Online Learning: Custom Design to Promote Learning for Multiple Disciplines

S. Silverstone, and J. Phadungtin

Abstract—Today's Wi Fi generation utilize the latest technology in their daily lives. Instructors at National University, the second largest non profit private institution of higher learning in California, are incorporating these new tools to modify their Online class formats to better accommodate these new skills in their distance education delivery modes. The University provides accelerated learning in a one-course per month format both Onsite and Online. Since there has been such a significant increase in Online classes over the past three years, and it is expected to grow even more over the over the next five years, Instructors cannot afford to maintain the status quo and not take advantage of these new options. It is at the discretion of the instructors which accessory they use and how comfortable and familiar they are with the technology. This paper explores the effects and summarizes students' comments of some of these new technological options which have been recently provided in order to make students' online learning experience more exciting and meaningful.

Keywords—Asynchronous chats, Synchronous learning, VoIP.

I. INTRODUCTION

GENERATION Y, the echo boomers, the "millenials", are the generation born between 1977 and 1994. They are the 71 million children of baby boomers that grew up Online and are ethnically diverse. They make up 26% of the general population. They spend $200 billion annually and are hard to reach. They do not read or watch TV, but the Internet is their medium of choice. [1] They are the most education-minded generation in history. Influenced by Baby-boomer parents who value education and a workplace that demands it. [2] Most Gen- Yers recognize that the key to their success lies in advanced learning. An online education is a natural choice.

Perhaps there's a nicer way to put it. "The baby boomers seem to see technology as information and communication," said Prof. Michael Bugeja, director of the journalism school at Iowa State University and the author of "Interpersonal Divide: The Search for Community in a Technological Age." He continues, "Their offspring and the emerging generation seem to see the same devices as entertainment and socializing."[3} Another author states, [4] "the World Wide Web is the

Susan Silverstone, PhD, Lead faculty for Health Sciences, is with School of Health and Human Services, National University, 11255 N Torrey Pines Road, La Jolla, CA 92037 (phone: 858-642-8430; fax: 858-642-8781; e-mail: ssilvers@nu.edu).

Jack Phadungtin, PhD, DBA, Associate Vice President, is with Institutional Research, Planning and Analysis, National University, 11255 N. Torrey Pines Road, La Jolla, CA 92037-1011 (phone: 858.642.8315; fax: 858.642.8759; e-mail: jphadungtin@nu.edu).

largest resource of information in the whole world and whatever your needs the Internet can provide. What started as a bubble has soon become a massive tidal wave and online education is one of the areas that is still increasing, probably more than ever. In addition, globalization of communication, entertainment, and information provides students with wider perspectives and resources than ever before, placing them in a new and continually changing learning space." The Sloan Foundation's report, Online Nation *A Five Year Report (October 2007)[5] reports:*

- Almost 3.5 million students were taking at least one online course during the fall 2006 term; a nearly 10 percent increase over the number reported the previous year.
- The 9.7 percent growth rate for online enrollments far exceeds the 1.5 percent growth of the overall higher education student population.

1.2.3.4.5.

- Nearly twenty percent of all U.S. higher education students were taking at least one online course in the fall of 2006.

Dysart predicts that "continued robust growth in online learning during 2008, with most new registrations popping up at institutions already embracing the market. [6]The higher education environment is changing rapidly. The demand for new services is increasing. Nontraditional students seek flexible class schedules which are generating an increasing need for distance education. Today's student demographics differ from what we have seen in traditional institutions". A number of new options are now available to enhance the learning experience in the form of new technology.

In the 2007 Horizon Report Educause identified six emerging technologies in higher education. They include [7]

1. User-created content: Instructor and student are part of sharing content as part of the education process. Examples of these platforms include thread discussion, blogs and wikis.

2. Social networking: This technology replaced emails. It allows used to post messages on friends' boards in popular venues such as MySpace and FaceBook. Once predominately used among younger students, now commonly used by adult students and faculty

3. Mobile devices: Expansion of mobile phone capabilities enable this technology niche to grow. The major breakthrough includes Apple adapting their iTunes platform to introduce iTunes University. Small portable

World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:2, No:2, 2008

device such as cell phone and MP3 are replacing bulky devices as laptops.

