Student-Centered Collaborative Learning using Smart Classrooms and Laptops

Submitted to

Clemson University Innovation Fund

Submitted by

Clemson University
Department of Mathematical Sciences

Amount Requested: $49,000
Duration: July 1, 1997 – June 30, 1998

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1 Background

In the fall of 97, the Mathematical Sciences department was charged with developing a renovation plan for the Martin Hall complex. The plan delivered to Dee Stone at the end of February 97, would transform Martin M into a state-of-the-art classroom building in which each classroom would be smart; that is, a ceiling mounted projector and a technology podium would be installed in these classrooms. Additionally, the plan calls for providing power and network connections at the student tables in at least two classrooms and it provides for easy retrofitting of power and network connections at the student tables in all other classrooms. The renovation of Martin M is scheduled to begin in January 1998. The preliminary plan can be found at the web address

http://www.math.clemson.edu/faculty/Moss/martinM.html

In conjunction with planning for the renovation of Martin M, a group consisting of Dee Stone, Gary Berger, Phil Lyles, Rick Jarvis, and Bill Moss visited Wake Forest University (WFU) in February 97. Our purpose was to examine their renovated classrooms and to learn about their information technology project called the Plan for the Class of 2000. Bill Moss subsequently looked at information technology plans at a number of other institutions. A summary can be found at the web address

http://www.math.clemson.edu/faculty/Moss/uaccess.html

The IT plans at these institutions share the following features.

• Universal access to technology for all students and faculty via the use of laptop computers.

• The adoption of a student centered model of learning based on communication and collaboration. In addition to traditional modes of communication, the student interacts with various learning resources via his laptop. These resources include his collaborative workgroups, his professors, software applications, the library, the registrar, distance learning, electronic databases, the WWW.

• An incentive program for faculty adoption.

• The adoption of a standard hardware configuration.

• The adoption of a standard software load which can be supplemented by college or department.

• The construction of a high bandwidth network with high reliability and extra capacity.

• The use of high speed, high capacity servers.

• The introduction of a technology fee for all students or an increase in tuition.

• The renovation of classrooms to include power and network connections at the student tables and the instructor podium, audio/video/data projection systems, multiple screens, and carefully designed lighting.

• Data and video wiring for student dorms and common areas.
On March 17, 1997 the group that visited WFU met with Provost Rogers to tell him what we found there. At the end of this meeting, the Provost instructed Dee Stone to form a committee to formulate a pilot information technology project for the fall of 98. The committee formed, consisting of Dee Stone, Steve Wainscott, Steve Melsheimer, Gary Berger, Phil Lyles, Rick Jarvis, Chris Duckenfield, and Bill Moss, discussed a pilot laptop project for the College of Engineering and Science (CoES) and a faculty development center. On April 30, 1997 we concluded our deliberations with the recommendation that Clemson should proceed with both projects.

The CoES pilot laptop project will begin in the fall of 98. A small number of students, probably about 64, will purchase or lease laptops and will take most of their freshman courses in smart classrooms with power and network connections at the student tables. The instructors will also have the same laptops and will be provided with training during the spring and summer of 98. The purpose of the pilot is to investigate a student centered model of collaborative learning based on communication via laptops and workgroup services using the projects at Wake Forest University and Oklahoma University College of Engineering as guides.

It is anticipated that the CoES pilot, if judged successful, will be followed by a somewhat larger pilot in the fall of 99, and a college wide program beginning in the fall of 2000.

2 Proposal

The Mathematical Sciences department requests $49,000 to begin to prepare for the use of smart classrooms and the CoES laptop pilot. We would like to create two temporary smart classrooms for the fall of 97. We plan to take this equipment with us when we are moved out of Martin M in January 98. We also request laptops and two weeks of summer support for six faculty members. The department has already invested $15,000 in planning for the fall of 97.

3 Budget

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<th>Item</th>
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<td>2-Smart Classrooms</td>
<td>16,000</td>
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<tr>
<td>6-Laptops</td>
<td>15,000</td>
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<td>Summer support for 6 faculty</td>
<td>18,000</td>
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<td>Total</td>
<td>$49,000</td>
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4 Budget Justification

The budget for each smart classroom includes a 500 ANSI Lumen, 800x600 LCD projector, a ceiling mount kit, 50’ of high grade VGA cable, an Extron distribution amplifier, and a technology podium. In addition, power will be provided to the ceiling mounted projector, to the technology podium, and two light switches will have to be added.

The summer support will give six faculty the opportunity to begin to explore student-centered collaborative models for learning and teaching and to familiarize themselves with the new laptops.