

Teaching the 21st Century Learner

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The 21st Century Learner

For some faculty, any discussion of the nature of today's students is an occasion to express chagrin and dismay over prevailing student attitudes about scholarship. One need not listen long in faculty lounges and offices to hear: "Something has happened to the quality of our students!" "They just don't value learning like we did!" "You wouldn't believe how much I had to dumb down the course to get half the students to pass!" "I am deeply concerned about the students coming out of high school today. They aren't ready for college." As Hanno van Keulen noted¹, faculty disappointed in their students' progress tend to blame either the students themselves or their earlier educational experiences.

Perhaps some of the criticism is valid. After all, students of every generation are, whether they realize it or not, seeking maturity – intellectual, social, and physical. But could it be that the unease expressed by some faculty stems less from unusually severe deficiencies in current students, and more from an egocentric belief that our students learn (or should learn) the same way that we do? This belief may be misplaced. There is mounting evidence that today's traditional students – those born after 1982 – have a different relationship with information and learning than do previous generations, as a result of their access to the Internet and computer-enabled technologies. Diana Oblinger, Vice President for EDUCAUSE, summarized this research in her description² of these students, known variously as "Net-generation" learners, "Millennial Students", "Generation-Y", and "Digital-natives". By age 21, these students will have spent 10,000 hours playing video games, sent 200,000 emails, watched 20,000 hours of television, spent 10,000 hours on a cell phone, but less than 5,000 hours reading. The trend will continue: children age 6 and under will spend 2.01 hours per day playing outside, but 1.58 hours using computers. They will spend only 40 minutes daily reading or being read to. Despite their young ages, 48% of these children have used a computer, and of these children, 27% of 4-6 year olds use a computer daily and 39% use a computer several times a week. At least 30% have played video games. Oblinger suggests that this intense interaction with technology has deeply affected the way that these children interact with their environment. Out of a belief that people born before 1982 can also be influenced by technology, we propose the term 21st Century Learner to describe those for whom technology is at the center of their learning and interactions with information.

A 21st Century Learner tends to be a multi-tasker that uses sound and images to convey content whenever possible. Text, the primary medium of traditional academics, is tolerated only when the technology does not (yet) support something better. In chat rooms, for example, 21st Century Learners gladly forsake well-

formed sentences for other, faster, tools: what does ROTFL mean? People who are not 21st Century Learner may have trouble selecting “**Rolling On The Floor Laughing**”. Indeed, many *chat acronyms* set 21st Century Learners apart from other people. Do you know the meaning of B4, LOL, POS, GNSTDLTBBB or CUL8R?³

Emotions are also subject to abbreviation, generally in the form of *emoticons*. Do you know the meaning of these examples?

;-)
>:-(
^5
((((name))))
(:):)
@[_]~~⁴

The 21st Century Learners will look to the Internet as the universal source of information. Were you to ask students to answer this question in less than 15 seconds:

What actor/actress had a major supporting role in the Movies “The Birds” and “Alien”?

The response would invariably involve a quick Google search. Terminology such as “Chat,” “Blog,” “Blogging,” “IM,” “On-line,” “To Google,” and “Text Messaging” are used quite un-self-consciously by 21st Century Learners. Games and simulations are highly valued, especially those that support interactivity between multiple players. Of these, SimCity 4 (build and manage your own city) and Runescape⁵ are prime examples.

Among educators, there is often the question as to whether video games pose a challenge to education. The time and money that students spend on gaming indicates the pervasive role of entertainment in our culture. What these games do provide is insight into engagement, not entertainment. Video games challenge K-12 and higher ed to foster engagement in learning.

There are also questions about student use of technology in the classroom. “Are students becoming too dependent on technology to do spelling and basic arithmetic?” Instead of asking this question, it may be better to look at technology as a means to empower today’s students. The 21st Century Learner can oftentimes add, subtract, divide, and multiply faster and more accurately than past students who did not have access to such technology. It may be better to take the perspective that if a device can do something better, more efficiently, more accurately, or quicker than we can manually, why not use it? Isn’t that the true purpose of technology (cars and electricity)? Our focus must shift from the tools themselves to the capabilities of these new tools to empower students to do new things

Teaching the 21st Century Learner

The 21st Century Learner has many educational traits that older educators may not be familiar or comfortable with. These traits include gravitating toward group activities, thinking it’s cool to be smart, busy with extracurricular activities, identifying with their parents’ values and feeling close to them, respecting social conventions and institutions, being fascinated with new technologies, and being comfortable with racial and ethnic diversity. Today’s learners are also digitally literate, mobile, always on, experiential and social. To them computers aren’t technology—they are just part of their life experience background. The hypertext minds of 21st Century Learners crave interactivity, are good at reading visual images (though weak with reading skills), have strong visual-spatial skills, tend toward parallel processing and inductive discovery, look for fast response times which leads to short attention spans.

So how does all of this impact the field of education? At the bottom of all of this is the simple fact that the amount of information is growing almost as quickly as new technologies develop. We now process more information in 24-hours than the average person 500 years ago would process in a lifetime. By the time today's kindergarteners graduate from grade 12, information will have doubled at least seven times while technological power will have doubled itself nearly nine times! And to think that the general structure of today's university was solidly established by AD 1500!

With the rate of information growth continuously accelerating, higher education today must place less emphasis on the amount of material memorized and more weight on making connections, thinking through issues, and solving problems. We must discard the notion that schools can teach everything every student will need to know to be successful in their field of choice. We must move beyond the old university model where the primary challenge of learning was to absorb a vast array of specific information.

