchase plans if the School did not require laptop ownership, only 5 first-year participants indicated that they would consider laptops. The most popular reasons for this decision included: having desktops at home with Internet access, high cost of laptops, and powerful computer resources in the School lab. Several students were also concerned that laptops were hardly required in class or incorporated in teaching (except for one course), thus owning one was not a must.

For those who followed the requirement, less than half of the participants in our study chose to purchase the recommended CCI laptops from UNC. Some bought other brands such as Dell, Toshiba or HP, and one student got a \$700 used one just for the requirement. High price was again an important factor for this decision. One student mentioned that:

When I was comparing prices at Best Buy and other places that sell computers, I noticed that I could buy a computer with more memory and better features for less money than the UNC laptops cost. ... I figured that as long as I had to buy a laptop, I might as well get what I wanted.

The data suggest that not all students followed the School's requirement. They had their own considerations when making purchase plans. The data also indicate that the rationales for adopting laptop programs need to be compatible with their institutional context. From the University's rationale, "a student body not fully equipped with computers remains an obstacle ... to integrate technology into the curriculum," and the CCI program aims to ensure students "have easy access to high-quality and affordable technology and can use it effectively" (Carolina Computing Initiative, 2001). UNC's reasons seem typical of why many other educational institutions have computer requirement for their students (Resmer, et al., 1995). However, this

rationale might not apply to ILS graduate students. Being in a graduate school of information and library science, where computer use is prevalent inside and outside class, and where computer labs offer world-class facilities, students already have lots of exposure to computers before the requirement started. One student commented that:

I really feel that most SILS students use technology a great deal already, and are not scared of technology, so using a laptop as an "immersion" tactic is not necessary.

Thus the rationale in this case should be different for SILS from that of the university.

4.2 Discussion 2: Skill Level

Participants were asked to rate their computer skills from 1-5 in our survey, with 5 being the highest. Since these scores were self-reported, they reflected more about participants' perceptions of and confidence in their computer skills, rather than their actual computer skill levels. It was found that choice of computers was related to these perceptions. Table 3 contains participants' self-reported computer skills in regards to their computer ownership.

Table 3: Self-reported computer skills of participants

Participants	Number	Mean Computer skills
First-year students who		
own CCI laptops*	10	3
own non-CCI laptops	10	3.8
own only desktops	5	3
Returning students who		
own CCI laptops	4	4.25
own non-CCI laptops	4	4.5
own only desktops	8	3.5

* the two participants who own both a CCI laptop and a non-CCI laptop are included in this category. It is most likely they owned a non-CCI laptop before they were admitted to SILS, and bought a CCI laptop upon coming to the School.

First-year students who just started in SILS reported lower computer skills than returning students, which is not surprising. First-year participants who bought non-CCI laptops, however,

reported higher computer skills than participants who purchased university-recommended computers. Buying a non-standard computer may imply that one has the knowledge to compare different laptop models and order it to match the School's requirement or one's personal preferences. It can also imply that one has the confidence to configure the computers to School systems and rely on sources other than the university for help. If one is not quite confident about his/her computer skills, a CCI laptop with four-year warranty and convenient on-campus support can be a good option. This might be the case for the eight first-year library science participants who purchased CCI laptops. Their average self-reported computer skills were 2.6, and they take up the majority (80%) of participants in this category. One student mentioned this in the email response:

Because I'm so inexperienced with computers, I felt compelled to purchase my laptop from UNC -- thus making it an even more expensive purchase -- so that I would be guaranteed assistance in case of any problems.

Other students also seemed to be aware of this difference. One respondent said that:

And there also seems to be some strange division of camps -- those who bought a CCI laptop and the others. Some of the others seem to look down on the CCI people and present an attitude that the CCI people wasted money. A bit of self righteousness.

For returning students, it was a different story. It was found that the self-reported computer skills of the eight returning students with laptops were much higher than the eight students with just desktops ($p=0.02$). Since they are not required to own a laptop computer, pursuing one might indicate that they have the interest in exploring the technology, and necessary know-how to play with it. It needs to be noted that five of the eight returning participants who own laptops were doctoral students, who were in the field for longer time, and had presumably acquired more knowledge of computers.

