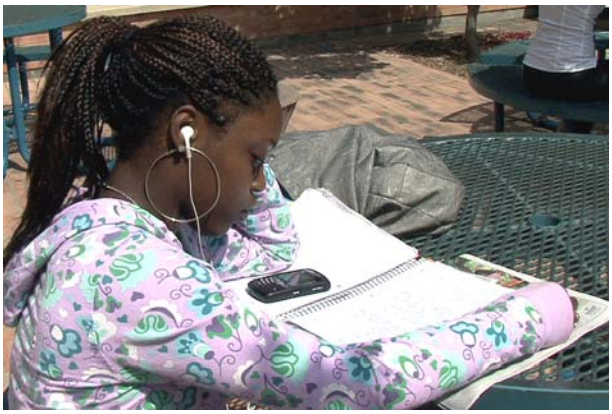
Senate Forum

Volume XXIII, Number 3, Spring 2008 A publication of the Academic Senate, California State University, Fullerton

Bridging a New Gap in Academia: The Disconnect Between Native Students and Digital Immigrant Professors



An Introduction to this Issue

More and more today, both faculty and students are realizing that the pedagogies of the past are no longer appropriate for students of the present. Technology is ubiquitous in the lives of today's Net Generation students, so much so that they may not even think of cell phones, mp3 players, PDAs and other mobile devices as technology. Net Geners have never known a world without computers, and in fact, computers are the center of their academic and social lives. Today's students think in radically different ways than their predecessors, in large part because their brains have been hardwired by their technology-rich environments.

If we as professors are to reach this generation of learners, we must critically examine the disconnect between how students learn and how teachers teach. Only then can we begin to develop a truly responsive pedagogy.

This issue of the Senate Forum contains five articles that fully explore the needs and characteristics of today's students, as well as the potential for a vast array of emerging technology tools for tailoring instruction.

Inside this edition

Cyberinfrastructure and the Brave New World of Higher Education

Katherine Kantardjieff

I never teach my pupils; I only attempt to provide the conditions in which they can learn." – Albert Einstein

In this brave new cyber-enabled world of higher education, we have pedagogically rich cyber-infrastructure-mediated tools to create blended learning environments for our students. This article reviews some of these tools, and their potential pedagogical impacts. Ultimately, at issue is not the technology. It is about what you can DO with the technology to teach better and improve student learning.

Cyberinfrastructure

As a high school student in the 1970s, I was one of the first to have a pocket calculator. A Casio that weighed at least a pound, it could add, subtract, multiply, divide, calculate logarithms, and compute percentages. Wow. When I was a high school teacher from 1979-1982, my classrooms had computers. In particular, my chemistry class at Daniel Murphy High School in Los Angeles had a Texas Instruments 99-4, on which several students assisted me with Basic programming to create software tools for solving chemistry and physics problems. They also programmed it to play Christmas carols.

The first IBM PC appeared in 1981, followed by the Apple Classrooms of Tomorrow™ (ACOT) in 1985. Since then, hardware and software have substantively evolved, providing us with transformative technologies: word processing, spreadsheets, desktop publishing, reviewing tools, citation managers, photo editing, presentation graphics, and the World Wide Web. With these transformative technologies have also come e-mail, chat rooms, games, bootleg software and music, blogs, wikis, instant messaging, web conferencing, and ubiquitous computing initiatives. With the good comes the bad; effective use and implementation of technology for purposeful e-learning requires knowledge of the technology (and a willingness to learn as part of one's professional development), a recognition of its strengths and limitations, and intelligent instructional design.

Cyberinfrastructure is defined by the National Science Foundation as "the coordinated aggregate of software, hardware and other technologies, *as well as human expertise*, required to support current and future discoveries." Indeed, learning and workforce development is a key strategic area identified by the NSF in its Cyberinfrastructure (CI) Vision for the 21st Century Discovery [1]. Technology cannot be taught without using technology. There is ongoing debate on content priorities and effective methodologies, with discussions about pedagogy, objectives, culture, educational priorities, and available resources. Nevertheless, the fact remains that the future workforce needs to be trained with cyber-based methods and tools that it will be expected to design, deploy, adopt, and apply to be competitive and globally engaged, whether as future teachers, business executives, artists and musicians, writers, scientists or engineers.

The CI vision is a bold one that encourages the use of cyberinfrastructure-mediated tools to collaborate and communicate in ubiquitous learning environments and virtual organizations. Several objectives of the NSF CI vision are relevant to our missions and goals at Cal State Fullerton, in particular to change the organizational enterprise of learning, foster deployment and utilization of cyber-enabled learning and research environments, and study the evolution and impact of cyberinfrastructure on the culture and conduct of research and education. Merely "using" or "integrating" technology is not the goal, because this objective is too broad and vague to guide purpose, implementation, and assessment. We also must ask "What is the value added through using or implementing technology?" and also "What can we do now and/or better with a technology that

we could not have done without it?" In considering these questions, we must remember (and dispel a damaging misconception): Utilizing and exploiting technology is NOT simply about teaching a computer class. Effective use and implementation of technology for education is not about the technology. It's about what you can DO with the technology [2].

21st Century Learning Environments Are Blended

Traditional classroom methods based in 19th century philosophies, with an emphasis on the "sage on the stage" format, create an often mechanistic, standardized, controlled, and fragmented learning environment. Learning in the cyber-enabled age is about fully engaging students using a variety of learning methods through genuine collaboration and by stimulating internal (not external) motivation to integrate learning into a lifelong interest and endeavor. All of us need to re-examine and in some cases abandon our assumptions about student learning, artifacts of the 19th century that cannot meet the educational challenges of the 21st century in a cyber-enabled world. In today's cyber-enabled culture, we must produce in our students, who live in a world of flux, a knowledge workforce, capable of constantly absorbing and adjusting to new information, a workforce that is fully engaged in thinking, problem-solving, innovating, and learning.

A blended learning environment is one that combines several different technologies as delivery methods, including collaboration software, web-based courses, electronic performance support systems and knowledge management practices. Blended learning also mixes various event-based activities including face-to-face classrooms, live e-learning, and self-paced learning. Thus, blended learning represents a spectrum of deliveries and activities, with one end being asynchronous, the other being synchronous, and various hybrid environments distributed across this spectrum. Regardless of where these environments fall in this spectrum, however, successful blended learning environments are characterized by a) stimulating creativity, b) involving learners, c) creating healthy e-learning environments, d) accelerating and enhancing learning, e) improving retention, f) building effective learning communities, g) improving technology-driven learning, h) saving time and money, and i) enjoying a return on investment, financially and operationally. Let's now look at a few of the technologies available for creating blended learning environments, including our campus' most recent acquisition, the web conferencing application, iLinc.