4. Virtual Worlds: This technology becomes viable environment from entertaining, politics and commerce. Researchers use this technology to capture real-time data feeds to model complex concepts. Instructors use it as virtual teaching labs.

5. New Forms of Scholarship and Publishing: Approaches to scholarship and publishing changes rapidly with new tools and ways to interacting, analyzing and critiquing scholarly works. Scholars will be adapting with these emerging technologies.

6. Massive multi media games and simulations: Educators have begun to experiment with games and simulations for education purposes as the cost of developing these media become more affordable and the use becomes more popular among students.

Many higher institutions are currently utilizing user-created content technologies to mediate classrooms for both asynchronous and synchronous modes of communication. While web-enhanced courses may benefit from asynchronous communication as lecture topics, threaded discussions, and/or email, it can be enhanced by a live-text messaging function for synchronous communication. Voice over Internet Protocol (VOIP) requires both instructor and students to connect synchronously. Leading VOIP technology providers in higher education include iLinc, Illuminate and Adobe. This family of technologies allows IP networks to be used for voice applications, such as voice instant messaging and teleconferencing. VOIP entails solutions at most every level of an IP network-from specialized voice [6,7] applications (SKYPE) all the way down to low-level quality measures that keep those applications running smoothly [8].

Institutions select those services that they feel are either responsive to the institution's distance learning goals or may base their choice of technology according to students' preferences. This article discusses how National University has selected a combination of technologies that best fit its mission and learning objectives. National University (NU) [9] a leader in Online education, is an accredited, private university based in San Diego, California with 27 regional campuses located within the state and one in Nevada. NU has an enrollment of 22,000 full-time undergraduate and graduate students. The university was founded in 1971, and is the second-largest private university in the State of California with the third largest graduate program in the country. It has witnessed a strong growth in its online classes and programs. The number of online classes offered at National University has increased in all of its five schools and one college. The number has doubled for the College of Letters and Sciences (COLS) and tripled for School of Engineering and Technology (SOET) between 2005 and 2007. The School of Media and Communication (SOMC) offered more than half of their programs online in 2007.

According to a student survey conducted in 2007 with 866 responses, the primary reasons the respondents opted for online courses are

- They prefer the flexibility of doing schoolwork at their convenience times and

- They are unable to attend evening classes on campus due to work/personal schedule conflicts.

84% of the total respondents were located in the same time zone as the university, 23% of the Graduate respondents claimed that it was the flexibility of doing schoolwork at the students' convenience times. 29% of the Undergraduate respondents indicated they were unable to attend evening classes on campus due to work/personal schedule conflicts.

As a consequence, the number of students taking online classes has grown steadily. The following graph illustrates the growth in numbers of students enrolled in online classes at NU.
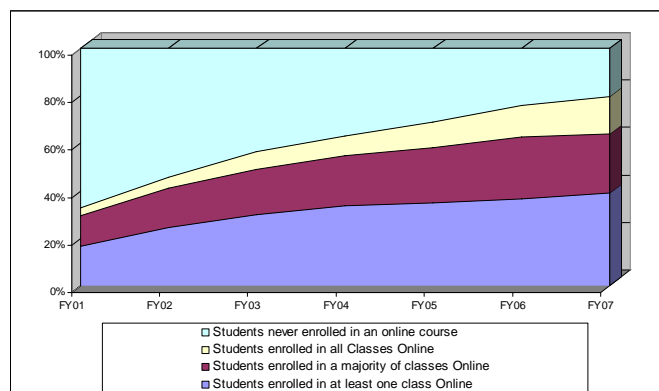

Fig. 1 The growth in numbers of students enrolled in online classes at NU

Students' preference for the online modality differs among the schools in which they are enrolled. While the majority of graduate students in the School of Business and Management (SOBM) (44%) prefer a combination of synchronous and asynchronous formats, undergraduate students in the same school prefer the asynchronous mode with no optional live chat sessions. Both graduate and undergraduate students (over 42%) in COLS also prefer to take asynchronous classes with no optional live chat sessions. Their second best option is asynchronous supplemented by optional live text [8,9] messaging chat sessions. More than half of the students enrolled in School of Education (SOE) prefer asynchronous classes. Almost 30% of students in this school indicated that they prefer online classes for its flexibility to do schoolwork at times that are convenient for them.