From this evidence, it appears the laptop requirement might have the highest potential to change behavior for students with the lowest technical skills. This is part of the stated purpose of the

requirement: to increase the overall level of computer proficiency. However, the challenge will be to insure that the low-tech students are given sufficient training and support to utilize their laptops effectively.

4.3 Discussion 3: Seeking Support

The availability of campus and departmental support for student laptop use was deemed important by the administration. The main support feature of the IBM computers from UNC's CCI purchase plan was ATN's on-campus warranty service and a loaner program. Other campus support options were available to any student, regardless of which computer they purchased. These included a 24-hour email and telephone response center, numerous online help documents, and training classes.

Within SILS, additional options were available for all students. These contained a departmental computing laboratory, help desk, and orientation classes. Within the curriculum, a required course (INLS 102, <http://ils.unc.edu/inls102>) was developed to serve partially as an orientation to laptop use within the university. This course was not offered to students until Spring 2002 semester, so at the time of study, no participants had taken this course, though it is highly anticipated among first-year students.

The survey asked participants with laptops to choose among three places for help when they have software-related or hardware-related problems for their laptops. Table 4 lists participants' choices, in the order of preference, for the places they turn for help.

Table 4 shows that student preferences for help resources, even the order, were almost the same for software-related or hardware-related problems. The one exception was the University's ATN, which was the most popular choice if students had hardware-related problems with their laptops. Student also learned from each other, and relied on documents either online or on paper for help. Departmental help and faculty support were not among the top picks of help resources students use. Seeking service from the university facilities or elsewhere was encouraged by the School, and SILS promises no support for any hardware-related problems and offered limited support for software-related problems (SILS Computing Requirements, 2001).

Table 4: Help channel preferences for problems related to laptop use

Software-related problems*	Hardware-related problems*
1. SILS classmates	1. ATN
2. online materials	2. SILS classmates
3. ATN	3. online materials
4. people outside SILS	4. people outside SILS
5. printed materials	5. printed materials
For students with CCI laptops**:	
1. SILS classmates	1. ATN
2. ATN	2. SILS classmates
3. online materials	3. SILS help desk
For students with non-CCI laptops**:	
1. online materials	1. online materials
2. SILS classmates	2. people outside SILS
3. people outside SILS	3. printed materials
4. printed materials	4. SILS classmates
	5. laptop manufacturers

Note: total $n=28$.

* only items which were chosen by at least one third of participants with laptops were included here.

** $n=14$.

Students with CCI laptops showed a slightly different preference for help channels. Support from ATN was high on the lists of students with CCI laptops, but absent from the top list of students with non-CCI laptops. While students with CCI laptops enjoyed the convenience of help resources around them, students with non-standard computers were comparatively more self-sufficient, relying more on printed or online resources and people from outside school for help. Seeking help from laptop manufacturers was also preferred in this group.

Providing adequate technical support is one of the biggest challenges for universities with laptop programs. However, if more understanding is gained about students' preferences of support, this job can be done in a more efficient way. For instance, our data suggest that more accessible and useful materials can be provided to students, and easy communication channels among students can be encouraged.

Table 5: Estimated time spent with laptops

Situations	Groups according to laptop ownership		Groups according to status		total
	Students with CCI Laptops	Students with non-CCI laptops	first-year students	returning students	
Number	14	14	20	8	28
schoolwork in class	1.75	1.25	1.40	2	1.50
schoolwork outside class	3.71	3.21	3.45	3.5	3.46
personal use	2	2.79	2.25	2.86	2.41

Note: participants were asked to rate their estimated time for laptop use from the choices of: 0-20%, 20-40%, 40-60%, 60-80%, and 80-100%. These answers were then coded using numbers 1 to 5. 0-20% was coded as 1, 80-100% was coded as 5, and other numbers fall in between.

4.4 Discussion 4: Uses and Benefits

At the time of this study, the laptop requirement within the School was in its first year. At the University, the requirement was in its second year. Thus, many of the anticipated uses of laptops in the classroom had not yet occurred. One reason for this, in the graduate program, was the mix of laptop-enabled and without-laptop students classes.

The survey asked students with laptops to describe their actual uses of the portable computers, and the relative time spent with them for schoolwork inside and outside class, and for personal purposes. Table 5 presents the estimated time participants spent with their laptops in different situations.