PowerPoint Pedagogy

Digital technology can enhance students' learning, but only if our goals for student learning drive its use. Not all digital technologies are created equal. Some, by the very way they are likely to be used, have great potential for enhancing learning, while others do not. Case in point: Microsoft PowerPoint. PowerPoint is ubiquitous presentation software, designed by the business sector for making sales presentations. It is presenter-oriented, or in the educational context, designed to promote the lecture; it is instructor-centered. If used in its default mode, it promotes passivity on the part of students. Whether they participate in the instructional process or not is incidental. Lectures are instructor-controlled in PowerPoint. Simply presenting a standard lecture with PowerPoint instead of overheads, a chalk board or white board tells you nothing about whether your students have comprehended what you have tried to communicate. In its basic presentation mode, PowerPoint is not a pedagogical or innovative use of the technology. Moreover, providing PowerPoint outside of class as multimedia material does not structure the interaction of your students with the material during the time they are not in class, which is substantial.

Does this mean that PowerPoint is useless learning technology? Not necessarily. It is true that it can present material in a linear fashion, encourage students to passively absorb information, and be insensitive to students' background, interests, and level of understanding. However, the pedagogical value of PowerPoint, and any particular technology for that matter, will

depend on the ways in which it is used. Each technology, PowerPoint included, encourages particular strategies to its use.

Much of what we can do with PowerPoint can be done with white boards, overhead projectors, photographic slides and other similar technologies. Whether PowerPoint is better suited to a given task depends on the learning environment. However, here are some things to consider that PowerPoint can enable more efficiently than several other technologies combined, with the potential to provide you with more effective curriculum materials, and also to save you, the instructor, valuable time in the long run.

PowerPoint can utilize graphics more quickly, and perhaps render them better than you can sketch them. Concepts can potentially be made clearer with appropriate choices of color, contrast, and text or font. Your presentation can be made available to students as a handout with plenty of room for students to annotate. Note taking and note making are critical skills for effective learning, and students tend not to take or make notes if you present them a complete, annotated set of notes. Your PowerPoint presentation can be made available on your course website for further review, and with consistency, thus offering your students greater flexibility and accessibility in their learning endeavors. This can be the file itself, a PDF, or a recording you have made while delivering the lecture (and even pre- or post-lecture). Today, such recordings are easy to make with a headset or built-in microphone, using user-friendly software such as SnapKast, Camtasia Studio or Impatica. Judicious use of animations can clarify difficult concepts and reinforce conceptual understanding.

From an efficiency standpoint, PowerPoint lends organization; having your curriculum materials in electronic format such as PowerPoint facilitates creation of modified and updated presentations and efficient archiving of materials for future reference. It is also easier to speak from and to distribute well-organized slides and outlines than scribbled notes. PowerPoint is well-adapted to preparing lectures from materials heard at a conference or communicated on the web. It integrates with a word processor; in Office 2007, PowerPoint's "Slides From Outline" feature builds slides directly from Word documents. Use of PowerPoint templates also facilitates ADA 508 compliance, because these are used by various software tools to convert text into audio.

PowerPoint can be pedagogically useful. It helps the instructor stay organized, keeps material legible and neat for students, and can easily provide skeletal notes to *support*, not supplant, student note taking and making. However, arbitrary use of PowerPoint, or any other technology for that matter, does not automatically win you glowing student evaluations if you don't know how to use it *to teach better*.

Instant Messaging

Instant messaging (IM) is a mind-boggling phenomenon. This simple tool for real-time text messaging and presence detection is a staple in our students' cyber-enabled lives, and it is changing decades-old messaging and communication patterns. While some may complain that this form of communication is impersonal, it is no less impersonal than e-mail, and is in fact, synchronous in its typical usage. Without guidelines and structure that define appropriate use of IM, however, IM can be more of a distraction than a tool when used in education.

Students seem to prefer IM to voice over internet protocol (VoIP) a mode of communication and if connected, will often engage in lively discourse, despite its seeming inefficiency. Thus, if we can devise challenging assignments that promote active involvement in learning and incorporate, at least in part, their preferred modes of communication, our students may find coursework at least as interesting as other activities competing for their time. Good use of technology to enhance a course can only serve to contribute positively to learning outcomes [3].

There are hundreds of ways we can synchronously communicate online with our

students, including Blackboard's Virtual Classroom and Skype. Instant messaging applications allow chats and file transfers, as well as white boarding and video messaging with a web camera. Why should we care as instructors? It is estimated that 74% of online teens use IM in comparison to 44% of adults, and most students use it several times a week, if not daily [4]. In addition, 37% of online teens have used IM to write something they would not have said in person, and 41% report using email and IM to contact teachers or classmates about schoolwork. How do they occupy their time outside of class? According to a national survey of college students, 31% of full-time college students devote more than 10 hours per week to informal conversations with other students [5].

So does this all suggest we should be using IM in direct instruction? Yes and no. Students asked to evaluate the effectiveness of their online learning experience note that they value *asynchronous* discussions with their peers the most. Students are bored by reading screen after screen of text when an instructor tries to recreate a lecture online [6]. Brief instructional posts that stimulate thinking and discussion appear to contribute more to effective learning than posting a lecture online or using video or audio [7]. My own personal experiences with blended or hybrid courses strongly suggest that students do prefer chatting to VoIP, which they use to collaborate online, and even during virtual office hours. Accepted good educational uses of IM therefore include instructional sharing, group assignments with planned scholarly chat sessions or group brainstorming (providing an accessible record of student participation), office hours, online study sessions, help with homework, and as one form of backup communication when VoIP is poor or fails.

Course Management Systems

Course Management Systems (CMSs), and the newer generation Learning Management Systems (LMSs) are programs enabling instructors to teach or provide materials online. Popular programs familiar to the reader are WebCT and Blackboard, which we have on our campus. Others include Moodle, Joomla, Drupal, eLeaP and CollegeBrain. CMSs are integrated systems creating a self-contained environment with many technical options for e-learning, blended learning, and delivery of online instruction. CMSs have been adopted largely out of convenience, to integrate campus computational resources, and to manage mundane tasks associated with instruction, particularly large classes. Questions have been raised about their pedagogical use, but few studies have been conducted on their effects on pedagogy, teaching and learning. Their standardization as a way to ease management issues may limit their pedagogical value [8, 9].

The pre-set organization of CMSs makes it easy for those less familiar with these tools to insert their content into pre-defined appropriate categories rather than to adapt the interface and translate their individual pedagogical style into a cyber-enabled environment. Whereas we typically envision accomplishing our pedagogical objectives in a temporal (weeks or semester) or topic framework, the default organization of Blackboard constrains the structure to content types and may actually limit faculty flexibility and creativity. CMSs to some degree reinforce the "sage on the stage" pedagogy by focusing on presentation of written documents and providing for complementary discussion by students. The construction of knowledge, also called the "guide on the side" approach [10], may actually be better supported by blogs, wikis and social networking web applications. Nevertheless, the newer generation LMSs do have added features that allow instructors to deviate from default settings by customization. Lack of knowledge about the technology makes it difficult to use LMSs pedagogically, particularly when faculty teaching online or hybrid courses do not make use of the web extensively or intensively in their own scholarship [11]. Those readers who are not digital natives or "web heads" may quickly find themselves overwhelmed. But you are not alone. Those who consider themselves more experienced and innovative also become frustrated when faced with the pedagogical limitations of integrated CMSs.

