



## Cañada College

### Interactive Learning Network (ILN) with Individualized or Group Focus for Real-Time Student Assessment and Assistance

In April 2005, Cañada College received an HP Technology for Teaching grant to encourage the transformation of learning and teaching. Engineering Professor Amelito Enriquez is using HP mobile technology to achieve intellectual engagement of all students during classroom instruction by providing a venue for active two-way interactions between the instructor and individual students, as well as collaboration between the students to develop skills and strategies for problem solving. The Interactive Learning Network is developed using a versatile software NetSupport School that allows individual and group monitoring, assessment and management of all computer applications, immediate feedback and analysis of student performance, and participation in individual student activity, or interaction between students.

#### Rationale

One of the strengths of the Science and Technology Division at Cañada College is its student-centered approach to teaching and the amount of individual attention that the faculty devotes to students. The growth of the Engineering Department in recent years has made implementing this approach challenging.

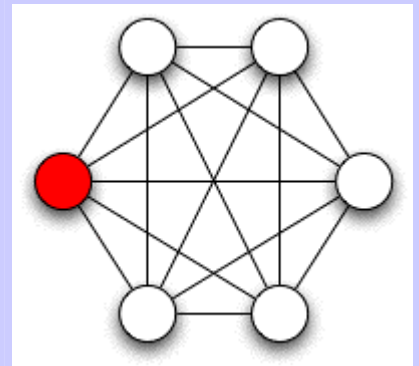
The Interactive Learning Network is designed to address this problem by enhancing the instructor's ability to solicit active participation from all students during lectures, to conduct immediate and meaningful assessment of student learning, and to provide needed real-time feedback and assistance to maximize student learning. It will also provide opportunities for students to develop their ability to communicate effectively and function in a team in identifying, formulating and solving engineering problems.

#### Impact on Teaching

Through the Interactive Learning Network the instructor is able to:

- Achieve active participation of all students during classroom instruction;
- Increase the quantity and improve the quality of assessment of student learning;
- Maximize the ability and opportunity to provide guidance and assistance when needed;
- Improve students' ability to work and learn collaboratively;
- Increase emphasis on understanding of foundational concepts rather than memorization of facts;
- Tailor instruction and assistance according to

A schematic of the Interactive Learning Network (ILN) model showing the interactions



between the instructor (red) and the students (white) is shown. In this model, the instructor is able to initiate, monitor, manage, and control the various interactions between the instructor and individual students, among any selected groups of students, and among students within a group.

The project aims to use mobile technology to achieve intellectual engagement of all students during classroom instruction, and to reduce the barriers for educationally disadvantaged community college students by addressing different learning styles, and allowing for the design of more meaningful and timely assessment of student learning, as well as individualized instruction and assistance.

individual student needs;

- Obtain feedback and solicit questions from students who would not normally participate because it can be done anonymously if desired;
- Get a better understanding of students' different approaches to the same problem while allowing them to progress at their own pace.

“This approach is like individual tutoring that allows the instructor to work with each student’s needs systematically and efficiently, without leaving the instructor’s workstation using wireless technology.”

Tom Mohr, Cañada College President

## Implementation (pedagogy)

Through the Interactive Learning Network, the focus in the classroom shifts from the teaching process to the learning process. Less time is spent by the instructor delivering content through traditional lectures. The lectures focus on introducing new concepts and applying them to a few simple examples. More involved examples are introduced as exercises that students work on individually or in groups using Windows Journal and appropriate software (Matlab, MultiSIM, AutoCAD) while the instructor observes their progress, assess their understanding by polling, address individual questions using [NetSupport School](#) software. Through this process the instructor guides students and assesses student progress using NetSupport’s Survey mode. Individual questions are received by the instructor through the Help Request feature, and assistance provided using Monitor, Share and Control features.

## Implementation (technology)

During lectures, [NetSupport School](#) software allows a quick assessment of individual student understanding of concepts using instant student surveys. While students work on examples and exercises on their tablet PC's using Windows Journal, Netsupport School allows the instructor to scan and monitor students' work from the instructor's tablet PC. When needed, the instructor can assist individual students or groups of students by taking control of their PC's. The instructor is also able to effectively manage the various interactions through Group Chat, use of an electronic whiteboard, file transfer and distribution, other computer applications and web activity.

make-up exam was given for 3 of the 4 tests, while no make-up exam is needed in any of the four tests this year. The percentage of students who got a grade of A in the class more than doubled that of the previous year.

