All incoming Wake Forest University freshmen students receive new laptop computers upon entering, exchange them for a more powerful laptop upon returning for their third year, and take their second computer with them upon graduation. In Fall 1999 the computer will be the IBM Thinkpad 390 with Pentium II, 333 Mhz, 6 GB Hardrive, 128MB Ram, 4.1” active matrix screen, DVGA video, ethernet, and CD Rom. Standard software will include Windows 98, MS Office Professional 97, Netscape 4.5, Dreamweaver, SPSS 9.0, and Maple V5.1.

All Wake Forest faculty and staff are on a two-year refresh cycle. All students, faculty, and staff therefore have 24-hour, 365-day, worldwide access to one of two standard computers with standard software packages. Standardization enables round-the-clock staffing of knowledgeable help desks, coaching by roommates and office neighbors, loaner pools, and (most meaningfully) teaching with the knowledge that all students have access to powerful electronic tools. The methods students learn for one class (e.g. creation of a web page) are transferable to other classes and to all types of community activities (e.g. fraternities and special interest clubs).

This ubiquitous computer environment has transformed the quantity, quality, and character of teaching, learning, and campus life. Frequent surveys confirm that more students are more intensely involved with more subgroups over more months, even when subgroup members may be farther apart. Surveys show that faculty are in touch with more students more frequently, as well as with more professional colleagues in more countries and for more years. The capacity for network conferencing, for sharing videotapes, for synchronous and asynchronous threaded conversations, for sophisticated archiving and indexing of messages, and for random access of images now contributes to a much, much richer community of learners. Students in a freshman writing course exchange rough draft essays with a similar class in Canada. Shakespeare students participate in fortnightly, live, two-way video conferences with the archivists at London’s Globe theatre. Business students view and review cyber-lectures so that class time can be reserved for discussion and analysis.

Because Wake Forest was one of the first to implement a ubiquitous computing program, we have been visited by individuals and delegations from over 300 U.S. colleges and universities and over 40 colleges and universities in other countries. In Winston-Salem, Southeast Asia, and Europe we have been sharing "the Wake Forest Story." Our intent is to catalyze other institutions to implement ubiquitous computing for the benefit of their students. This story includes a multiyear financial plan, the steps followed toward achieving faculty and trustee votes for a standardized computer initiative, faculty development initiatives, printer and network strategies, etc.
In COMPUTER ENHANCED LEARNING (http://iccel.wfu.edu) nineteen leaders of the implementation have collected this list of lessons learned:

- PC’s are only 10% of the Challenge (support/networks/policies/train/expose)
- Most sunk costs can be ignored
- Expectations need management
- Develop a comprehensive plan first, and quickly match it with a multiyear financial plan
- Standardization pays rewards well beyond those anticipated; non-standard configurations require 3-4 times support
- Students/Faculty want specific computer training that is centered around a task-at-hand; general classes don’t work well
- Be prepared to outsource challenges
- Reliability is critical, especially the Help Desk
- Provide academic units staff of their own & plenty of equipment without hassle
- Defer wiring every seat and every classroom
- Provide printers to every student
- Adopt a common course shell
- Avoid mandating the use of computers by all faculty
- Insist upon at least a three year refresh rate
- Improve communications weekly; rumors fly faster
- Spread the gains from & ownership of innovation throughout all units

This beginning list is cited for the purpose of catalyzing a sharing of lessons learned by other early implementers of ubiquitous computing, and thereby enabling others to avoid some of the missteps others have made.