Here again, the issue should not be about the

technology; it should be about what we can do with the technology [12]. How can LMSs promote student learning and engagement? Faculty members can learn to customize their LMS organization by week or topic, more reflective of a syllabus with defined objectives. Moreover, we can utilize free web applications that encourage social construction of knowledge and create component-based learning environments. Several additional applications to enhance constructivist pedagogy can be directly interfaced with LMSs. The latest in our campus' arsenal of educational technology tools, presently integrated into Blackboard, is iLinc, described in the next section.

Web Conferencing Technologies and iLinc

The pedagogical methods drawn upon in the blended learning environment can have a profound impact on the quality of the learning experience a student receives in a hybrid or distance learning course. Instructors should strive to stimulate learning and critical thinking rather than simply delivering content. The learning process will be more efficient and effective when interaction is integrated into the course rather than having students learning in the isolated monomedium. When students are required to participate and to lead discussions online, their active involvement creates a more engaging and effective learning environment. Rather than making the learning environment rote and isolated, a distance learning environment that is collaborative and interactive builds a true e-learning community, where the educational goals are palpable.

The concept of video conferencing was first developed in the 1960s by AT&T as a videophone. Innovations combining Internet and multimedia technologies have evolved computer-based web conferencing tools, which are becoming one of the fastest growing learning technologies in delivering online education and training. Web conferencing applications provide tools for real-time, interactive communication between individuals, across distances, for virtual meetings, online collaboration and presentations. They can employ audio in the form of teleconferencing or VoIP, as well as video in the form of static graphics or streaming video from a web camera. While some may view web conferencing as a loss in the educational process, because students exchange a live instructor for a virtual one, the reality is that web conferencing is rapidly becoming the preferred mode for distance education. Students participating in programs utilizing web conferencing technologies have far higher completion rates than those using traditional paper-based distance education [13, 14].

Web conferencing technologies offer new ways to support learning in a blended environment by facilitating interaction and discourse between geographically and sometimes temporally distributed learners and instructors. Participants can see each other, hear each other, and exchange electronic data [15, 16]. Web conferencing technologies provide students flexibility in attending classes remotely and accessibility if they must miss a session or have a disability. In addition, flexible scheduling allows for project-based instruction. Web conferencing technologies are also convenient for faculty and staff, allowing us to host and participate in in-service activities, department meetings and collaborations remotely. Students can also establish virtual meetings using these tools.

The keys [17] to successful implementations of web conferencing technologies into blended learning environments lie in a) understanding what is different about teaching at a distance; b) developing appropriate strategies for meeting student needs, as well as improving planning, organization, interaction and feedback; c) comprehending the phases of the process, including design, development, evaluation and revision; d) understanding and appreciating the need to evaluate, evaluation methods, and what to evaluate; e) knowing the instructional possibilities using the Internet; f) appreciating the advantages and limitations of various technologies; and g) perceiving the profiles of students and their development as remote learners. Web conferencing requires planning and practice. Familiarize yourself with the technology and any related ones you may be called upon to

integrate or use as a backup. Immerse your students in the process and be clear about expectations and the rules of engagement. Students must be adequately prepared to actively involve themselves in the learning process. The ultimate goal is to focus on the participants, the content and the learning process, and NOT on the technology. Dealing with the technology is not a problem for the majority of our students who are digital natives accustomed to similar forms of daily communication. If you are venturing into the brave new world of web conferencing, expect the initial phase to be exciting but sometimes tricky. Have a backup plan, or two. And, do NOT simply expect to plunge into a course full steam ahead. Run a pilot, or perhaps a parallel mode with an existing course. Remember, it is not about the technology; it is about what you can *teach and what can be learned* with the technology. And, please, share your lessons learned and best practices with other faculty colleagues.

Our campus recently acquired an enterprise license for iLinc, a web conferencing application consisting of several related tools for conducting different types of interactive sessions: LearnLinc, MeetingLinc, ConferenceLinc, and TestLinc. The grand vision for the next academic year is our potential to become a true, virtual networked organization, where every faculty member and every student on our campus will have an iLinc account, allowing them to participate in, set up and manage their own sessions, be they conversations, conferences, collaborations, or classrooms. It is beyond the scope of this article to provide detailed training on the use of iLinc (so please visit the Faculty Development Center), but it may be helpful to acquaint the reader with some of the useful pedagogical features of these tools.

iLinc supports multipoint video and recording, enabling participants to simultaneously see each other in a more dynamic way and the session to be recorded while you are delivering your presentations or your students are engaged in collaborative activity. Quizzes can be administered during the session, as well as tailored Q&A, in the same way that clickers are used in the classroom. A chat box is available, facilitating text conversation between all or selected participants that can be blocked partially or wholly by the instructor if preferred. Application sharing allows all or a portion of the desktop, regardless of which applications are in that region, as well as specific application(s) and web browsers, to be shared. Desktops can be split and glimpsed. The latter allows an instructor to monitor what a student may be doing remotely, when it is indicated that they are running other applications on their computer, or if they need help with a specific task or problem. Breakout groups can be organized and controlled, sending unique content to each group, or generating content for each group. Sessions can be scheduled at defined times, or they can be left open, providing a virtual collaborative space for students and instructor. Course content can be made available when in the session or through an email link sent to the participants.

The iLinc application itself downloads as a temporary client on the user's computer. A player and an editor of iLinc recordings remain available on the user's machine. iLinc is compatible with all operating systems: Windows XP/Vista, Mac OSX and Linux. It is not based on Java or Flash, and it supports both teleconferencing and VoIP.

iLinc has also a patented green meter technology, promoting the use of their technology to hold classes, meetings and remote experiment sessions over the Internet instead of traveling by automobile (or in some cases by airplane). Using the IP addresses of session participants, iLinc's technology estimates the CO_2 emissions saved by holding the session online. iLinc donates $100 toward renewable energy sources and carbon reduction programs for every business or institution that saves 1 million pounds of CO_2 or more by using iLinc's products.

Remote-Enabling Instrumentation

As a graduate student at UCLA in the 1980s, I could routinely remotely access, using a dial-up connection, a computer controlling an X-ray diffractometer, an essential piece of instrumentation with which to conduct my dissertation research in protein crystallography. At the W. M. Keck Foundation Center for

Molecular Structure (CMolS), a system-wide core facility here at Cal State Fullerton for the California State University Program for Education and Research in Biotechnology, our instruments were remotely-enabled in 1997, using commercial-off-the-shelf products in MS-DOS, six months before the Department of Energy collaboratories went online. Although it would be a few more years before these remote connections allowing control of instruments became robust graphical user interfaces, they provided research scientists, faculty, and students with the ability to conduct sophisticated research experiments from remote locations, using end-to-end cyber-infrastructure and the Internet. Remote data collection and observation is now routine in many areas of science, as is the use of high precision robotics and automation for the handling of samples.

