<p style="text-align:center">Western Carolina University TLT Collaborative Proposal</p>

<p style="text-align:center"><u>Using Wireless Palm Technology to Promote Active Learning in the Classroom</u></p>

Principal Investigators

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Introduction

A number of universities have tried to promote active classroom learning via "ubiquitous computing" by requiring students to have notebook computers. Using notebook computers for this classroom purpose has been disappointing in several respects due to cost and because they are cumbersome to carry and use. In particular, data show that students seldom bring the laptop computers to class unless required, and the large majority of faculty members do not require they be brought. Palm technology offers an attractive alternative option for ubiquitous classroom computing because of lower cost; less downtime, breakage, and theft; and general ease of transport and use. Western Carolina University is proposing to investigate how wireless palm technology can be used to achieve the educational benefits of ubiquitous computing and active classroom learning.

Because of the above disadvantages of notebook computers, when WCU initiated in Fall 1998 its freshman computer admission requirement, students were allowed to choose between desktop and laptop machines. Thus far, over 90% of the students have elected to use desktop models.

Significance of the Project

Any classroom becomes an electronic classroom when students bring palm computer devices to class, provided that wireless Ethernet networking is available. Faculty can use this technology to gather via the network real-time learning assessment data from students. This feedback should allow faculty to continuously adjust curriculum items, assignments, and learning objectives to better match student abilities and expectations, making students active participants in the teaching/learning process. Moreover, both faculty and students can employ informational web sites and databases to enhance classroom instruction and discussion. Students can connect their palm device to classroom presentation systems for delivery of presentations or for group document collaboration. Students can also use the palm devices for quick note taking, such as in the library when conducting research. Indeed, when students are conducting library research with printed materials, the palm devices allow immediate and convenient cross-referencing to web resources. Additional communication opportunities include instant e-mail, discussion group participation, chat, and personal calendar access.

An important significance of this proposed project is that <u>all</u> colleges and universities should be able to apply the results on their campuses. The methods by which wireless networked palm devices enable active classroom learning should not depend on the existence of a student computer ownership requirement. Project results will be actively disseminated at regional and national conferences, and via the Collaborative Portal.

Project Design

Western Carolina University's project will engage four groups of students and four faculty members during the spring semester of 2001. The faculty will use the Fall 2000 semester for project planning, training, and preparation. Two of the groups will be freshman learning communities comprised of twenty-two students engaged in undergraduate liberal studies. The third and fourth groups will each consist of five to ten non-traditional students engaged in graduate study. The two learning communities will enroll in different sections of the same three liberal studies courses taught by the same three faculty members. One learning community will receive "traditional" instruction by the current University method of conducting those courses. WCU will provide the second learning community with palm computing devices. Wireless networking will be installed in the appropriate classrooms, residence halls, and library. Western Carolina University seeks to demonstrate that the innovative use of palm computing coupled with wireless networking will contribute to students becoming more actively involved in the learning process and will assist their achieving greater learning outcomes.

The third group, consisting of non-traditional graduate students, will also be given palm computing devices and provided wireless network capabilities in their classroom. This aspect of the trial program will gauge non-traditional student reaction to use of the technology in one course at the graduate level. The fourth group will be graduate students enrolled in a course with the same faculty member as group three, but the palm technology will not be used in their class.

Evaluation

Assessment of the trial program will be performed by the Coulter Faculty Center in conjunction with the University's Assessment Office. For example, final syllabi from the corresponding courses will be compared to see if and how the technology provided student input into the course curriculum and to compare how course curricula and assignments evolved over time. Students in the program will complete the standard set of course performance assessment tools including written papers and exams. Wherever possible, direct comparison of student performance on similar assignments in corresponding courses will be used to measure possible differences in learning outcomes. Other data to be gathered include course attendance, rate of assignment completion, and number and type of student-faculty interactions (as recorded by the instructors in daily logs) to see if students became more engaged in the learning process by use of the technology. These and other data will be examined to determine whether the technology contributed to students becoming more actively involved in the learning process and assisted their achieving greater learning outcomes.

Budget Request

40 palm devices with wireless cards; 40 @ $500. each = $20,000. 10 wireless Ethernet points of access; 10 @ $900. each = $9000. Total request: $29,000.

Western Carolina University will provide one-half release time for the four participating faculty members for the 2000-01 year, part-time faculty funds to cover the released courses, and all instructional materials and supplies.

The staff of the Coulter Faculty Center will provide complete technological and instructional design support for the project.