

TECHNOLOGY

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Technology and Our Jesuit Mission

At first blush it is surprising to see a separate category for technology in a series of discussion papers about producing graduates who are '*maxime humanissimi*'. However, technology is not the antonym of humanity: it has a lot to do with what makes us human: we are different people with computers than we were before them – our lives, memories, stories are arranged in new, rich ways. Technology enables us to seek God in new ways through new forms of sensing and being in the world. It also enables us to develop new modes of being in solidarity with those most in need, with geographical barriers being less important. However, it also works, many argue, to deskill and dehumanize us and to remove us ever further from close contact with our fellows. We are all being constantly tracked in our movements and our purchases, regimented to an ever expanding set of mood stabilizers, and we are as a society multiplying the machineries of death. The tension between technology for exploration, discovery, and social justice and technology for discipline and control is central to our times: the 'contemplative in action' is ideally situated to address the philosophical depth and political range of the new technologies we are putting into place.

Our society is currently undergoing a profound shift in the gathering and diffusion of knowledge. The World Wide Web has within its brief history established itself as a new media form arguably as significant as the invention of the printing press five centuries earlier. All aspects of academic life are impacted - from the production of academic papers to the delivery of introductory undergraduate courses. Given its proximity to many of the companies driving major changes in technologies used in education (Intel, Apple, Cisco Systems, Hewlett Packard, Sun Microsystems, Google, Yahoo!, to name a few), SCU should be actively exploring partnerships and research opportunities to proactively explore the meaningful integration of these technologies to enhance teaching and enrich the learning experience of all students, including those from disadvantaged backgrounds, foreign students with limited access to quality resources that SCU has, and those with physical or cognitive disabilities. Situated as we are in the heart of Silicon Valley we have an opportunity to take a leadership role in exploring the social and educational benefits of new technology.

How Can We Teach about Technology?

Teaching about the human use of technology is particularly important. Through the Tech Awards, the Global Social Benefit Incubator (GSBI), and its biennial conferences, the Center for Science, Technology and Society (CSTS) has built a critical mass of leadership and scholarship in the appropriate uses of technology. We are as a society very good at wanting all the new gadgets that come along, but very bad at thinking about what effect they are having on users and on the environment. There is a remarkable dearth of training in thinking through the social benefits and costs of the development of a new technology. In particular, the Internet and associated technologies have the power to affect us all - rich and poor, rural and urban. We are at Santa Clara partly training technology leaders: we have a mission to teach them about the

ethical uses of technology. One model here is the two-week graduate workshop that CSTS is running in Summer 2005 on values in the design of information technology. SCU has a history and a mission that make it ideally suited to take a leadership position in this broad social conversation. However, this is not just about IT - the new Center for Nanostructures has a clear educational mission to raise awareness among students of the social and political issues that accompany the development of a new technology; the emerging field of biotechnology clearly raises issues core to our concerns. *A sine qua non* as we move forward is training all students the basic skills of 'literacy in the information age'. This includes learning how to read websites and online information critically; learning how to search for information effectively; learning the political economy of the web; and learning how to develop information strategies for life: our images, files, reprints, music can increasingly be stored in such a way that we can carry them forward with us for the long term. The perilous path of information overload many of us tread suggests that we should in this training discuss the balance between information and wisdom; and the tension between silence, sanctuary, and the ever increasing demands and noise of the Internet. These are vital challenges core to our mission of developing students with competence, conscience, and compassion.

How Can We Use Technology to Enhance All Teaching?

The traditional educational "chalk and talk" experience of the talking head and the squeaking chalk is being fundamentally challenged. It is increasingly possible to engage a learning community in new ways, which deeply reflect our mission, providing new ways for students to communicate with each other and with their professors. Some students are shy in class, but not in writing; some want to develop a conversation begun in class; others want to keep a blog describing their engagement with specific issues. We have faculty who have worked in each of these ways to deepen and enrich the educational experience. A system of rewards and incentives to encourage faculty to engage in this process (which for many will be difficult and/or inconvenient) must be put in place, building on current tenure and promotion procedures. Good use of information technology is labor-intensive; and good education (computer mediated or not) will always require intensive interactions with students. Faculty will need support to evolve and enhance their pedagogical practices in their courses, including new assessment strategies that better reflect what students learn through project-based, collaborative, community-aware, technology-assisted learning. A prospect for the future is to create a truly 'active' campus – one in which students with cell phones or PDAs or notebook computers will be able to access rich information as they are walking the grounds about local history (the Mission; Native American life) and about the environment (what tree is that?) as they go along. One in which students will actively engage in course material outside of the classroom through electronic resources developed by faculty to enhance their learning.