In 2005, CMolS, along with four similar core facilities located at predominantly undergraduate institutions, formed the nationwide STaRBURSTT-CDC, an e-consortium serving more than 150 predominately undergraduate institutions (PUIs) and community colleges in diffraction science. In 2007, Cal State Fullerton, along with Cal State Long Beach, Cal Poly Pomona, Cal State Stanislaus, Fresno State, Harvey Mudd College, and Newport Harbor High School, established the CAL-PRISSM e-consortium. Using the iLinc interface, the *Partnership for Remote Instruments to Study the Structure of Matter* is providing access to instruments for remote experiments involving X-ray diffraction, inductively coupled plasma mass spectrometry, scanning electron microscopy, atomic force microscopy, confocal microscopy, nuclear magnetic resonance, and electron paramagnetic resonance. Of even greater interest and significance, these instruments are being made accessible to secondary science classrooms to provide high school students and teachers with real-time data collection and analysis, as well as online simulations and communication with scientists.

Cyberinfrastructure Enables SAVI Learning

Students today are often mesmerized and overwhelmed by electronic media, and they fail to realize that to learn, one needs to be SAVI: Somatic (learning by physical activity); Auditory (learning by talking and interaction); Visual (learning by watching and listening); Intellectual (learning by reflecting, thinking, and analyzing). Everyone has different learning modes or strengths, usually falling into one of four combinations: Connector (AV); Analyzer (VI); Applier (IS); Innovator (SA). Online instruction tends to cater to Analyzers (VI), and professors at Texas Tech University found that stronger students, those who have good general-comprehension skills, benefit more from taking an online course than students with less ability [18]. Cyberinfrastructure can be extremely effective at playing to the diversity of learning modes and strengths of students, while at the same time broadening their ability to learn by incorporating other modes: observing, analyzing, doing, talking (even IM).

History shows us that about every 20 years since the Industrial Revolution, groups of technologies have had major impacts on economic and social life, and enabling information technologies are no exception. Wealth of information, however, doesn't necessarily yield wisdom. Computers alone will not revitalize higher education because, with few exceptions (such as online traffic school), they cannot be good substitutes for instructors. Computers can be isolating. They tend to keep people physically passive, to appeal to one learning style, and to be media-based rather than experience-based. Effective use of educational technology means understanding that learning is not simply about absorbing information. It is about creating meaning, value and actionable knowledge by the learner. Learning is not individualistic; it is enhanced by collaboration and interaction. Thus, effective use of cyberinfrastructure in higher education involves a) collaboration, b) exploration and experiment, c) delivering an option-rich environment, d) providing activity-based experiences, e) posing problems to solve rather than simply delivering a know-it-all repository of information, f) instructional design based on preparation, presentation, practice and performance.

Learning is best when it is *SAVI*, and cyberinfrastructure can facilitate *SAVI* learning. Knowing how to effectively incorporate these principles into instructional design will help our entire faculty to create effective blended learning environments, to do more, and to do it better, in this brave new cyber-enabled world of higher education.

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Creating Online Learning Communities

Chris Street

When many faculty members who are new to online instruction envision online courses they often imagine students working in isolation at their own computers, completing assignments independently rather than engaging in rich class discussions. This "correspondence" approach to online education has its roots in a distance education paradigm that was relevant 100 years ago, but is a far cry from the highly interactive experience that is possible in today's online courses. But now, with the proliferation of modern technologies and communication devices, online courses can break free of this out-dated model. One refreshing approach to teaching and learning at a distance involves the development of online learning communities.

What Does the Research Suggest?

The creation of an online learning community serves as the foundation for a successful learning environment (Palloff & Pratt, 2007; Rovai, 2001). Brown (2001) has emphasized that students can overcome feelings of being alone when they support one another in a community of learners. Moreover, the feeling of connection to the learning community is especially important because students who feel connected to learning communities often place a higher priority on the class and spend more time devoted to course content (Brown, 2001). Communities of practice develop over time, evolving and reshaping themselves according to the needs of the learners who comprise them (Squire & Johnson, 2000; Wenger, 1998). Moreover, research suggests that while community cannot be mandated, it can be nurtured by instructors who maintain the goal of developing a sense of community within their online classes. But as Schwier (2001) proposes, doing so requires instructors to actively support "the natural development of relationships" (p. 6) within these learning communities.

In sum, research reveals several significant factors that facilitate community development in online courses: students' positive and previous experiences with technology; using constructivist approaches in teaching and learning; valuing online discussions as the cornerstone of community building; taking full advantage of web-based tools for engendering group learning and knowledge construction; and constructing authentic assessments to scaffold adult development.

Rovai (2007)—drawing upon on the professional literature as well as his decades of experience as an online instructor—outlines an effective framework for facilitating online discussions through the use of Discussion Boards (Table 1).

Table 1

Design

- Generate motivation for students to engage in productive discussions, such as grading online discussions, allowing students to choose discussion topics, and contextualizing discussions by drawing on diverse learner backgrounds and perspectives of a topic.
- Describe the ground rules for online discussions at the start of the course by clearly describing what is expected of students, perhaps using a participation rubric.
- Provide opportunities for socio-emotional discussions that have the goal of nurturing a strong sense of community within the course.
- Similarly, provide opportunities for authentic content-and task-oriented discussions. For large class enrollments use group forums rather than class-wide forums.

Facilitation

- Develop social presence in the virtual classroom.
- Avoid becoming the center of all discussions, emphasize student-to-student interactions.
- Attend to issues of social equity based on different cultural communication patterns.
- Attend to issues of social equity based on different gender-related communication patterns.
- Increase the status of low status students in order to promote equitable collaborations.

Why Does a Sense of Community Matter?

If students see their learning activities as being part of an accepted learning community, then the motivation to sustain and enhance that community may well cause students to value and contribute to their newly found identities. As such, they will likely begin to identify with other learners, thus adding to the learning community in productive ways. Learning in virtual communities is a complex process; as such, the ability to work within a community of learners allows students a means to test, examine, and clarify the many ideas and conceptions they bring with them to the online classroom. Moreover, an open environment allows students to gain access to the craft knowledge and the thinking processes of their more experienced peers and teachers. Thus, a successful learning community enables students to reexamine preconceived notions of what it means to be a student in the context of a supportive environment.

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Why Should Faculty Consider Issues of Community?