Learning is now a life-long process of coping with change. The content of a particular lesson is less important than manipulating content resources. Learning how to learn is the basis of education today.

The learning preferences of the 21st Century Learner is to work in teams in peer-to-peer situations within a structured environment that affords a fair amount of flexibility. They look to be engaged in their learning and to be able to experience learning firsthand--to learn through exploration. They also tend to prefer visual and kinesthetic activities over reading and listening activities. Finally they want to learn things that matter. Students want to be challenged to reach their own conclusions, find their own results.

The new technologies that are available in the field of education can help create a learning culture in which the learner enjoys enhanced interactivity and connections with others. The central issue now is: How can technology be organized around student learning? How can we use these tools to help students think and communicate effectively?

Part of the challenge we encounter is due to the differences between students of the 21st Century and the faculty members at the front of the classroom. The chart below illustrates these differences.

Students	Faculty
Multitasking	Single or limited tasks
Pictures, sound, video	Text
Random access	Linear, logical, sequential
Interactive and networked	Independent and individual

In today's world, multimedia format pervades nearly every part of life, from television, to audio, animation and text. Students live in a world of digital, audio, and text. Because of that, they expect a similar approach in classroom. Faculty must therefore abandon the notion that a lecture and reading assignment are enough to teach a lesson.

The teacher's role is no longer that of the professor dispensing facts and theories. Faculty today must be participants in the learning process. Their role will be unbundled—moving from teacher to mentor where they facilitate peer-to-peer learning.

Faculty must learn to communicate in the language and style of today's students. They need to teach faster, be less sequential and more parallel in their approaches, and provide students with greater random access to the knowledge.

So what are the instructional implications? There is a movement toward more blended courses (face-to-face and online), the incorporation of more collaborative learning approaches, the use of continuous and formative assessment, and greater flexibility with respect to customizing course content to meet individual learner needs.

When developing a course site, the course redesign must be systematic. Incremental add-ons should be avoided. Simply adding a few computer experiences costs more, is more work for the faculty, and adds to the students' burden. True innovations change rather than modify systems

The classroom was the traditional learning space—physical in nature. Today, virtual space is now an option that can be included. To connect the two learning spaces, a blended approach must be taken.

Key features of an interactive course site would include: online quizzes, forms for providing feedback or asking questions, online voting, games, features for sharing pictures or stories, message boards, forums for offering and receiving information, and features for creating/adding content. The content would be more diverse in structure, with single unit kept short.

These new learning spaces provide an array of new pedagogical approaches. Wireless networking provides greater mobility in and out of the classroom. Videoconferencing, online collaborations via whiteboards, and virtual discussions through threaded discussion boards, blogs, wikis, and chat, all enable learning to happen easily inside and outside the classroom. Thus, the end of class can be a transition to another learning space where students can spend more time with the course content.

Another pedagogical approach that technology is enabling and that the 21st Century Learner is expecting is collaborative learning through group/team projects. These projects can be developed using multimedia processes and provide a more powerful learning approach than a term paper—specifically, more authentic learning. Students are looking for practical applications in real-world context. The course focus should be more on applying classroom lessons to real-life problems, institutions, or organizations, thus allowing students to center on their learning style strengths.

Overarching these pedagogical approaches is the infusion of social interaction and experiential and immersive activities within the classroom and blended learning environments. Collaborative immersion through the use of technology such as videoconferencing and whiteboard integration will further meet the learning needs and expectations of the 21st Century Learner.

Finally, to move all of this forward, a concerted effort must be immediately undertaken in the realm of faculty training. We need to have a new set of expectations of faculty with respect to their knowledge of and incorporation of technology within the learning space. We need to foster a technology culture with an emphasis on continuous faculty training, sufficient resources and support available and proper rewards for innovation in the creation of technology-rich learning environments.

Footnotes and References

¹ Hanno van Keulen, "Making Sense," Press Utrecht, 1995.

² Oblinger, D. (October 2004). Educating the net generation. Keynote address delivered at Educause 2004. Denver, CO. The address is available at <http://mslive.sonicfoundry.com/mslive/viewer/NoPopupRedirector.aspx?peid=2808fd88-7ab3-49e6-bc25-93f2c1b7dc39&shouldResize=False#>

³B4 = “before”; LOL = “Laughing out loud”; POS = “Parent over shoulder”; GNSTDLTBBB = “Good night, sleep tight, don’t let the bedbugs bite”; and CUL&R = “See you later”.

⁴;-) represents a wink; >:-(is a look of consternation; ^5 is a “high five”; (((((name))))), where “name” is replaced by the recipient’s actual name, is a hug (note the two sets of five parentheses to represent two arms); (::(:)::) is a band-aid; and @[_]~ suggests a cup of hot coffee!

⁵ <http://www.runescape.com>

Biographical Sketches

Dr. Michael Rodgers is a faculty member in Chemistry and a Technology Associate of Southeast’s Center for Scholarship in Teaching & Learning. He has contributed significantly to the planning and teaching of the Center's "Technology Serving Learning" Institutes since 1997. Mike has presented faculty instructional technology development workshops, papers, and panel sessions at many national and international conferences, such as Syllabus, Educause, MERLOT, SITE, AAHE, Council of Colleges of Arts and Sciences, POD, ED-MEDIA, and Sloan-C.

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Dr. Roger Von Holzen is the director of the Center for Information Technology in Education at Northwest Missouri State University. Since completing his doctorate in instructional technology from Texas Tech University in 1993, Roger has been extensively involved in the various technology initiatives undertaken by the university, leading to his appointment as the director of the campus's faculty technology and online learning center in the spring of 1999.

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