

Online Constructionism and the Future of Teacher Education

Terence Cannings

School of Education and Behavioral Studies
Azusa Pacific University
701 E. Foothill
Azusa, CA 91702-7000 USA

tcannings@apu.edu

Gary S. Stager

Department of Science and Mathematics Education
The University of Melbourne
Victoria 3010
Australia

gary@stager.org

Keywords: Online learning, E-learning, Distance education, Distributed learning.

Introduction

Today's educational discourse involves the role of e-learning in the future of education. The authors of this paper have extensive experience creating online learning environments for professional educators that may help that the future of education evolve in meaningful ways.

Definitions

When firms take their eyes off knowledge, they default to technology because it's easier to buy, implement, and measure. (Davenport and Prusak, 1998: 173)

E-learning, distance education and online learning are all terms used to describe educational practice shifted from physical classrooms to the Internet. Numerous affordances, fiscal and educational, are offered by this shift. Educational opportunity is no longer dictated by student geography, age or background experience. Physical plant, print materials and faculty costs may be reduced. Learning may occur anywhere, anytime, 24 hours per day, seven days a week.

Distance education need not require distance or represent the highest quality educational experience, although it may support both. Distance education has a well-established tradition. To many, this form of education represents the future, although its philosophical and pedagogical approach seem firmly rooted in the past. Much e-learning is the digital descendent of the correspondence course.

Correspondence courses were a means of delivering education across geographic distances and represent one form of distance education. While such courses may have their value, few would choose a one over studying at Harvard. Many schools built expensive single-purpose interactive TV classrooms in which kids can watch a course taught via television with very little actual interaction. Such courses stick to the facts of a subject without the social milieu of the coffee shop, playground or dormitory. Massachusetts Institute of Technology's commitment to making their entire course content freely available online is a recognition that an outstanding education is about community of practice, rather than a bunch of facts.

Instead of distance education, we suggest that the focus shifts to distributed learning. The differences are not merely semantic. Distance education represents the past, distributed learning the future. Distance education is a way to solve a problem – teacher shortages, remote students, inadequate funding, schools too small to support specialist subjects. While distance education is a reaction to a problem, distributed learning is about responding to potential. The former is about teaching and the latter about learning. Distance education is prescribed by a person or organization away from the learner. Distributed learning is shaped by a community of practice containing learners, teachers and practitioners. We should focus on supporting expanded learning opportunities and constructing learning communities. Distributed learning is the future, distance education the past.

Distributed learning offers opportunities to adjust the place and time for learning; increase social interaction between learners, experts and teachers; enable learners to study subjects of their choice based on need and interest level, not merely age or geographic accident.

There will be an explosion of network-based courses for teacher professional development. The best of these will offer world-class learning opportunities that will intermix cognitive research, educational philosophy, subject matter content, and just-in-time support for in-class experimentation. Participants can work with local study

Copyright © 2003, Australian Computer Society, Inc. This paper was presented at the IFIP Working Groups 3.1 and 3.3 Working Conference: ICT and the Teacher of the Future, held at St. Hilda's College, The University of Melbourne, Australia 27th–31st January, 2003. Reproduction for academic, not-for profit purposes permitted provided this text is included.

groups and larger virtual groups that span the world. (Tinker 1997: 5)

Constructionism

Seymour Papert's constructionism/instructionism dichotomy offers a lens through which to view the future of education – real and virtual. Papert coined the term, instructionism, to describe the educational philosophy and related practices based on the notion that you improve education by teaching better. Portals, web quests, instructional management systems, computer-assisted instruction and most online courses are artifacts of instructionism. Instructionists over value content and make the learner the target of instruction. Distance learning is instructionist in nature. Distributed learning is constructionist.

Constructivism is the idea that knowledge is something you build in your head. Constructionism reminds us that the best way to do that is to build something tangible - outside of your head - that is personally meaningful. (Papert 1990) In subsequent writing, Papert says that knowledge is best constructed in a social context where the participants make something shareable. This view is consistent with the theories of Vygotsky, Lave, Wenger and others. Constructionism particularly applies to learning with digital technology. *If you can use technology to make things you can make a lot more interesting things. And you can learn a lot more by making them.* (Papert 1999)

Much current e-learning is based on mountains of repurposed content being delivered to students via the Internet. Communication, collaboration and community are afterthoughts grafted onto a digital correspondence course. Despite claims of interactivity, the interactions are primarily between mouse and remote database, rather than between the hearts and minds of learners. Regular contact with colleagues and teachers is more important than the oft heralded information at your fingertips.

Knowledge that is more or less explicit can be embedded in procedures or represented in documents and databases and transferred with reasonable accuracy. Tacit knowledge transfer generally requires extensive personal contact. The "transfer relationship" may be a partnership, mentoring, or an apprenticeship, but some kind of working relationship is usually essential. (Davenport and Prusak 1998: 95)

OMAET

In 1998, Pepperdine University (California USA) created the Online Master of Arts in Educational Technology degree program. OMAET is built on the principles of constructionism, community, collaboration and context. Students from around the world work collaboratively with classmates and faculty on the construction of personally meaningful projects related to their professional contexts. The structure of the OMAET program is instructive for future online learning ventures.

