The New Information Ecosystem and Opportunities for Adult Education

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Abstract: This paper relates key elements of andragogy (Knowles, 1970, 1984) to the intellectual origins of the Internet. Common to both are the principles of access, voluntary participation, self-direction, and learning webs. New opportunities for adult learners and educators in the emergent information ecosystem are discussed.

Anyone with access to the World Wide Web now has a portal to a vast amount of information. This is a recent development as are the high rates of Internet usage, easy access to user-created content, and social computing. The explosion of new content on the World Wide Web, the ability of individuals to access and contribute to this content, and new interactive and communication technologies all constitute elements of a new information ecosystem. The term *ecosystem* is used to emphasize the importance of the multitude of interactions between individuals and communities in their use, exchange, and creation of information (Walker, 2002). This paper seeks to understand how this new information ecosystem can lead to new opportunities for adult learners and educators. The paper begins with a discussion of technology and its relationship to central themes in andragogy. These themes are related to the intellectual origins of the Internet and the emergence of a new information ecosystem. The paper concludes with a brief discussion of how recent developments may impact opportunities for adult learner and educators.

Technology and Central Themes in Andragogy

Technology has helped adults escape conformity while providing tools to assist with learning and knowledge creation (Knowles, 1970, 1984). Knowles (1977) traces the use of technology in the education of adults to apprenticeship programs, agricultural societies, and Benjamin Franklin's Junto, a discussion group precursor to National Issues Forums. Junto members read printed material that they later discussed at meetings. Similarly, the knowledge of technology was first spread through agricultural societies, which met to discuss innovations and technological advances in agriculture. The printing press improved access to materials such as newspapers, pamphlets, and books, which increased communication and the dissemination of knowledge. Such progress aided colonists when they declared and won independence and nurtured a nascent economy (Isaacson, 2004; Knowles, 1977). Technological advances foster communication between people, dissemination of ideas, and economic development.

Technology also assists adults seeking formal (within educational institutions), nonformal education (external to the established institutions), or informal learning (e.g., opportunistic, experiential, incidental; Merriam & Brockett, 1997). Informal learning occurs without sponsorship or institutional control. Informal learning occurs in everyday contexts for problem solving (Merriam & Brockett, 1997; Merriam, Caffarella, & Baumgartner, 2006). Informal learning episodes are more commonly known as self-directed learning projects. Because of broadly accepted beliefs among adult educators that the majority of adult learning is informal (Merriam et al., 2006) and that adults have difficulty identifying and placing measurable parameters around these learning episodes, informal learning is a difficult area to study and to influence.

Houle's (1961) study of adult participation produced a division of "purposes and values of continuing education" (p. 15) that distinguished among goal, activity, and learning orientations. In the 1970s, Houle's doctoral student, Tough, investigated the learning orientation goal of adults, describing them as learning projects (Heimstra, 1994) initiated by learners who are motivated to gain knowledge, skills, or produce change. The assumption that adults are self-directed in their learning was popularized by Knowles (1970) and was based on learning orientation. Knowles (1970, 1975) further developed his basic assumptions about the adult learner by setting a baseline for self-directed learning. For Knowles, self-directed learning meant that adults have a universal need and are intrinsically motivated to be self-directed in their learning. The problems stem from experience and experience is used to solve the problems.

Knowles (1984) popularized other assumptions about the adult learner. He made the case to distinguish between adults and children as learners and developed the concept of andragogy, a system of assumptions about the adult learner (Merriam et al., 2006). Andragogy is "the art and science of helping adults learn" (Knowles, 1970, p. 38) and is counterpoised to pedagogy's focus on children. Adult educators accepted andragogy because differentiating between the education of children and adults was important to professionalizing the field. Consistent with this, Knowles promoted a planning model that incorporates evaluating the educational experiences of adults. Andragogy and self-directed learning are considered pillars in the knowledge base of adult learning (Merriam, 2001).

Ohliger argued against the professionalization of the field of adult education because he felt that as the practice of adult education became the profession of adult education, less of the development work would "advance equality and social justice for independent learners" (as cited in Grace & Rocco, 2009, p. 5) who value free access to media and materials. Professionalization also implied that education was a solution to correcting behavior, filling a void in knowledge, or serving corporations. Education as a solution diminished the importance of coming to learning voluntarily, engaging with a community of learners to solve a problem or pursue a cause, and pursuing self-directed learning projects without an instructor (Rocco, 2009).

