Lessons from the ALN Home Front:

Observations from Pace University’s 2003 NACTEL Graduates about OnLine Learning and the Relation of those Comments to Educational Learning Theory

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The present manuscript is the draft of a paper to be published in the near future by the Sloan Consortium (Sloan-C), a consortium of institutions and organizations committed to quality online education. Read about Sloan-C at http://www.aln.org/index.asp.

David A. Sachs is Associate Dean and Professor of Technology Systems in Pace University's School of Computer Science and Information Systems. As Associate Dean, Dr. Sachs has been actively involved in the development and implementation of computer science and telecommunications courses for the corporate community since 1984. As director of the Pace Computer Learning Center, Dr. Sachs is responsible for the many hundreds of days of personal computer, computer science, and telecommunications education that are provided each year to corporations throughout the United States and around the world such as AT&T, IBM, MCI, PepsiCo, The Reader's Digest, and others. Dr. Sachs has worked closely with teachers, administrators and others to think about the most effective ways to introduce technology into public and private schools.

Most recently, Dr. Sachs has been actively involved in the development of courses to be taught asynchronously over the Internet and the World Wide Web. He is Co-Director of the NACTEL Program (http://csis.pace.edu/nactel) a program that provides an Associate in Science in Telecommunications Degree to many hundreds of individuals from Verizon, Qwest, SBC and Citizens, many of whom are members of CWA and IBEW. In addition, Dr. Sachs has been the Principal Investigator for a FIPSE Learning Anytime Anywhere Partnership Grant (1999 - 2002) as well as for several grants from the Alfred P. Sloan Foundation (1997, 1998, and 2002).
Lessons from the ALN Home Front:
Observations from Pace University's 2003 NACTEL Graduates about OnLine Learning and the Relation of those Comments to Educational Learning Theory

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ABSTRACT
The purpose of this paper is to highlight some interesting observations made by students who are participating in online education and to show how these statements relate to current educational learning theory. Graduating students in May 2003 in Pace University's NACTEL program made all of the comments and were told that the comments would be made public on a Web site. Joel Foreman is the author of the educational learning theory ideas. This paper hopes to inform faculty and administrators who are involved in (or who are thinking about) online education. It is intended to show that there is a close connection between what educational learning theorists say "should" be the case and with what online students say "is" the case. This paper was written as a result of the author's participation in the Sloan-C Summer Workshop, held in Boston, in September 2003.

I. BRIEF BACKGROUND AND INTRODUCTION
Pace University's 100% online NACTEL Program offered its first set of pilot courses in Spring 1999. The NACTEL Program was developed in direct response to needs that were expressed by four major telecommunications companies (Verizon, SBC, Qwest and Citizens) and two unions (IBEW and CWA) in collaboration with CAEL. The NACTEL Program currently offers an AS in Telecommunications Degree, a BS in Telecommunications Completion Degree, as well as several certificates. Information about the NACTEL Partnership is available at: http://www.nactel.org and information about all of the degrees and certificates that are offered by Pace University as part of the NACTEL Program is available at: http://csis.pace.edu/nactel. All courses in the degrees and certificates are taught 100% online, asynchronously. That is to say, we assume that the students will be working together each week on a given set of materials, but they will be doing so at times and in places that work most effectively for them. This method of instruction is often referred to as ALN or Asynchronous Learning Networks. More complete information about ALN may be found at: http://www.aln.org.
As of July 2003, over 1,500 individuals have participated in the NACTEL program. NACTEL demographics tell us that 40% of our students are female and 60% are male; our students come from 45 different states and 5 different time zones, and their average age is 38. NACTEL students often appear at Pace University with an array of paperwork from other institutions (anywhere from 0 – 6); on average they present 3 transcripts for evaluation. (Interestingly, these statistics about NACTEL students mirror, almost exactly, the characteristics reported in the National Center for Education Statistics 2002 report for “non-traditional” students.)  

As of May 2003, 53 students have graduated from the NACTEL program with an AS in Telecommunications degree. Many more students are “in the pipeline” and should graduate within the next few years.

An article in the July/August 2003 Educause Review entitled “Next Generation Educational Technology Versus the Lecture” provides an interesting proposal for changing and (hopefully) improving the delivery of education. In the article, Joel Foreman discusses five learning-theory desiderata.