From Table 5, it can be seen that participants spent more time on laptops for schoolwork outside class, and the amount of time spent on laptops in class was relatively low. Both faculty and students were still exploring ways to use laptops in the classroom as the laptop program had just started to unfold in SILS. Not much difference can be found between participants with the standard and non-standard computers, or between first-year and second-year participants with laptops.

For the kinds of tasks students performed on laptops in class, ten, or one-third of participants who owned laptops mentioned that they would use laptops to retrieve relevant and supplement information for course use, such as class homepages, pertinent websites, etc. Some, not many, reported using laptops for taking notes (6 participants) and doing hands-on practice during class (5 participants). Four students also mentioned they became distracted in class by doing emails or surfing the Web on their laptops.

More laptop use was reported in the other two situations. For schoolwork outside class, most participants used laptops for word processing jobs, such as writing papers or their thesis. Many of them used laptops to go online for library searches, or looked for useful information for their coursework. About half of the participants used laptops for communicating with classmates or faculty, and participating in discussing forums. Laptop use was also mentioned and observed as a plus for student group meetings. Besides coursework, students used laptops heavily surfing the Web for personal information needs, and communicating with others mostly via email. About one third of the participants reported that they use laptops for playing computer games, listening to music and watching DVDs.

Although laptop use was not widespread, especially in the classroom, participants were able to point out some benefits of using laptops. Besides alleviating crowdedness in the School's computer lab, personal laptop ownership could help students learn more about technology. This echoed one of the points made earlier: laptop programs benefit low-tech students most. Participants commented that:

I think that students are forced to get familiar with technology and online/computer resources...very beneficial to those who wouldn't otherwise do it.

I do think students can benefit from it because it forces the owner to learn how to do everything with the computer--how to fix it, how to reconfigure it, how to do all kinds of things that you would never do on a school-owned computer.

Buying my own computer taught me about hardware, more than I had learned using computer labs at my undergraduate university.

Participants also mentioned the power of a networked laptop:

The ability to use a wireless network to access specific software (like SAS or Oracle) and specific data stores (like CD-ROM banks) will make the laptop a valuable resource for the resourceful student.

We have a lot of technically-competent people who could benefit from having access to the Web and one another within easy grasp, and this is exactly what wireless laptops help facilitate.

Indeed, connectivity and portability were two of the most advantageous features of laptop computers, and thus needed to be exploited to the full. However, this has not been realized by many people. One participant suggested the School to increase students' wireless connectivity:

A laptop is only so useful if it's not networked. Either make the wireless cards part of the package or increase the number of Ethernet jacks by a factor of 25 or so.

To students, what they did with laptops was not much different from what they usually did with desktop computers. Students' previous knowledge of and experiences using desktop computers influenced their encounter with laptops, and to some extent constrained their options in utilizing this new tool (Orlikowski & Gash, 1994). When asked to describe future classrooms with laptops, one student also mentioned that:

I'm not an innovative thinker, so I'm just thinking of how current classroom activities like those will be done using computers, not about new activities that aren't done now without laptops!

It will take more effort and innovativeness, for both students and faculty, to put laptops to good use.

4.5 Discussion 5: Concerns and Anticipated Impact

From answers to open-ended questionnaire items and follow-up email survey, students' areas of overall concern were identified. These concerns included, in the order of the number of students that mentioned them:

1. The high cost of portable computers
2. Negative factors in the classroom, especially distraction
3. Proper incorporation of laptops in curricula
4. Availability of support and training
5. Laptop safety
6. Inconvenience of carrying the laptop
7. The school shifting towards greater interest in information science

Most of these concerns have been reported by other researches (e.g. The Laptop College, 1999), except the last item. Participants, most of whom were library science students, were concerned that "the school is hurdling head on into technology and information science', ... neglecting other traditional roles that libraries still fulfill."

This section of the discussion will focus on the first three big concerns of students in the study: cost of laptops, incorporating laptops in curricula, and positive / negative impact of introducing computers in the classroom.

Affordability topped students' concerns. Over 60% of participants reported this concern, either for themselves or for other students. Having spent this extra \$2000 or more, many of them expected to "take full advantage of the laptop" and make good use of it. Whether the cost was justified, in students' eyes, became an important issue. Participants stated that:

I like my laptop and I'm glad I have it, but there are times when I'm not sure the cost was justified by how I use it.

In my opinion, the biggest issue regarding the laptop requirement, is balancing/justifying the cost with students' needs.

