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Technology as a Mirror

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IN CYBERSPACE instructors are more exposed, vulnerable, and less able to retain a veil of superior knowledge and expertise that has given scholars a sense of identity. We can, however, deepen our understanding, authentically practice the disciplines that we love, and enter new relationships to the learners who entrust themselves to our care. This I learned from faculty I consulted at the University of Vermont. And this is how technology can influence--and further--the aims of education.

Frank Mayadas, program director for the Alfred P. Sloan Foundation distinguishes between two kinds of learning: the broadcast model and the interactive model.(n1) In the self-study or broadcast model, materials are prepared and posted on the Web to be used by learners at their own pace. Mayadas likens this to any other form of publishing and self-study. Unusually disciplined individuals can learn this way. At the same time, the cost of production of these online materials can be quite high, often reaching a million dollars per course.

The second form of on-line learning is the interactive model in which classes begin on a particular day with a cohort of students taught by a faculty member who interacts with individuals or the whole cohort via group e-mail tools. Interaction with the instructor is regular and continuous, as is interaction among students. The cost of such courses and their sequence that can produce a degree in cyberspace is often quite modest, requiring very little start-up funding. As a benchmark, Sloan offers about $10,000 to support the development of a single course and $150,000 for the design of a full masters degree.

An important point is that these kinds of courses neither eliminate the need for faculty nor cause faculty to become increasingly independent of colleges and universities. In fact, enrollments often climb as these courses become available, and the infrastructure required to provide the course can justify growth in an institution's instructional base. These courses also tend to link cohorts of students more effectively to a particular institution or to a collaborative educational environment provided by an institution.

Criteria for excellence

From the perspective of the Alfred P. Sloan Foundation, which has been investing in these interactive electronically delivered courses for several years, the criteria for excellence in cyberspace are no different from what we expect in a traditional classroom setting. They are

- access to excellent learning materials including books, notes and handouts, special kinds of educational software--often used in self-study or group-study fashion
- access to a professor who determines the overall content and pace of the course, helps interpret the subject matter, and evaluates how well a student has learned
- the presence of other students who help each other, study together, seek assistance with materials and problem sets or projects.

These three elements can be provided in a classroom setting, in a combination of classroom and technology augmentation and through distance learning entirely in cyberspace.

Although many futurists who are following the growing influence of technology on education, the production of intellectual property, and the relationship of learners to institutions predict dire consequences of the information age on the health and financial stability of our traditional colleges and universities,(n2) it is equally likely that the use of technology will have quite different and often profound and positive effects on the clarity of purpose, depth of understanding, and goals of traditional institutions.

Lessons learned

The experience of the University of Vermont (UVM) is a case in point. What have we learned from two years of focused effort? Our intent is to promote the use of technology to enhance learning, to build a cyber learning space for students who are primarily residential, to offer graduate and professional degrees throughout Vermont for nurses, social workers, and teachers, and professional development for physicians, engineers, public administrators, and other practitioners.

Lesson #1: Preparing faculty to work entirely within the environment created by electronic media is time-consuming. UVM devoted over 2,000 hours of time to support seven cybercourses in the summer of 2000. This level of commitment is necessary, however, to yield the kinds of benefits that technology can contribute to accomplish the aims of education. Needed support may include assistance with course design, technical support for learning the use of appropriate technologies and pedagogical strategies that promote cyberlearning, and support for graphics. An on-line educational experience is helpful for participating faculty where the cyberspace instructors, by being on-line themselves, learn about on-line learning while they work with each other to develop their cybercourses. Once every two weeks, intense workshop sessions supplemented this on-line experience; each faculty member had a personal tutor, almost like a personal trainer. After the training sessions were over, this same trainer was then assigned to help each faculty member.

Similar intensity is required to help faculty who are introducing elements of technology into campus-based courses, including (a) intensive workshops and (b) access to "the doctor is in," just-in-time assistance that makes available technical support from both technical personnel and faculty colleagues with more advanced experience of technology in instruction. These are available in our Center for Teaching and Learning.

Lesson #2: The task of converting a course to electronic form holds a mirror up to faculty and challenges them to revisit their assumptions about their own role in learning and their intentions and goals for themselves and for their students. The deep reflection required to think about how to convert a course or elements of a course into cyberspace forces a fresh consideration of students' experiences in typical classroom settings. Many faculty shy away from this level of disclosure, not wishing to reexamine such fundamental questions. Those that do, however, report that cyberspace or the introduction of technology elements into their site-based classes can be a

truly transformational and refreshing experience in which they rediscover the source of their original attraction to the academy and renew that commitment in exciting new ways.