Several studies during the past decade comparing online learning with traditional classes have made the case for the viability of distance education. Generally, research findings indicate that there are few significant differences in students' satisfaction with the quality of their learning experiences online versus traditional classrooms as measured by assessment outcomes and students' perceptions of online learning (Maki, Patterson & Whittaker, 2000; Tolmie & Boyle, 2000). However, Garrison and Anderson (2003) remind distance education faculty that they will face continual challenges in the delivery of courses and programs in higher education. Primary among them is using distance learning to enhance inherently deficient existing practices such as lecturing and transforming educational transactions towards the ideal of a community of inquiry (p. xiv). To meet these challenges, administrators, faculty, and program developers are rethinking how knowledge is acquired, how expertise is defined, and how computer-mediated learning affects adult learners. Palloff and Pratt (2003) urge distance learning providers to recognize the value of community building as a central means of facilitating learning because "collaborative learning and the reflective practice involved in transformative learning differentiate the online learning community" (pp. 16-17).

By promoting and sustaining a sense of an online learning community among students faculty members can demonstrate our commitment to "providing an accessible, attractive and safe environment, and a welcoming campus climate" for our students (Mission and Goals, V, G). Though the environment may be a virtual one, students can still be welcomed into online classes as members of a learning community—a group that will be expected to provide support and guidance for one another as the group moves through the four course sequence together. Significant research supports the notion that online learning communities are essential to the formation of effective online programs. As such, the development of a sense of community among our students is a tangible way that we as dedicated faculty members can help ensure that our students feel supported as they seek meaningful ways to engage with others in their online classes.

For faculty who are interested in learning more about developing a sense of community in their online courses the two recommended resources in Table 2 provide an excellent overview.

Table 2
Recommended Resources

Palloff, R., & Pratt, K. (2007). *Building online learning communities: Effective strategies for the virtual classroom* (2nd. Ed.). San Francisco, CA: Jossey-Bass.

The authors explore the development of virtual classroom environments that foster a sense of community and empower students to take charge of their learning to successfully achieve learning outcomes. A practical, hands-on guide, this resource is filled with illustrative case studies, vignettes, and examples from a wide variety of successful online courses. The authors offer proven strategies for handling challenges that include:

Engaging students in the formation of an online learning community.
Establishing a sense of presence online.
Maximizing participation.
Developing effective courses that include collaboration and reflection.
Assessing student performance.

Written for faculty in any distance learning environment, this revised edition is based on the authors' many years of work in faculty development for online teaching as well as their extensive personal experience as faculty in online distance education. Rena M. Palloff and Keith Pratt share insights designed to guide readers through the steps of online course design and delivery.
http://www.wiley.com/WileyCDA/WileyTitle/productCd-0787988251.html

Rovai, A. P. (2007). Facilitating online discussions effectively. *Internet and Higher Education, 10*, 77-88.

This article presents a synthesis of the theoretical and research literature on facilitating asynchronous online discussions. It provides a nice blend of practical suggestions and research for those pragmatic suggestions.
http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6W4X-4MV71T2-1&_user=521375&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000059558&_version=1&_urlVersion=0&_userid=521375&md5=3f75aa632cbbe575a6d3ee864405cb1c

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The Changing Role of the Academic in a Digital Society

Karen Ivers

As academics, we may be defined as studious, intellectual, scholarly, learned, theoretical ---- "thinkers." Our role, at one time, was to impart knowledge in teacher-centered instructional environments that encouraged independent work in what many refer to as passive or traditional learning environments. Students sat while instructors lectured.

Over the years, our roles and responsibilities changed. We moved from "traditional' learning environments to "new" learning environments. New learning environments included student-centered learning, collaborative learning, information exchange, and active/ exploratory/inquiry-based learning in an authentic, real-world context. We were no longer the dispensers of all knowledge but facilitators of learning. New learning environments promoted active learning, higher-level thinking skills, collaboration, and multisensory learning.

"New" learning environments have evolved into what is now called 21st century learning environments. These environments emphasize much of what we defined in "new" learning environments but requires "…broad and intensive use of technology and a strong technology infrastructure" (ISTE, Partnership for 21st Century Skills, & SETDA, 2007, p.3). In addition, 21st Century Learning environments emphasize mastery of core subjects and 21st century themes: global awareness; financial, economic, business and entrepreneurial literacy; civic literacy; and health literacy. Skills include learning and innovation; information, media and technology; and life and career.

So, how does this affect our role as academics? It

means promoting creativity and innovation; critical thinking and problem solving; communication and collaboration; information, media, and communication literacy; flexibility and adaptability; initiative and self-direction; social and cross-cultural skills; productivity and accountability; and leadership and responsibility – a far cry from standing in front of a classroom and giving a lecture.

In his book, *A Whole New Mind: Why Right-Brainers Will Rule the Future,* Daniel Pink (2006) describes how we evolved from an Agriculture Age (farmers) to the Industrial Age (factory workers), from the Industrial Age to the Information Age (knowledge workers), and now, how we are evolving from the Information Age into a Conceptual Age – "…a society of creators and empathizers, of pattern recognizers and meaning makers" (p.50). According to Pink, affluence, technological progress, and globalization drive our evolution. He states, "Mere survival today depends on being able to do something that overseas knowledge workers can't do cheaper, that powerful computers can't do faster, and that satisfies one of the nonmaterial, transcendent desires of an abundant age" (p. 51).

Technology continues to be a defining force in our society. Saettler (1990) documents this, noting how proponents of new educational technologies seemed to promise their technology would suddenly make kids want to come to school, solve all of our educational woes, and replace teachers. These promises have been unfulfilled for over 100 years. Still, it strikes fear in many academics that they may one day be replaced by a computer or other technology. It is not the academic who is being replaced; it's the instructional environment that is being replaced, and unless academics are able and willing to work in these new instructional environments, the academic – no matter how learned – will become obsolete.

So, what does this mean to us as academics? It means being in touch, aware, and prepared to work with students submersed in a multisensory, digital world of, perhaps, over stimulation. It means understanding and becoming a part of their world because their world is the future. Their world is about creativity and innovation, critical thinking and problem solving, communication and collaboration, and globalization. It means staying abreast of the latest educational technologies and delivery systems, engaging in professional development to become competent with new technology tools, and focusing on the outcomes of 21st Century Learning skills rather than on a particular technology or software program. Technology will continue to evolve, as will software. We must focus on technology as a learning tool rather than a tool within itself. As academics, it is our role to move "…beyond narrowly focused 'computer courses' to deploying technology more broadly, improving student performance and revitalizing the classroom experience" (CDW-G, 2006, p.3,). Technology should be an integral component of all coursework, implemented to support 21st Century Learning skills.