While reading the Foreman article, I was also reviewing interviews from 12 recent NACTEL graduates. The graduates were interviewed in June, and were asked about the NACTEL program and online learning. The students knew that their comments would be placed on a public Web site (http://www.nactel.org) for others to see. Interestingly, the graduates make many of the same points that are highlighted in the Foreman article. Some intriguing lessons about the NACTEL program and ALN instruction emerged while I was doing so, and are shared below. The lessons are my own, and they clearly pertain to the NACTEL program and to the courses and the students within that program. My instinct, training, and background tell me that these lessons may pertain to others as well.

II. FIVE LEARNING-THEORY DESIDERATA –
(AS PER JOEL FOREMAN)

In the article (which is located at: http://www.educause.edu/ir/library/pdf/erm0340.pdf), Foreman states

“To address the deficiencies of the large lecture, I invoke five learning-theory desiderata:

The ideal learning situation is customized to the very specific needs of the individual. Optimal learning takes place when instruction targets an individual’s proximal zone and learning styles.

The ideal learning situation provides students with immediate feedback. Optimal learning takes place if a student is able to seek immediate clarification or amplification when he or she encounters problems.

The ideal learning situation is constructive. It allows students to explore learning environments (preferably multisensorial) that encourage the active discovery of new knowledge and the development of new kinds of comprehension.

The ideal learning situation motivates students to persist far in excess of any externally imposed requirements. If students are engaged in what they perceive as personally meaningful and rewarding activity, they will devote more time to the effort than is prescribed in a course.
The ideal learning situation builds enduring conceptual structures. It ensures that concepts and procedures are committed to long-term memory and are available thereafter for the analysis and interpretation of related but novel real-world experiences.”

It is instructive to keep these five precepts in mind as we listen to comments that were made by 12 of the May 2003 NACTEL graduates. It should be noted that students made specific comments that pertain to the first four precepts that Foreman states; no comments were made that related to the fifth precept.

III. LESSONS FROM NACTEL GRADUATES

Lesson #1: Effective ALN education is current and timely, at a time and in a place that works for online students. (Foreman #1: The ideal learning situation is customized to the very specific needs of the individual.)

Note that this theme of current and timely ALN education that is customized to the specific needs of the individual pervades all of the following comments. These are students who have very full lives, filled with family and job responsibilities. In addition, they are eager to get a formal college education.

"As a Systems Tech and a single parent, this was the only way I could take college classes." 33-year-old Shannon Peterson balances his parenting responsibilities with his job, which requires an hour commute each way, plus his online studies. (Shannon Ray Peterson is a Systems Technician who works for Verizon and belongs to CWA Local 2109)

"I probably wouldn't have completed a college degree were it not for the NACTEL program. The program helped me understand why things work the way they do and I am more proficient in my job because of it. I had always planned to continue my education when I came to these shores, but I had already started a family," says Leroy. Plus, his job requires him to be on call every third week, so attending a traditional college was out of the question. Leroy had no problem with the online courses and was grateful he could do his assignments in his spare time. “Best of all, my online studies didn't interfere with my family life.” Leroy graduated this May with Distinction and was voted Student of the Year by the Pace faculty and staff. (Leroy O. Greene is a Translation Specialist with PT1 Communications, Inc.)

"This was a good experience. I learned a lot. Plus I could be home at night, cook dinner, drive my kids to wherever...it worked for me." Mary Angela started the NACTEL program about 3 years ago, because she wanted to have a college degree for job security reasons. As a single parent of two teenagers (aged 15 and 18) Mary Angela doesn't have time for much outside of working, studying or taking care of her family. Her job requires her to sometimes work late shifts, which would make a traditional college program impossible. (Mary Angela Kane is a Switching Equipment Technician with Verizon who belongs to CWA Local 13000).

Foreman states that a learning situation must be customized to the very specific needs of the individual. In this case, NACTEL students are studying for an AS in Telecommunications that is taught 100% online. The content of the degree pertains to their professional lives, and the online (ALN) format permits them to go to college. Over and over again, we hear that without this format of instruction, college would not be an option for these individuals.
Lesson #2: Effective ALN education provides excellent instruction that provides feedback in a timely fashion. Effective ALN education provides a caring and supportive environment in which adults can learn. (Foreman #2: The ideal learning situation provides students with immediate feedback.)