As a result, the number of online students at National University has grown exponentially. In 2007, only 34% of NU students had never taken an online class. This number has declined consistently since 2002 when 80% of all students took onsite classes. The number of students who took all their classes online has also increased from 4% in 2002 to 27% in 2007.

To satisfy these online needs, NU utilizes several different services. The choice of technology differs among the different schools. Currently, all the online classes are offered on the eCollege® platform. [10] Students interact with each other asynchronously through lecture topics, discussion boards and synchronous weekly text-chat sessions. The instructor acts as

World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:2, No:2, 2008

both moderator and lecturer and provides a constant virtual presence.

NU has invested in iLinc® software. In iLinc®, students can see and hear each other as well as the instructor in real time [11]. The system allows application sharing, group web browsing, the display of PowerPoint slideshows, voting, and independent group work.

Using this technology, the instructor acts as both a discussion moderator and a live lecturer. It is at the discretion of the Instructor as to which method they use.
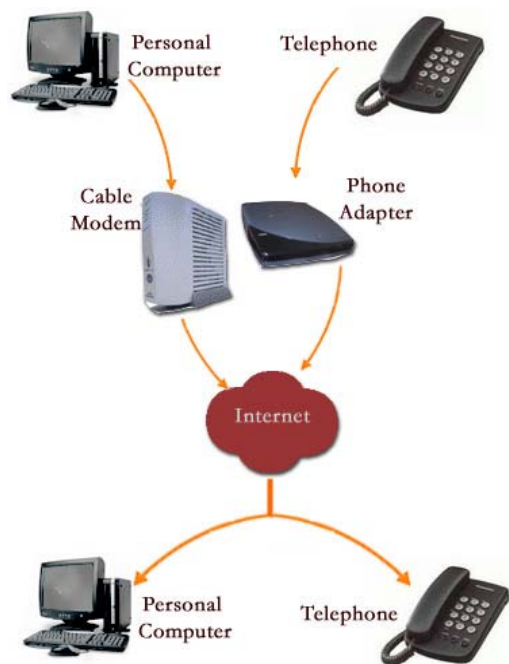
II. VoIP

Fig. 2 VoIP Diagram

This is a new technology and little research has been done on the efficacy of using audio conferencing. However [Chen CC, Wu J, Yang SC [12] in their study find ,"that for decision making tasks audio conferencing has a significant impact on cooperative learning satisfaction but not on learning performance."

In the School of Health and Human Services (SHHS) the online courses follow the NU protocol: an asynchronous weekly lecture topic, discussion boards, homework assignments, quizzes a midterm and final exam. Chat sessions are compulsory and once again offered either in the text or Ilinc format. The nursing faculty favors the text [10.11.12.] chats and offers these twice a week to accommodate the students' preferences. Topics for the Chats are posted in the weekly course schedule, so the students come prepared to the session and are expected to actively participate in the two hour meeting. The role of the chat is to promote interaction among the students, discuss topics and provide an opportunity to ask the Instructor for direction and/or help if required. Generally the instructor acts as a moderator rather than a lecturer. The disadvantages of the text format are

- that some students do not participate, and rely on others "to carry the conversation"
- the students follow a theme and "go in different directions"
- Some students are "slow typers" and get "left behind"
- The instructor may struggle to maintain "control of the conversation"

This author favors VoIP and offered this format in an Undergraduate SHHS class titled "Legal and Ethical issues and Health professions." The standard NU protocol was followed: weekly lectures discussion boards and Homework assignments. No quizzes or exams were given since the Homework assignments were comprehensive and required significant additional research and work by the individual students in order to earn a good grade. The chat topics were posted ahead of time. This format was a resounding success because

- The students were well prepared
- They followed direction and kept to the subjects under discussion
- In addition to the audio component they had the option for texting
- They shared Internet resources with one another
- The class was able to view court filings and follow up articles on the web in "real time"
- The students actively participated in all conversations and
- The instructor was able to lecture, moderate and/or facilitate depending on the circumstances

The students really appreciated this new format. They were "scattered" throughout the state of California and felt the experience closely resembled a "classroom setting." In SHHS this online format is an extremely useful delivery method for didactic material to students in the Nursing program. However, since clinical applications are such a necessary part of the curriculum, Onsite classes are still necessary for completion of the program.