The demands and skill requirements of today's academics are many, especially if we compare them to the days of standing in front of a group of students and reading a lecture. Unfortunately, technology does not automatically make someone a 21st Century instructor. For example, one could easily post his or her lecture notes on Blackboard and tout mastery of the technology revolution. The same is true for someone who assigns students activities limited to finding resources on the Internet. Academics, like their students, need to embrace technology as a tool for learning, sharing, creating, problem solving, and communicating. In order to do this, academics need the tools and the support (e.g., professional development, release time, funding, etc.) to enable them to create technology-rich environments (online or face-to-face) to support 21st Century Learning outcomes.

Even with the tools and support, the academic must be willing to take on the challenges of stepping into a new learning and instructional environment. While CSU Fullerton supports a Faculty Development Center, maintains a well-technologically advanced infrastructure, and other IT support, if the academic is unwilling to move forward and step into the 21st Century learning

and teaching environment, the loss to our students is great – especially to those who may be coming from disadvantaged backgrounds. What a horrible disservice.

So, what does it mean to be an academic today? It means embracing change that supports the methods and tools needed to support and teach 21st Century Learning skills. It means staying student-centered and promoting creativity and innovation; critical thinking and problem solving; communication and collaboration; information, media, and communication literacy; flexibility and adaptability; initiative and self-direction; social and cross-cultural skills; productivity and accountability; and leadership and responsibility. It means keeping abreast of current research and technologies, engaging in ongoing professional development to improve one's teaching and ability to use technology as a learning tool, not as a means to an end, but as a means to a means; technology should be used to promote critical thinking, as a tool to support innovation and creativity, and as a collaborative and communication tool.

Our roles and responsibilities have changed.. We need to be more than "thinkers;" we need to be creators, collaborators, innovators, motivators, leaders, role-models – part of our students' digital world if we are to succeed in providing them a high quality, advanced education.

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The 21st Century Student: Characteristics and Workplace Expectations of Today's Learners

JoAnn Carter-Wells

Who is the 21st century learner and what is the new cultural milieu? Marc Prensky, author of *Digital Game-Based Learning* (McGraw-Hill, 2001) and *Don't Bother Me, Mom, I'm Learning* (Paragon, 2005) has coined the phrase "digital native" to describe the 21st century student. Specifically, a digital native is a person who has grown up with digital technology such as computers, the Internet, mobile phones and MP3. On the other hand, he defines a "digital immigrant" as an individual who grew up without digital technology and adopted it later. (Digital Native, 2008, March 25). Although there is some controversy about these distinctions and resulting disconnect between these two types of learners, a Digital Native research project is being conducted jointly by the Berkman Centre for Internet & Society at Harvard Law School and the Research Center for Information Law at the University of St. Gallen in Switzerland. The project will address the issues and benefits of this new digital media landscape and gain valuable insight into how digital natives make sense of their experiences online with recommendations for appropriate instructional strategies and general societal educational support. What we do know is that the 21st century student functions in an environment which includes social networking, multitasking, expanded technology interaction (multimedia, laptops, IPODS, webisodes, etc.) and both synchronous and asynchronous web based learning.

What is expected in the rapidly changing workplace environment and how does that impact how we best prepare our students to meet those expectations and challenges?

In a recent presentation (April 27, 2008) to the alumni association of the online MS in Instructional Design and Technology (MSIDT) at CSUF, Ferrell Onyett, VP of Training, WAMU stressed that "speed and efficiency" have changed the workplace environment with change as the constant. Employers need workers who are able to multitask, work in teams, and participate in ongoing eLearning via the web or through mobile training, and webinars (multimedia online seminars).

In fact, the increased availability of computers, the Internet, company Intranets, and authoring and publishing technologies have affected the way people learn in both educational and corporate environments. Competitive job markets have sparked employee skill recruitment and retention more than ever. Companies are now striving to engage and retain employees by using the aforementioned technologies and by going beyond the basic active system/passive learner concept that many web-based learning programs characterize, to active system/active learner through interactivity. Conversely, educational environments must prepare students for the competitive corporate environments and engage them in order to expedite the knowledge transfer process (Bova, B. & Kroth, M, 2001).

As we know, web-based learning has exponentially increased in the last two decades and the third generation is based on two-way communications media that allows for direct interaction between the instructor, who originates the instruction, and the remote learner. This interaction is one of the key characteristics of e-learning. According to Choi et al (2007), the key to the new eLearning process involves the interactions amongst students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interactions. Zhang et all (2004) confirms the importance of interactivity in that the higher interactivity an e-learning environment provides, the better learning performance students may achieve. Voice Over Internet Protocol (VOIP), voice training profiles, and other non-kinesthetic technologies are allowing for a more integrated interactive learning experience for learners.

In the workplace, then, eLearning designers are moving beyond the point and click approach to learning and interactivity.

In addition, graduates of the MSIDT program who are primarily from business and industry throughout the country participated in a survey asking them to identify "What technology skills should college students have in order to compete in the workplace currently or in the future"? The most common responses were more detailed Microsoft Office expertise, increased design focused software experience, the use of peripherals in conjunction with regular technology, data mining, and web /internet marketing, and non-technical communication skills. The emphasis on being able to participate in communities of learning within the workplace and information literacy competency were also stressed.

For students in the digital age the possession of Information Literacy skills is considered a prerequisite for academic success. However, Information Literacy skills, as mentioned in the survey results, are not strictly confined to the classroom as they are becoming a critical job skill requirement. Corporations today are global and geographically dispersed workers need access to data that could be located anywhere the world. In the information economy employers expect that new employees will be productive within the shortest amount of time possible and the fastest way for new employees to be productive is to initially have strong basic Information Literacy skills. To remain competitive in a global environment, then, corporate workers will need to retrieve, transfer, manipulate, interpret, use and store data on those very same global networks. In addition, Knowledge Management in the corporate world is an attempt to shorten the learning curve for entry level employees by presenting them with the same knowledge and skills that older established workers already possess. What is more, workers will need a level of Information Literacy skills which allow them to perform all these tasks instinctively and without supervision. (Oman, 2001).

Obviously, we are beyond "netiquette" in terms of working with students in these new technology enriched cultural and workplace environments. The Blackboard infrastructure and campus support systems at CSUF particularly related to the integration of technology and web based learning environments provide the basis for faculty to create enhanced learning and instructional strategies. The use of podcasting, multimedia integration, communities of learning and web conferencing software such as the new iLINC will help to ensure that our students are prepared for the new workplace demands and expectations as well as success in the continued use of technology as it evolves exponentially throughout their lives in the 21st century!

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Designing Engaging and Relevant Instruction for Net Generation Students

Lynda Randall

Introduction

In recent decades, advances in technology have dramatically transformed the landscape of higher education. These advances have affected not only how we teach, but how our students learn. Technologies that are pervasive as members of a generation mature have a profound influence on attitudes, behaviors, and learning dispositions. The pedagogies used higher education are also influenced by technological advances, but to a lesser extent and at a slower rate. In light of these trends, it is incumbent on the professoriate to work toward closing this gap.