The notion of immediate feedback while we are learning takes on new meaning in an online environment. How immediate is immediate? How often do faculty members need to check their email and discussion boards? Clearly the NACTEL students have some strong feelings about this idea.

Casey Windrider noted: "When I ask a question online, I get a response within 4 hours. My previous distance education required playing 'telephone tag' for 2 days or more before I could get an answer from my professor, and many times my studies were on hold until I received the answer." (Casey Windrider is a Customer Service Representative who works for SBC).

Robert Grimm declared: "The instructors were great. I would email a question at night and the answer would be there the next morning. There was a lot of networking with classmates too, from all over the country." Based on his courses in the NACTEL program, Bob finds he can offer more skills and experience to potential employers because of his courses. "I can take a PC apart and understand why a chip is bad. I know now how it works," says Bob. (Robert Grimm is a member of IBEW Local 2321).

Janette Miller comments on the responsiveness and support issue when she states: "Everybody at Pace has been very, very helpful. They made it an easy transition to take classes online." At the suggestion of a co-worker (a NACTEL student) Janette entered the program in Fall 2000 and committed to putting her leisure life on hold while she concentrated on studying. "This was very challenging for me as I had been out of school for 20 years and had little experience with computers", says Janette. She bought her first computer and, with Pace's support, taught herself how to use it, as well as how to take her classes online. "With the help of the teachers and other classmates at Pace", says Janette, "I feel I did better than I could have expected." (Janette Miller is a Central Office Attendant who works for SBC and is a member of CWA Local 1298).

Lesson #3: Effective ALN education pertains to the interests and needs of students. It provides technical content that pertains to the “real” lives of students. (Foreman #3: The ideal learning situation is constructive.)

This second lesson focuses on the idea that we learn best when the content that we learn pertains to the lives that we lead. We construct the reality of what we learn when it is informed by the work that we do and the meaning that we make of that work.

Scott Bross states: "I have remote access to most of the equipment because I'm troubleshooting T1 lines and problems are always turning up. But now I have a better understanding of the technology, and I use the information I've learned almost everyday on the job." (Scott Bross is a Customer Communications Technician who works for Qwest and who belongs to CWA Local 7102).
Shannon Ray Peterson entered the program primarily to qualify for a different job, closer to home. But, he has since found that his courses have impacted his work. "A lot of the guys only see 'special circuits' once a year, so they have to relearn it all over again. Not me. I tell them to take the NACTEL program, because it's directly related to the work we do." (Shannon Ray Peterson is a Systems Technician who works for Verizon and belongs to CWA Local 2109)

Alan Dudinsky stated: "I absolutely endorse this for Verizon employees...I really liked the depth of the courses and the way the program brought it all together: the technology, the electronics, the math...No where else can you get this kind of knowledge all in one program. It's thorough." NACTEL was the only online program that was specifically geared to telecommunications technologies at the associate's level. Alan appreciated being able to do the course work online, but he was most impressed with the content of the courses. "You can't get an overview of Telecom like this in traditional education or anywhere else," says Alan. (Alan Dudinsky is a Customer Zone Technician who works for Verizon and who belongs to IBEW Local 1637).

Amy Palmer declared that "I always wanted a more technical background...The NACTEL program gave me that missing piece...Now when I speak to customers I have a much better understanding of the problems they may be facing in the field and I think I'm better at my job because of it." Amy already had a business degree but felt that she lacked the technical knowledge to handle customer service questions effectively. NACTEL was the 'missing piece'. Now she better understands the customers' issues. (Amy Palmer is a Sales/Service Consultant for Qwest Communications who belongs to IBEW Local 620).

Charles Snow commented on the relationship between his coursework and his everyday life. "The program gave me a real broad view of the technology that is available and how the technology can be put into play in our everyday lives. I know I learned a lot!" (Charles Snow is a Technical Operations Supervisor in Nebraska who works for Express Communications).