An unarticulated assumption of the field is that adults have unencumbered access to education and learning opportunities. The assumption of access has been criticized because the amount of schooling, age, and socioeconomic status are predictors of access. Discussions of access, however, must be focused on what can be measured. So in 1982 when Darkenwald and Merriam described the typical adult education participant as "white, and middle class, has completed high school, is married" (p. 120), they refer to formal and nonformal education. The issue of access to education has been debated most notably by Illich as a critique of the institutionalization of schools, the commodification of education, and the redundancy of experts (Finger & Asun, 2001). The end result is "institutions create the needs and control their satisfaction, and by so doing, turn the human being and her or his creativity into objects" (p. 10).

Two concrete activities emerged from Illich's critique of institutionalization. He is known as the founder of the home school movement (Illich, 1970) and the advocate of learning webs (Illich, 1973). Learning webs exist in a convivial society that supports open access to learning tools and building communities of learners (Finger & Asun, 2001). With computers costing less than televisions and available in locations such as libraries and homeless shelters, Illich argued that there are novel possibilities for "a radically new relationship between human beings and their environment" (as cited in Finger & Asun, 2001, p. 14) in terms of access to learning tools, voluntary unencumbered choice to solve problems, and the support of a community of self-directed learners.

Intellectual Origins of Web 2.0 and the New Information Ecosystem

The emergence of Web 2.0, the technical infrastructure that allows users to contribute content on the World Wide Web across time and space, and the open source movement have their origins in the democratic ethos of the programmer communities around Stanford University, Silicon Valley, the Massachusetts Institute of Technology (MIT OpenCourseWare, 2006), and Cambridge Massachusetts (Raymond, 2001). Established in 1975 in Silicon Valley, the Homebrew Computer Club members helped each other build personal computers, shared ideas, and *shared* software. Sharing software prompted Bill Gates' open letter to hobbyists, in which he lamented that "as the majority of hobbyists must be aware, most of you steal software" (Gates, 1976, para. 4).

A founding member of Homebrew Computer Club, Lee Feldenstein, led a project called *Community Memory*, which allowed everyday people to link to a central computer from two terminals set up in a popular record shop. The project's description was:

> An actively open information system, enabling direct communication among its users with no centralized editing or control over the information exchanged. Such a system represents a precise antithesis to the dominant uses of electronic media which broadcasts centrally-determined messages to mass passive audiences. (Leadbetter, 2008, p. 56)

Feldenstein saw the *Community Memory* project and other efforts like it as fostering convivial institutions like those discussed by Illich (1973). Like John Ohliger and other adult educators who challenged the conventions of the time (Grace & Rocco, 2009), Feldenstein was strongly influenced by Illich (1970) who famously rallied against schools that discourage poor and disadvantaged from taking control of their learning. These optimistic and democratic beginnings of the World Wide Web ebbed in the era of the dot.com boom and bust from approximately 1995-2001, but have begun to re-emerge with the open-source movement and social computing, which may lead to increased access, voluntary participation, and self-directedness (Benkler, 2006; Raymond, 2001).

This democratic ethos has also guided reconsideration of the traditional restrictive use of copyright. An active computer hacker culture was emerging in Cambridge, Massachusetts. At its center was Richard Stallman who, as an undergraduate student at Harvard, became a programmer at Artificial Intelligence Lab. He continued to work there until 1983, when he launched the GNU operating system as an alternative to the proprietary UNIX operating system (GNU is a recursive acronym for "GNU is not Unix"). In his continued efforts to develop and promote GNU, Stallman issued the GNU manifesto (Stallman, 1985) in which he outlined the general principles of the free software movement and General Purpose Licensing (GPL). This was later developed as the concept of *copyleft*.

Copyright law grants an author the right to prohibit others from reproducing, adapting, or distributing copies of the authors' work. In contrast, under the doctrine of copyleft, products are allowed to be reproduced, adapted, and redistributed, provided the subsequent versions of the product are also covered by the principles of copyleft. GNU, GPL, and copyleft were developed further during the early years of Web 2.0 (Lessig, 2005). If copyright can be reduced to *all rights reserved*, Creative Commons was founded to formalize various ways creators of intellectual property could codify *some rights reserved* (Lessig, 2005).