In the School of Business, the faculty is encouraged to use ILINC for their weekly Chat sessions. In a Marketing Advertising class, the students were able to review, share and criticize their favorite advertisements with the rest of the class. The students were also tasked to review advertising agency websites and other marketing websites. A Graduate Marketing class was asked to watch a TV reality show and share their experiences with the rest of the class. Reviewing web contents and material was an integral part of weekly assignments. Computer-generated weekly quizzes were also given and graded to provide instant feedback. Overall the students enjoyed the experience and felt this class to be an excellent learning exercise.

In the Marketing Research classes, Instructors are able to introduce the students to statistical software, and demonstrate and provide examples utilizing the ILINC^R whiteboard where both teacher and student can interact and solve problems together. This is managed by "handing off" to the student so he/she has the "floor" and can add to the "whiteboard exercise." Comments from students are positive since they feel they are actively participating and this closely resembles

World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:2, No:2, 2008

an Onsite class relationship. Similarly if students are experiencing problems, the instructor can "pull up the problem" and review step by step with a detailed explanation.

In the Accounting program the same course syllabus is used for both Online and onsite classes. [13]Merrill states "that he has a handout learning guide for both Online and Onsite classes. During chats he displays it in the application sharing window and allows the students to work through the examples, the same as in the classroom." In Onground classes he asks the questions and writes the responses on the board; he does the same with the online chat. Two three-hour compulsory chats are held twice a week. (24 contact hours).However, he feels that was not enough time to cover all of the material adequately. He feels strongly that 45 hours of contact time should be standard for both Onsite and Online classes. In Onground classes, there is sufficient time to discuss both theory and application. With the limited time Online, he can only cover the application and students "are on their own for theory". He tests both theory and application Onground and online, using the same exam" This format has been such a success that all accounting faculty now follow a similar protocol.

In response to the students needs, most of distance learning classes in SOE are done through web-enhanced technology through eCollege. Another component that enhances online learning at the SOE includes ePortfolio, a portal where students can save work samples and artifacts for future self-review or by their instructor. It also serves as a useful tool in program assessment and prospective employer material.

In the School of Engineering (SOE), VOIP has become the preferred mode of instructional delivery. The majority of classes offered in both graduate and undergraduate level are eCollege equipped with the iLinc[R] component. Engineering students prefer the hands-on experience and opportunities to share "live exercises." Several virtual lab courses are now offered. Their purpose is to act as a precursor and familiarize the students with the course materials prior to the "live laboratory class."

Most of the undergraduate classes offered in COLS are through eCollege with the iLinc component. Synchronous mode of instruction does not appear to be the top choice for undergraduate students.

The faculty in SOMC are familiar with 'the newer" technology. They incorporate both audio and video components into their courses. Lecture topics may be previously recorded in either format and more use of the "webcam" is employed in synchronous chat sessions. The development of Podcasts is currently being evaluated.

The university has also transformed its Writing and Math centers from onsite to online in order to support a larger number of student located outside San Diego. The transformation allows the university to service more students effectively on a one-on-one basis in real time using VOIP.

Bates and Poole state, "Managing teaching workload is the most difficult and critical issue in the use of technology for teaching in higher education (14]. The effective use of technology in any work environment requires major changes in the organization of work. Basically, teaching with technology creates more work for the instructor than teaching