One faculty member told me, "Technology is a giant mirror reflecting back to you your own deepest issues. It challenges you to clarify what you value, to rediscover why you went into teaching in the first place, and to be honest about whether your original hopes have been realized. It also sheds light on how we interact with our students and how they respond to our courses. It forces us to think about the real meaning of community, and what it is that a group of people assembled in a single physical space experience and how that compares to what a group of people in cyberspace might experience." This same faculty member went on to say that the real power of technology resides in its ability to help reassert basic purposes and values in the translation into new media and forms of interaction.

Before we can approach the use of different media for communication and exchange, our deepest held values and assumptions--unexamined for a long time--must be revisited and either affirmed or amended.

Lesson #3: Effective use of technology can create a true democratization of learning. Everyone can and will participate in cyberspace, and ideas will generate on-going discussion long after the class is over. The very thought process that leads to discovery and understanding in a particular field can be exposed and modeled for students, who can then have an authentic experience within the discipline.

How many of us take time to assure ourselves that every student in a classroom setting has truly participated and that the exchange is meaningful? How often is the exchange simply a set of questions raised by students and answered by the instructor in the form of a monologue ?

For those who work with their students in cyberspace, a common observation is that the students continue a discussion after class, and everyone eventually chimes in. One faculty member at UVM told me that he had always hoped that the classes he taught would be so interesting and provocative that his students would walk out of the classroom still thinking about the issues and head right to the coffee shop to keep talking. Until he added an electronic discussion component to his class on leadership, he never knew whether this dream was being realized. He would sign on, and as he explained, "There they were, talking about the class within minutes after the hour was over and even chatting back and forth at 3 a.m. There it was, proof that they really were interested." In addition, he could find out more of what they were really thinking.

Another faculty member told me that it was an eye-opening experience to realize that in cyberspace-enhanced courses and in his summer course on-line, every student posted comments and reactions in the chat room. He thought back to the same class taught in a typical discussion format during a scheduled classroom session and realized that often only a handful of the most confident and quick-thinking students would dominate; many students just sat there, looking down at their desks. He never knew what they were thinking or even whether they were thinking about what was going on in class at all.

Lesson #4: Technology changes the very nature of faculty work and the way that faculty interact with their students. In the view of many faculty, this change is much for the better, but it can also be exhausting--even unsettling--to faculty who have grown up with traditional views of the role that faculty play as they teach. On-line students may interact with the material or each other at any time, day or night. This also means that the instructor's time is now equally unbounded. In cyberspace, things are exposed that are otherwise hidden in the minds of the faculty. Instead of the faculty member assimilating and interpreting the work of a field, the whole thought process is laid open in the building of understanding through much richer conversation. In cyberspace, students can find material that challenges the faculty member's worldview and expertise. They can uncover stories and research results that the faculty member may never have heard about. When the instructor no longer controls the subject matter the students will use, it is easy to lose control of the discussion and the worldview planned in the choice of topics and class materials

Lesson #5: The use of technology can bring the nature of the work and the interactions among learners close to the core values of liberal learning and can create the occasion for authentic work in the disciplines. Fundamentally, in electronic exchanges, faculty members are able to express themselves as physicists or biologists or historians or philosophers or engineers by communicating in the style of their disciplines and by drawing their students into the ways of thinking, examinations of ideas, and forms of validation and proof that are the tools and intellectual base of a field. In addition, original documents and materials as well as fresh research data are readily accessible on the web. In cyberspace the instructor has unbounded access to electronic images and texts that open up the full range of historical inquiry, analysis, interpretation, and access to contemporary material.

The instructor can model intellectual work, exposing through electronic means the thought processes and realities of the blind alleys and sudden bursts of clarity that we all experience in our search for understanding. For many, this is unnerving because they lose control of both the interaction and the material. For others, it is a true liberation. For all however, it can be a much more immediate and authentic experience of inquiry than most classroom interactions can achieve.

Lesson #6: The use of technology can open up new ways for students to experience the fundamental questions struggled with in Western civilization for centuries and create a way for them to explore and apply what they are learning to the culture and challenges of their own age and times. Recently, a group of our emeriti who have agreed to teach an occasional course talked with me about their classroom experience. Days later, I ran into a few students who were taking one of those classes. Here is what I learned. The emeriti were puzzled that their examples and jokes didn't seem to go over very well; the students, similarly, were gently bemused by the strange examples and stories the faculty told. Impressed by the wisdom and experience of these senior faculty members, they just couldn't leap the culture gap to meet them on common terms.