The characteristics of students from within a given generation are not entirely homogenous, but research has revealed a number of tenable generalizations. The Net Generation has become defined in large part by the rapid growth of technology. These students have never known and could scarcely imagine a world in which computers were not present. Growing up surrounded with digital media and advanced technologies, they have learned to integrate computers and technology into all aspects of their lives. For Net Geners, these tools are essential to communication, social networking, study, and entertainment.

One in five college students today began using computers between the ages of 5 and 8 (Jones, 2003). At least 85% of college students today own their own computer, and nearly all have access. In addition, 66% use at least two email addresses. Clearly, our students have the tools and skills to participate in rich e-Learning experiences.

The Net Generation in Context

In the United States, the number of Net Geners born during the period from 1980 on totals about 88 million, or thirty percent of the country's population. This cohort is slightly larger than the Baby Boomers, those born between 1946 and 1964, a population of about 80 million. The sheer number of Net Geners under the age of 28 enrolled in colleges and universities today impels us to examine our teaching practices. Instructors are often left to ponder why their tried and true methods don't seem to work any longer.

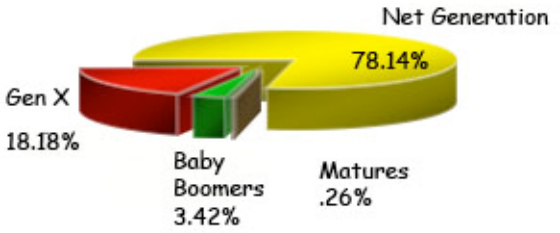
Specific to Cal State Fullerton, the demographics of student enrollment are roughly .26 percent "matures" (born prior to 1946), 3.42 percent "baby boomers" (born 1946-1964), 18.18 percent "Gen X" (born 1965-1980), and 78.15 percent "Net Generation." Table 1 provides a summary of enrollment data for the University by

Table 1

CSUF Spring 2008 Enrollments by Generational Group

Generation	Birth Years	Age Range	Number Enrolled
Matures	Prior to 1946	63+	93
Baby Boomers	1946-1964	44-62	1232
Gen X	1964-1980	28-43	6547
Net Generation	1981 and later	Under 28	28,146
Total			36,018

Figure 1: Percentage of CSUF Students by Group



Note: The data for Table I and Figure 1 were obtained from the Office of Institutional Research and Analytical Studies reports at www.fullerton.edu/analyticalstudies/enrollment_history/index.html. Because the data were not reported in the same age ranges as the generational groups, some extrapolation of the data was required.

generational group, and Figure 1 displays the percentages of enrolled students in each group.

Influences of Technology on Generational Attitudes

Research shows that Net Geners are generally accepting of diversity, curious, assertive, self reliant, and net addicted. Computers are at the center of their study spaces, and they are accustomed to finding information online. These students are always connected and able to communicate through instant messaging, text messaging, cell phone calls, and email. They are adept at multi-tasking and parallel processing. Having learned that information is available at Internet speed, they expect immediate answers and find it difficult to delay gratification. Table 2 provides a comparison of prevailing technologies across generations of students and their influences on behaviors, attitudes, and learning

Table 2: Influences of Technology on Generational Behaviors, Attitudes, and Learning Dispositions

Generation	Prevailing Technologies	Behaviors and Attitudes	Learning Dispositions
Matures (Traditionalists) Born prior to 1946 Aged 63 and older	Vacuum-tube radios Mechanical calculators 78 rpm records Rotary telephones Party lines	Responsibility Respect for authority Diligence	Amenable to rote learning Value written and face-to-face communication Formal communication style
Baby Boomers Born 1946-1964 Aged 44 to 62	Transistor radios Mainframe computers 33 and 45 rpm records Touch-tone telephones	Optimism Process-oriented Work ethic Can-Do Attitude Question Authority	Value some face-to-face encounters Competitive Embrace lifelong learning
Gen X Born 1965-1980 Aged 28-43	CDs Personal Computers Electronic Mail Digital cameras	Skeptical about social institutions Value positive reinforcement and frequent feedback Enjoy informality Desire a balance of work and play	Skip the red tape Get to the point Independent Creative Resourceful Adaptable
Net Generation (Millennial) Born from 1981 on Aged 27 and under	MP3s Cell phones PDAs Instant messaging Text messaging	Multi-taskers Connected (computers, cell phones, IM, email) Curious Self confident and assertive Collaborative Expect immediate answers	Seek information online Computers central to study Prefer “learning on the go” “Cut and paste” Prefer graphics over text

dispositions. Again, keep in mind that these groups are not homogenous.

Opportunities and Challenges for Teaching Net Generation Learners

Net Geners have many common strengths as learners, particularly in terms of collaborating and co-creating. In the social realm, they seek communication and interaction with others both known and unknown to them. This social orientation leads to a preference for learning with peers and as team members. They value immediacy and relevance, preferring to work on tasks that involve "things that matter." (Oblinger & Oblinger, 2005). With mobile devices such a cell phones, iPods, laptop computers, and PDAs readily available, they gravitate toward "learning on the go" and self-paced learning.

Along with the advantages of working with Net Gen students, there are some noteworthy challenges as well. The downside of multi-tasking is a short attention span. These students are somewhat allergic to direct instruction, however short the segment, and insist on interactivity. Their adeptness at visual interpretation and hyperlinked styles of processing also lead to shallow reading and a focus on surface features of text. And often, they they lack skill in critical thinking and information fluency. They need guidance and training in judging the accuracy of online resources, as well as acknowledging sources and making their own interpretations.

Although the Net Generation does comprise 78 percent of our student population here at Fullerton, the learning needs and preferences of other represented generations are also germane. Researchers at the University of Central Florida's Research Initiative for Teaching Effectiveness conduct ongoing research to assess student perceptions of online instruction. One of their most recent studies compared the quantitative and qualitative responses of Baby Boomers, Generation Xers, and Net Geners on two dimensions of online learning: learning engagement and interaction value.

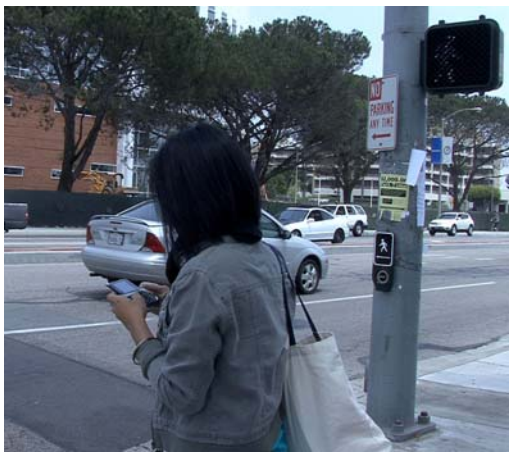
Results showed that Net Generation students were the least satisfied with online instruction overall. Baby boomers reported more positive learning engagement, but wished for more face-to-face interaction. Generation X students disliked the continuous and connected nature of online instruction and preferred to "get to the point" and "move on." (Hartman, p. 60) Net Generation students lamented the lack of immediacy and the lag time in faculty responses.