face-to-face, at least initially, thus more work has to go into the 'front-end' of teaching - design and development - but with careful management this can be accompanied by some savings of time in the delivery of courses. One reason why educational technology often fails is that teachers try to carry over the predominant styles of the classroom to the new media, rather than developing new formats that exploit the unique features of the medium or technology. At the same time, presenting teaching in new ways will require students also to approach the learning task differently." They continue ".'The more different ways we can learn about a subject or topic, the more deeply we are likely to understand. Thus one [13,14] immediate advantage of using different media and technologies is that they allow us to represent the world in different ways." In addition Hines and, Pearl make the following statements [15}: Goldberg (founder of WebCT, questioned the usefulness of synchronous chats in the learning environment and proclaimed his bias toward, and "almost exclusive use of asynchronous communication tools"(p.1) in electronic course offerings [16]. However, instructor preference for asynchronous tools may not necessarily match student preferences. Though students may not have time to carefully consider and prepare responses, the immediacy of the synchronous exchange stimulates overall interaction. They continue, According to Lynch [17] the first foundational rule of web-based instruction states, "We must push beyond our comfort zones" (p. 3). It has been demonstrated that forty-four people in forty-four different locations can participate in a stimulating and coherent discussion on a given topic. It is hoped that online instructors who have not explored the possibilities of synchronous tools will be prompted to consider going live."

These statements confirm the position that was taken by NU when they considered several critical factors in the design and delivery of their distance education to ensure and promote effective student learning. Available technologies must support and augment the learning objectives, student preferences, and be pedagogically sound. By selecting and using "new tools" that better accommodate the different disciplines and satisfy these goals one anticipates that NU will be able to maintain its role as a leader in the delivery of Online education.
[15,16,17]

REFERENCES

[1] Echoboomer (1999, September).[Online].Available: http://www.worldwidewords.org/turnsofphrase/tp-ech1.htm
[2] B.Tulgan and C.A, Martyn. (2001, September, 28) "Managing Generation Y -- Part 1 [Online}.Available:http://www.businessweek.com/smallbiz/content/sep2001/sb20010928_113.htm?chan=search
[3] S.G Freedman,(2007,November,7)New Class(room) War: Teacher vs. Technology 2007 [Online].Available:http://www.nytimes.com/2007/11/07/education/07education.html?_r=1&ref=education&oref=slogin
[4] J. Thompson, Sloan Foundation. (2007, August 16). "E-Learning: Why Choose Online Education? [Online].Available:http://www.searchenginecollege.com/articles/2005/07/e learning-why-choose-online-education.html
[5] E.Allen and J.Seaman,(2007, October) Online Nation: Five Years of Growth in Online Learning.[Online]. Available: http://www.sloan-c.org/publications/survey/index.as

World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:2, No:2, 2008

[6]   J.Dysart,(2008,January) "Online learning: Continued robust growth in 2008" *Greentree Gazette*. [Online}.Available: http://greentreegazette.com/SpecialSeries/load.aspx?art=477

[7]   Horizon Report (2007).[Online].Available: http://connect.educause.edu/Library/ELI/2007HorizonReport/37041?time=1201398586.

[8]   T.Wallingford (2005, September, 2) "What Is VOIP?" [Online].Available: http://www.oreillynet.com/pub/a/network/2005/09/02/what-is-voip.html

[9]   National *University. Annual Report* (Report Style) National University. La Jolla, CA.(2007,July 20).

[10] Ecollege.com. Online]. Available: http://www.ecollege.com

[11] Ilinc. (2007).[Online]. Available: http://ilinc.com

[12] C.C.Chen,J. Wu,and S.C.Yang, (2006). "The efficacy of online cooperative learning systems; The perspective of task technology fit."*Campus-Wide Information Systems*. (23)(3), 112. [Online]Available:http://proquest.umi.com/pqdweb?did=1127949221&Fmt=3&clientId=1506&RQT=309&VName=PQD ProQuest.

[13] G. Merrill, National University,La Jolla, CA, private communication, January 2008.

[14] A.W Bates, and G. Poole, G. "*Effective Teaching with Technology*"[book style]. San Francisco,CA:Jossey Bass, 2005,ch 3.

[15] R.A. Hines, C.E. Pearl, "Increasing Interaction in Web-based Instruction: Using Synchronous Chats and Asynchronous discussions"[Periodical style],*Rural Special Education Quarterly Spring* 2004.[Online].Available: http://findarticles.com/p/articles/mi_qa4052/is_200404/ai_n9391397/pg_4

[16] M.Goldberg, (2002). [Online]"Synchronous Versus Asynchronous: Some Thoughts". Available: http://www.webct.com/OTL/ViewContent?contentID=2339346.

[17] M.M Lynch, Book style] "The Online educator: A guide to creating the virtual classroom." New York: Routledge Falmer.