Dan Rumbold says "I really like my job, but I came from the military and had no background in Telephony. I wanted to find out what the equipment I test is used for, and NACTEL has given me that knowledge." Dan loves his job repairing and calibrating a variety of test equipment, but felt that he needed more knowledge in the fundamentals of telecommunications. (Dan Rumbold is a Senior Metrology Technician who works for Verizon and belongs to IBEW Local 723).

Joe Fleming stated: "The program worked for me. The professors did a nice job putting the courses together, and they were always accessible and quick to respond." As a designer of communications cable plant and equipment rooms, Joe Fleming entered the NACTEL program in order to have a better understanding of the Telecom world - from the point of origination to the distribution of services. In his job, Joe works closely with all phases of network communications, and the program helped him to understand and stay on top of technological changes that are always happening in this industry. (Joe Fleming is a Senior Network Professional who works for USAA and belongs to IBEW 716).
Lesson #4: Effective ALN instruction meets adults where they are, and takes them to new levels of competence and expertise (and income!). (Foreman #4: The ideal learning situation motivates students to persist far in excess of any externally imposed requirements.)

Dixon Kavanaugh states: "I wouldn't be even close to where I am today were it not for the NACTEL program." 39-year old Dixon Kavanaugh started the NACTEL program while at Qwest. At the time, he had absolutely no computer experience nor formal education beyond his GED. But Dixon was committed to earning his college degree and making a better life for himself, his wife and three kids. Although he was faced with some major hurdles all happening at the same time (the passing of his father, a serious illness, a stint of unemployment plus having to relocate his family,) Dixon would not give up on his studies. In fact, while he was waiting to go to the hospital for kidney stones, he worked on a homework assignment to keep his mind off the pain (!) Dixon's perseverance and diligence has paid off. He graduated in May 2003 with his A.S. degree and has recently begun a new job marketing data network systems. Dixon says his NACTEL courses were instrumental in helping him advance in his career. (E. Dixon Kavanaugh is a Marketing Manager for Digital Information Business Solutions).

Casey Windrider proudly proclaims: "Now I can frequently explain the technicalities of a problem the customer may be having with their equipment, and the customer is back in service with the trouble cleared within 5 minutes, avoiding dispatch of a technician to the customer's premises." This spring Casey received her Associates degree and is graduating with Distinction. She is hoping that she will soon be transferring to a new job as a communication's technician, with an increase in salary of almost 80%! (Casey Windrider is a Customer Service Representative for SBC).

Frank Traylor comments on the overall educational experience that he has had at Pace. "This training has given me exposure to the workings of voice communication along with the terminology and technology that goes into it... It's an excellent program and I am very grateful to Verizon for giving me this opportunity to advance my education." "The convenience of distance learning has made attaining a degree a reality", says Frank. He also wanted to learn more about analog communications since most of his experience was in data transmission. "The training I've received through NACTEL has broadened my understanding of the entire spectrum of telecommunications technologies". Frank graduates this May with Distinction and intends to continue his education. "To remain competitive and knowledgeable in this industry, one must continue to strive for knowledge or become left behind", says Frank. (Frank Traylor is a Network Engineer with Verizon Online).

IV. SUMMARY/CONCLUSION

There are many ways to measure the power of online learning. Certainly one important way is for all of us to listen carefully to what our students are telling us. And interestingly, Pace University’s NACTEL students, in their own voices, seem to be mirroring many of the lessons from contemporary educational theory. The lessons that they provide clearly support the power of online learning. They tell us that online learning (even very technical online learning) can and does work effectively. And, in their own voices, they demonstrate how this new found learning has dramatically improved the quality of their day-to-day lives at work. The lessons that are articulated here are ones that pertain directly to the NACTEL Program and to NACTEL students. However, it seems that these lessons might apply to online learning in general, as well.
V. REFERENCES


VI. ACKNOWLEDGMENTS

The NACTEL Program is the result of the work of many people. Four major telecommunications companies, two major unions, CAEL, Pace University faculty and staff, and the Alfred P. Sloan Foundation have all worked together to make this program the success that it is today. In addition, a FIPSE LAAP Grant from 1999 – 2002 enabled all of us to have the additional resources necessary to build a successful online program. Finally, the NACTEL students and their families are an integral part of this process.
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