OMAET students physically meet at the Pepperdine campus for four to five days at the beginning of the program. There they meet their classmates and faculty, learn the communications tools essential to the program and are immersed in an intense technology-rich constructionist project. Students are grouped in diverse cohorts of 18-24 people. These cohorts take all of their courses together allowing for students to really get to know the needs, interests and talents of their peers. This sustains the learning culture and students provide day-to-day support for each other. Students become intellectually intimate and are able to share resources and knowledge with each other around the clock without necessitating the intervention of the professor.

The three terms of the OMAET program progress from a focus on learning, teaching and leading – micro to macro – personal to systemic. Each term is connected by the ongoing development of a reflective action research project exhibited at the end of the program. The collaborative construction of knowledge through dialogue, debate, experimentation and reading across the program culminates in the authentic project designed to have a positive impact on each student's professional context. This process allows students from such diverse fields as preschool teaching, aerospace and software development not only to learn together, but also to make a major contribution to each others' learning. Students report 500-600% greater communication with faculty than in traditional graduate programs and they have infinitely greater access to each other online. The resulting community of practice becomes a tight-knit family. This heterogeneous, multi-age, geographically diverse and continuous learning culture may offer a blueprint for the future.

The OMAET program uses synchronous technology, www.tappedin.org, and asynchronous Netscape newsgroups. These simple low-cost tools recognize the affordances and constraints of asynchronous vs. synchronous discussion, as well as the ways in which each type of environment supports different learning styles and teaching objectives. The text-based nature of these environments allows for deliberate communication, reflection and editing rather than spontaneous outbursts. Students become very close and supportive of each other despite their reliance on textual communication. Students often use multiple communication mediums at the same time. It is not uncommon for small groups of students to be discussing an issue via instant messaging while a professor leads a synchronous discussion. All student work is published and accessible via personal web sites. OMAET students routinely experiment with new tools and communication environments and the program is open to the adoption of promising new technology. We have just been careful not to adopt technology before it is reliable, widely available and effective across a range of bandwidth. Students and faculty share video clips, but videoconferencing is not in use. Early exploration with Lesson Lab's lesson study tools offer exciting potential for enhancing the process of reflective professional practice in a collaborative context.

Faculty members collaborate on the creation of educational objectives and assign books and web-based content for students to read. Students routinely share timely information as well. Each course assigns short and long-term projects in addition to the ongoing action research project, but there is often significant overlap between the assignments. Asynchronous discussions are continuous and synchronous discussions (student and faculty led) are offered a few times each week. The OMAET teacher operates in the best Socratic tradition by keeping the discussion going, asking provocative questions, providing pastoral care and organizing resources. OMAET students and faculty meet at a conference near the middle of the thirteen month program in order to regroup and explore more sophisticated technology. The program culminates in face-to-face action research exhibitions.

The OMAET approach succeeds in meeting the intellectual and emotional needs of professionals interested in transforming their practice. It also satisfies the future's need for cost-efficiency, time flexibility and geographic diversity. While enormous amounts of time and capital are being invested in impersonal unproven classroom management systems and digital delivery the contrasting OMAET approach is worthy of consideration. Our experience suggests that digital technology has the capacity to make learning more personal, meaningful and collaborative than ever before at all levels of education.

References

- CANNINGS, T. and STAGER, G. (1998): Online Communities as a Vehicle for Developing Secondary Mathematics Educators. In the *Proceedings of the 1998 National Educational Computing Conference*. Eugene, Oregon, National Educational Computing Conference.
- COLLISON, G., ELBAUM, B., HAAVIND, S., and TINKER, R. (2000): *Facilitating Online Learning: Effective Strategies for Moderators*. Madison, WI, Atwood Publishing.
- DAVENPORT, T. and PRUSAK, L. (1998): *Working Knowledge*. Boston, MA, Harvard Business School Press.
- HAREL, I. and PAPERT, S. (eds) (1991): *Constructionism*. Norwood, NJ, Ablex Publishing Corporation.
- LAVE, J. and WENGER, E. (1991): *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press.
- PAPERT, S. (1990): A Critique of Technocentrism in Thinking About the School of the Future. *MIT Epistemology and Learning Memo No. 2*. Cambridge, Massachusetts, Massachusetts Institute of Technology Media Laboratory.
- PAPERT, S. (1991): Situating Constructionism. In *Constructionism*. HAREL, I. and PAPERT, S. (eds).. Norwood, NJ, Ablex Publishing.
- PAPERT, S. (1999): *The Eight Big Ideas of the Constructionist Learning Laboratory*. Unpublished internal document. South Portland, Maine.
- TINKER, R. and HAAVIND, S. (1997): *Netcourses and Netseminars: Current Practice and New Designs*. Concord, MA, The Concord Consortium.
<http://www.concord.org/publications/>.
- TINKER, R. (1997): *The Whole World in Their Hands*. Concord, MA: The Concord Consortium.
<http://www.concord.org/publications/>.