Implications for Teaching and Learning

Marc Prensky's classic work on digital natives and digital immigrants clearly underscores the need to align our pedagogies with the needs of today's learners. Digital natives who have grown up immersed in technology (computers, cell phones, video cameras, digital media players, computer games, and email) think differently than their predecessors. There is growing evidence that the actual "hardwiring" of the brain is affected by environmental influences. Prensky (2001, p.1) asserts, "Our students have changed radically. Today's students are no longer the people our educational system was designed to teach . . . .It is now clear that as a result of this ubiquitous [technology], today's students think and process information fundamentally differently than their predecessors."

For the professoriate that is comprised almost exclusively of digital immigrants, it is often

difficult to recognize and appreciate the unique capabilities of digital native students. Unless professors can examine both their content and pedagogy in light of current learning styles, they will face ongoing tension and resistance in the classroom. The challenge is to find learning strategies and resources that are appropriate for the ways our learners process and conceptualize concepts.



Again, Prensky's (2001, p.6) words are particularly salient: "If Digital Immigrant educators really want to reach Digital Natives – i.e. all their students – they will have to change." The "disconnect" between learner preferences of digital natives and teaching strategies of digital immigrants is cogently outlined in the work of Jakes and Dosaj (2003). Table 3, as presented in their work, provides a succinct summary of this dichotomy.

Emerging Technologies to Support Student Learning

Lest the task of transforming pedagogies seem too daunting, first consider some of the emerging technologies that can help to ease the transition. These tools promote relevance through experiential, applied, and real world activities.

Table 3
Differences Between Digital Native Learners And Digital Immigrant Teachers.

Digital Native Learners	Digital Immigrant Teachers
Prefer receiving information quickly from multiple multimedia sources.	Prefer slow and controlled release of information from limited sources.
Prefer parallel processing and multitasking.	Prefer singular processing and single or limited tasking.
Prefer processing pictures, sounds and video before text.	Prefer to provide text before pictures, sounds and video.
Prefer random access to hyperlinked multimedia information.	Prefer to provide information linearly, logically and sequentially.
Prefer to interact/network simultaneously with many others.	Prefer students to work independently rather than network and interact.
Prefer to learn "just-in-time."	Prefer to teach "just-in-case" (it's on the exam).
Prefer instant gratification and instant rewards.	Prefer deferred gratification and deferred rewards.
Prefer learning that is relevant, instantly useful and fun.	Prefer to teach to the curriculum guide and standardized tests.
Jakes & Dosaj, 2003 http://www.apple.com/au/education/digitalkids/disconnect/landscape.html	

They ensure interactivity, collaboration, and co-learning through the use of Web 2.0 tools (e.g., wikis, blogs, and RSS syndication), and communication tools (e.g., discussion boards and video conferencing).

In these e-Learning applications, the need for immediacy is addressed through web-based instruction with embedded practice opportunities and feedback. The social construction of knowledge is supported by networking and collaboration. Effective online strategies enhance visual and auditory learning by augmenting text with graphics, videos, and audio input. And finally, these tools offer flexibility through the infusion of student choices, self-paced lessons, and open-ended assessments. Table 4 describes twelve technology tools, selected from a much

Table 4:Emerging Technology Resources for Transforming Instructional Strategies

Tool	Description/Application	Resources
Google Apps	A set of tools including Gmail, Google Calendar, Google Talk (free text and voice calling), Google Docs (real time sharing and collaboration on documents), and Google Sites (allows teams to organize documents and web resources in one place for sharing)	These tools will be available to all students and faculty beginning Fall 2008.
SoftChalk Lesson Builder	This software application allows faculty and students to develop interactive, web-based lessons in the form of .html pages. Interactive features such as text pop-ups, self-assessment quizzes, and learning games help to reinforce learning and provide formative feedback. The lessons can be packaged for delivery through Blackboard and other digital delivery modes.	Download a 30-day trial version at www.softchalk.com.
Lulu	This is a web-based self –publishing resource that allows you to design, publish, and print original material. Students and faculty use this tool to publish customized materials in a timely manner.	Read more about this on the Educause website: http://connect.educause.edu/Library/.
Web Conferencing	Using free software such as Skype and Google Talk, or licensed software such as iLink, students and faculty can conduct virtual conferences, office hours, and study sessions.	The Faculty Development Center offers periodic workshops on the use of iLink, for which the University has a site license. Download free Skype software at www.skype.com.
Creative Commons	This is a web-based resource developed by a non-profit organization. It provides free tools for users to copyright their work.	Log on to the website at this site http://creativecommons.org/.
TurnItIn.Com	This online plagiarism detection service scans student papers and compares them to millions of online sources and other student papers, and then produces an originality report.	This tool is accessible through Blackboard, and the University has a site license.
Google Jockeying	Some professors like to designate a Google Jockey who can immediately Google answers and research information on their laptop as the need arises.	Read more about this on the Educause website at http://connect.educause.edu.
iTunes U	This is Apple's interface designed specifically for higher education. Universities have specific sites within iTunes U where they can post lectures, readings, and other useful podcasts for download by their students and other users.	Apple's site for "the University that never sleeps" is accessible at http://www.apple.com/education/iTunesU.
Podcasting	Podcasts are digital media files (audio, video) that are made available for automatic download through syndication.	A variety of software applications can be useful in creating podcasts. Apple's Keynote is the simplest to use, and you can simultaneously present and record PowerPoint presentations by using ProfCast. Other useful tools include GarageBand, QuickTime Pro, Articulate, and Camtasia.

longer list of possibilities, that professors may wish to add to their pedagogical toolboxes.

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Dr. Randall is also the coordinator of the College of Education Podcasting and Multimedia Studio and works closely with faculty to assist with developing online instructional materials.

Calendar of Upcoming Technology Conferences

March 6-8, 2009 Cue (Computer Using Educators) Annual Conference, Palm Springs, CA.

June 18-20, 2008. EduComm Conference. Las Vegas, NV.

July 5-8, 2008. Annual Conference on Distance Teaching and Learning. Madison, WI.

August 5-6. International Conference on Teaching and Learning with Technology. Singapore.

October 14-16, 2006. Innovative Learning Conference. San Jose, CA.

November 17-21. E-Learn 2008. World Conference on E-Learning. Las Vegas, NV.

March 2-6, 2009. Society for Information Technology and Teacher Education. Charleston, SC.

Senate Forum

The Senate Forum is a publication of the Academic Senate at California State University, Fullerton. It is designed to stimulate discussion, debate, and understanding of a variety of important issues that the Senate addresses. Individuals are encouraged to respond to the materials contained in the forum, or to submit their own contributions.

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