Improving the Organization with Technology

A slate of new management techniques and technologies should not be experienced as a further inevitable step on the path to dehumanization. As new technologies are deployed across campus, they should be an occasion for all of us to engage with the spirit of our mission - they should provide an opportunity for us to grow as a community. It is helpful, of course, to use best design practices so that the visually impaired can still access our websites. However, we are thinking

also of technologies that help administrative staff work together or with faculty and students. A new technology should be an opportunity for a new form of engagement and a renewed spiritual commitment. Though this is somewhat rare within organizations, there are echoes of it in the Scandinavian School of Participatory Design. A particularly strong commitment we have to “green design” is an example of how our values can infuse our University, down to its very bricks and mortar.

Partnering with the Community

Central to the new style of learning is the breaking-down of the barriers between academia and the community. We can use the new technologies to enable students to work with local and distant community groups. For example, CSTS is expanding the Global Social Benefit Incubator (GSBI) into a course that puts students in direct touch with projects throughout the world. We can continue to include students in our own community after they have left - in the Department of Education, students in the teacher preparation program will be able to maintain their access to resources provided through the Electronic Portfolio Laboratory even after graduation. The opportunities to support a wide variety of learning experiences, learning styles, both in and out of the classroom and for both students and visitors of all ages (but perhaps particularly adult learners/seniors, in light of the new partnership with the Osher Lifelong Learning Institute) would give credence to the vision of “lifelong learning” at SCU.

Major Opportunities as We Move Forward

A commitment to use IT to broaden the learning community associated with Santa Clara to include mentors drawn from the professional world; the possibility of deepening the ties between Santa Clara students and local community projects both nearby and across the globe; an imaginative use of the new information technologies to enrich the daily experience of students on campus; a suite of courses that explore the ethical, policy, and social implications of new technology.

Reflectors

Ron Danielson, Don Dodson, Al Hammond (on sabbatical), Pedro Hernández-Ramos, Terri Griffith, Kathleen Maxwell, Chris Kitts, Jim Koch, Shelby McIntyre, John Staudenmaier, S.J.

APPENDIX

Where Are We Now?

Teaching Technology

The ITS (Information Technology and Society) minor is currently being revamped to address some of the issues above. A few areas of campus (e.g., the second writing course in English and some faculty in engineering) are making information literacy concepts a significant component of courses taught. There are some courses (e.g., Comm 12) that look at the impact of technology on society.

The technology requirement of the University Core Curriculum helps the student integrate an understanding of the goals and social impact of technology, an understanding of how technology works (as described in its characteristic methods), and a proficiency in applicable computer skills. Contemporary society, with its dependence on technology and its emphasis on technological change, demands awareness of and proficiency in appropriate technology in each discipline, especially computers. As written in the statement of purpose for this requirement, the University's commitment to values, community, and justice demands a critical attitude to technology.

Technologically Enhanced Teaching

Santa Clara faculty have widely embraced the web as a means of making supplemental materials available to students anytime, anyplace. More than 85% make use of the University's course management or electronic reserve systems. Many faculty use technology to enhance their classroom presentations. Approximately 25% of classrooms have built-in computer display systems, but only a few classrooms could claim to make innovative use of technology. The number of classroom computer deliveries and set ups has increased at 30% compound growth rates for the past five years. Many more faculty are using technology to significantly change the way they teach and their students learn. Most of those who have done so report spending large amounts of time spent in revising their courses, and a sense that the effort they expend and the risks they take to do so are not understood or valued. The University's wired infrastructure is quite strong, but we are ill-prepared to exploit mobile technologies, both in terms of network infrastructure and widespread availability of mobile devices among the faculty. Desktop computers are replaced on a regular cycle, but we are still struggling with regular replacement of other infrastructure components.

There is still a great deal to do to bring up the comfort levels integrating technology by the faculty, some students, and the IT infrastructure (e.g., wireless access) across campus. We have some innovative classroom space, but this is in short supply. For the last several years a two-week summer workshop on technology integration for faculty has been offered. Faculty are paid a stipend to participate. Both Media Services (through the four Information Technology Resource Specialists) and the Library (two Technology Trainers) offer support to faculty for either individual research or teaching projects.

Improving the Organization

The current set of training programs are good technically, but perhaps not for thinking about how work practices change when new technology comes in. Recent improvements to Peoplesoft have enabled new procedures for planning.

Partnering with the Community

These are difficult programs to set up, and we still have a lot of work to do to understand what the best forms of engagement are - things that don't scatter us too widely into too many far flung communities but which work creatively on the set of skills we have to hand and in our local community. Some faculty are working on these issues, for example, in Computer Engineering and in Education.