The fact that laptops aren't integrated into the curriculum and that students drop \$2,000 for nothing!

Indeed, the actual level of integration of laptops within the curricula is one of the biggest shared concerns among participants. Many students observed that most of their classes made little or no use of the laptop at all. Despite signs of patience in awaiting further integration, there was clear frustration, especially combined with their expectations and the cost issue:

I've been frustrated because most professors do not require it in class. ... SILS does not require us to use the computers enough to justify the laptop requirement.

Some participants mentioned the importance of preparing faculty for incorporating laptops in teaching. This may include training faculty on how to incorporate the use of laptops in classroom teaching, providing incentives and support systems. Participants stated that:

I think there is a lot of learning to be done by the professors to implement laptops in the classroom. I was a teacher ... they encourage us to use technology in the classroom-computers, web pages, etc.. That seemed to be more of a burden.

Faculty will need to greatly increase their computer skills to successfully incorporate laptop use in the classroom. Another is the variation in faculty support, some professors seem to think the requirement is unnecessary and therefore have little reason to incorporate laptops into their courses.

It may be difficult to integrate teaching with laptops into the classroom if there is not an adequate support system in place for faculty, i.e., a resource that specializes in helping make technology a vital part of teaching.

Incorporating laptops in classroom learning was not welcomed indisputably by all students. Rather, it was seen as both a threat and a benefit to learning experiences by participants. Distraction was one of the imperfections of having laptops in class:

I've seen some students taking notes on their laptops, but I've also seen students using computers in class to surf the web, engage in

instant messaging conversations, and check their email.

People will check their email or play games in class instead of paying attention, annoying the rest of us with their typing.

Some students were concerned about decreased reliance on real-world interpersonal interaction, with laptops serving to distance people behind electronic facades.

Right now we have great discussions in some classes, but if we all have our attention directed at our laptops we will be losing a lot of the interpersonal communication and class participation.

Another student commented that:

inside class, discussion may be reduced for everyone concentrates on his or her screen and is busy typing. Outside class, however, interactions may increase for students are free to contact each other when they have an idea via email if they have the wireless connection to the Internet.

Laptops can thus also be welcomed as an easier way to use email, Web pages and interactive chatting to communicate more directly with faculty and fellow students.

Some students questioned whether laptop computers should be required at all, but many others indicated they thought it was a "positive step" in the right direction, despite their concerns.

I realize that we are the first group to have this requirement, and that therefore there are a lot of kinks that need to be worked out.

It will probably take several years to assimilate the laptops. We're still just figuring out how they will be most useful.

In the future, many of the students entering the program will have grown-up using laptops in their classrooms before they even get to the university level, so I think it will be the norm rather than being a special requirement.

5. Conclusion

This paper has examined the reactions of graduate ILS students towards the new laptop requirement, their laptop usage, concerns and anticipated changes as a result of the requirement. The institutional background was discussed, and various student perspectives were sought. However, it needs to be noted that the study took place only six months into the laptop program. Students and faculty were still exploring ways they could play with this new tool, and it is premature to say now whether laptops are a failure or a success. A follow-up survey was scheduled for Spring 2002, so that more information on the implementation process and changes experienced can be obtained. It also needs to be mentioned that only student's perspectives were studied here. It is important for the roles, reactions and actions of other participant groups to be examined for a more holistic picture of the case under study.

Overall, the data show that the decisions students made as to whether they followed the School's laptop requirement were influenced by their own considerations such as previous computer ownership, financial situations, and computer skills. Their use of laptops was also influenced by their previous experiences and knowledge of desktops. Most of the students regarded cost as a big concern for the laptop program, and had high expectations for its use in the School although the implementation was just in its early stages. For the School, its strong technical resources both encouraged and discouraged student laptop ownership. The program seems to offer the most potential to help low-tech students, yet the School also needs to provide adequate and efficient help resources or channels. Managing student expectations and providing support for faculty also need to be on the School's agenda.

One of the starting notions of the laptop requirement is to make computing ubiquitous. Just as pen, paper and books are part of the background of campus life, and their utility is seldom questioned, faculty at SILS, like elsewhere, saw ubiquitous networked computing as desirable and inevitable. The laptop requirement was a step towards the future of ubiquity for networked computers, and a subtext in many respondents' comments is recognition of this goal's desirability.

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