The solution to this intergenerational problem came in a later conversation. A faculty member in our school of business brought me a packet of material generated by one of the best students in his electronically augmented leadership class. The middle-aged professor had prepared a number of case studies of leadership in military affairs, government and statesmanship, business and corporate life; the students read about great leaders in history. One class exercise was to report

on a leader of their choice. As he was asking students to talk about how they saw the tasks of leadership and how they learned about leadership, he was surprised to discover that many thought of leadership as inspiration, and they found that certain music groups were especially good models of leadership in both their music and their lyrics.

After class the students continued their exploration electronically and compared notes on which groups meant the most to each of them. It became clear that the lives of leaders may have instructional value for his students, but lyrics of contemporary songs offered more meaningful inspiration to them. With more grace than some of us might have shown, the professor invited the students to do the leadership exercise however they wished, in whatever media they wished, so long as they explored the dimensions of leadership.

For these students, the lives of great leaders were less important sources of inspiration and understanding than the messages being delivered in songs. The packet the business faculty member brought me was a CD cut by one of his students and an annotated diary and reflection on what these songs meant to her about leadership. The cultural and social gulf had been bridged by the students, who translated the ideas about leadership into their own cultural context. Using the power of chat rooms, on-going reflection, and communication before and after class, as well as the intensity of interaction in the class, our professor had discovered the key to the Rosetta Stone: how to bring the joys of the search for truth and the exploration of the big questions of human life and experience into a context that was meaningful for his students, authentically linked to their lives, and yet true to the fundamental purposes and universal challenges he wanted to explore in his course.

I can attest to the power of this translation from one generation to another because, as a guest in his class, I was one of his live case studies. I simply responded honestly to the questions posed by his students about my leadership experience. I have never been asked such profound and insightful questions by a group of students! I also was allowed to see the string of comments and reactions posted on the Web site after that class. It was intensely rewarding to listen in on what that conversation with me had set off in the thoughts of the class.

Lesson #7: Technology offers us a chance to think deeply about the very nature of learning and what it means to know something. We face vexing questions today as we try to define the meaning and purpose of an undergraduate education, the nature and goals of graduate education, and the nature of faculty work.

- What do we need to know and be able to do with what we know?
- Is the very nature of the production of knowledge changing, and how can we be sure that we are basing our actions on valid understanding?
- If the university and the disciplines are no longer the sole source of discovery, interpretation, and validation, how will we know the truth, and who will have the authority to declare that a particular form of knowledge is valid?
- Is there such a thing as a community of learners, and are contemporary ideas about connected learning important to pursue ?

- What do we learn alone without interactions with others? Is this self-study different from what we learn as members of a community? Does it matter whether that community is bounded by a specific location or sense of place or placed in cyberspace?
- Will electronically facilitated interactions in the absence of personal experience and knowledge of each other promote a new kind of "unconnected" learning, and, if so, what difference, if any, will this make in the development of practitioners, citizens, and scholars?

The most important gift of liberal learning is the nurturing of a prepared mind, a deep sense of social responsibility, and a commitment to the importance of citizenship in a community with others. Can this kind of "virtuous learning" occur in the virtual encounters of cyberspace? Are there other ways to accomplish the same integration of cognitive, social, and emotional development that occur now in the encounter with others ? In cyberspace, can we foster some of the fundamental qualities of a prepared mind, such as

- the ability to learn: not just to memorize the rules of a particular task but to be able to discern or discover what the rules are or should be from a study of unfamiliar situations
- the ability to recognize when we do know something, and when we don't, the capacity to make sense out of an infinite world of images, assertions, words, and facts and to act responsibly and wisely on that knowledge
- the ability to apply knowledge resourcefully and ethically.

Lesson #8: In the world of cyberspace, the classic realm of teaching disappears and the teacher is held to high standards. In our direct and recorded interactions with the students in electronic form, we are called upon to be more mindful about our duty to be examplars of what it means to be truly educated, to be responsible learners, to reflect in our ideas and our interactions with others the values of a **liberal education**, and to be models of integrity. Whether we like it or not, the record of our exchanges in cyberspace reveals a great deal about us. In many ways, technology--when it is honestly held up as a mirror to challenge us to a deeper examination of our purposes and experiences as teachers--can both deepen and clarify our educational aims and help us further them. For all of these reasons, technology, appropriately used to enhance and expand the scope of educational experience, can enrich our intellectual lives and offer our students an authentic route to discovery.

NOTES

(n1.) From testimony given by Frank Mayadas, Sloan Program Director, to a Congressional committee on on-line learning, distributed electronically in November 2000.

(n2.) Arthur E. Levine. 2000. The Future of Colleges: 9 Inevitable Changes. Chronicle of Higher Education, October 27: B10.

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