## Quick Facts

Science and Technology Division

Courses Impacted:  
Engineering Dynamics, Graphics and  
Circuit Analysis  
General Physics  
Calculus

# Students Impacted: 90

# Faculty Involved: 4

This project is funded by an HP  
Technology for Teaching grant.

## Contact Us

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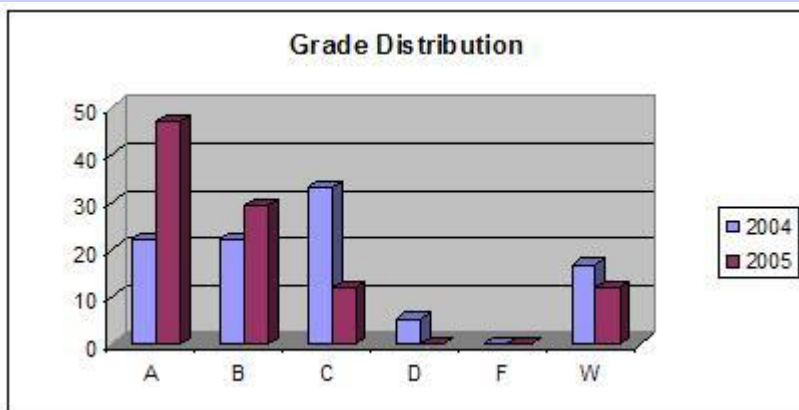
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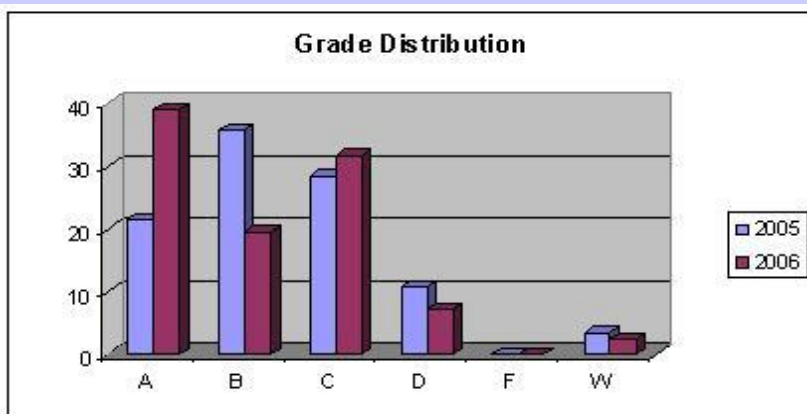
## Project Presentations

“Interactive Learning Network using  
Tablet PC's,” Fall 2005 Engineering  
Liaison Council (ELC) Conference -  
Teaching Techniques Session, Fremont,  
CA, November 8, 2005.

“Developing an Interactive Learning



For this semester's Circuits and Devices class, student performance also shows significant improvement over last year. The class average homework is over 7% higher this semester. The quiz average improved by 19%, the test average by 7% higher and the final exam by 8%. The percentage of students who received a grade of A in the class almost doubled while the percentage of students who received a grade of C, D, or W decreased. It should also be noted that the number of students in the class increased from 28 in 2005 to 41 in 2006.



Results of a [student survey](#) of the impact of the project on their learning show overwhelmingly positive student opinions. Of the students surveyed, 78% agreed or strongly agreed that the tablet pc's and the NetSupport School helped improve their performance in class, and 100% would like to have this technology in other courses.

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Network in Sophomore-Level Engineering Courses," HP Worldwide Technology for Teaching Conference, Monterey, CA, Feb. 2, 2006

Received the "Best Evidence of Impact Award" as voted by conference participants.

"Creating an Interactive Learning Network Using Tablet PC's," San Mateo County Community College District Instructional Technology Council Meeting, May 8, 2006.

## Future Project Presentations

Summer @ONE Scholars Retreat, Sacramento, CA, June 28-30, 2006

San Mateo Community College District Professional Development Day, August 15, 2006

2006 Frontiers in Education Conference, San Diego CA, Oct. 28-31, 2006

## References

Grant Wiggins and Jay McTighe, "Understanding by Design, Expanded Second edition," ACSD, 2005.

Dennis C. Jacobs, "Implementing and Assessing Cooperative Learning in a Large Section of General Chemistry," presented at the HP Engineering Retention Symposium, Nov. 5, 2003.

This project supported in part by an [HP Technology for Teaching](#) grant.

By the way, here is our latest project website that describes how NetSupport has made it successful:

<http://www.smccd.net/accounts/enriquez/HP-Technology-for-teaching.htm>