In many ways, the restrictions of the use of content are designed to protect the original authors from false attribution of ideas as well as to protect the intellectual property of the authors. Terms of distribution for the Online Courseware (OCW) initiative provide a good example (MIT OpenCourseWare, n.d). In the frequently asked questions section on OCW's

website, clear and explicit references are made to the concept of copyleft. Specifically, OCW limits the use of the material to non-commercial purposes. For-profit and non-profit entities may use OCW material provided that a fee is not charged to their clients. Massachusetts Institute of Technology requires the distribution of OCW, and derivative works should attribute the initial authorship of faculty. However, translations of OCW materials must note that faculty have not reviewed nor are responsible for the accuracy of translations. Finally, relating the principle of copyleft requires that others who use the work must "offer the works freely and openly to others under the same terms that OpenCourseWare first made the works available to the user" (MIT OpenCourseWare, n.d., para.8)

The impact of copyleft and Creative Commons licensing on Web 2.0 and the current information ecosystem can be seen both in the development of the technical infrastructure for collaboration and access to the World Wide Web and in the challenge to the notion that knowledge is owned by individual or corporate producers of content. In terms of infrastructure, Linux and the Open Source software movement facilitates increased access and, thus, reduces the transaction costs of mass collaboration (Raymond, 2001). In terms of content creation, Creative Commons provides a means by which content providers can share content with varying levels of restrictions (Leadbetter, 2008).

The technical infrastructure of the Internet allows individuals dispersed across time and space to gain access and to develop new content. In less than the span of a generation, the amount of information has grown beyond what could be measured by the estimated 231.5 million publicly accessible websites (Wolfram Research, 2010). The munificence of new information is creating new opportunities for the exploration of learning in formal, informal, and nonformal settings. The content contained within this new information ecosystem is the result of a combination of for-profit initiatives, not-for-profit individual and institutional initiatives, and social computing.

New Opportunities for Adult Learners and Educators

Given the intellectual origins of Web 2.0, it is not surprising that adult educators have been among the first to use the tools for collaborative endeavors. A new, uncoordinated movement is emerging among adult educators collaborating in the development of curriculum and dialogue on issues of interest. Initiatives among professionals are taking place alongside trends that place learning more under the control of learners. How far this latter development will go towards actualizing the principles of access, voluntary participation, and self-directedness will be determined by the continuing success of the open source movement.

Many educators are using Web 2.0 tools in their teaching. These tools are incorporated into blended or fully online courses to facilitate learning, team building, and the co-construction of knowledge. Learners can continue using these tools after they complete a course or a workshop. Thus, Web 2.0 provides methods and opportunities for adult learners to view learning as extending beyond the classroom (King, 1998). There are now numerous documented efforts of adult educators exploring blogs, chats, wikis, and social networking sites in their everyday activities (Weinstein, Rocco, & Plakhotnik, in press, 2010). Less well understood, but of clear importance, is the growth of free online content including several thousand online courses offered by leading universities and free online computational tools like alphawolfram.com. Soon many adult educators will offer a level of mediation between the learner and the information ecosystem. In this arrangement, professional educators may provide guidance to self-directed learners who can draw on a munificence of content.

The inclusion of Web 2.0 in adult education seems appropriate in light of Lindeman's (1926) view of adult education as providing an environment for new methods and incentives for informal self-directed learning. Certainly, the new methods for content creation such as blogs and wikis create incentives for learning more about the actual subject of the content, how to use the tools to store the content, and how to collaborate with others. Learners pursuing these activities embody Knowles' (1984) assumptions about the adult learner as self-directed, problem focused, building on past experience, and a voluntary participant in learning projects. The information ecosystem with its multitude of interactions between individual learners, collaborative communities of learners, and content within the information system of Web 2.0 brings to life Illich's (1973) vision of learning webs. Learners pursuing solutions to problems, creating knowledge, and investigating personal, professional, and spiritual questions is the learning web Illich envisioned.

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