Community-embedded learning[1]

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Abstract

Online learners often stay located in, and tied to, their communities, kinship networks, households, and workplaces. Institutions providing online education can thus create ties to communities as students draw their learning into networks in which they are already embedded. Frequent interactions across multiple media that are afforded by information and communication technologies allow students to create strong ties with their fellow students and instructors. Those relationships provide a network of weak ties that is indirectly available to friends, coworkers, and community members who live and work near the students. Community-embedded learning that takes advantage of these strong and weak ties, and is appropriate to ICT modes of delivery, is important for two reasons. The various clienteles served by students while they earn their degrees will affect LIS education and outcomes; and LIS distance education offered via interactive ICT can directly affect the clienteles served.

Introduction

People who engage in online learning in LIS also often stay physically located in, and strongly tied to, their communities, kinship networks, households, and workplaces. Institutions providing online education in LIS therefore have key opportunities for creating ties to communities, nearby and far away, as students draw their learning from online courses into networks in which they are already embedded. At the same time, the frequent interactions across multiple media that are afforded by information and communication technologies (ICT) used in online education allow students to create strong

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ties with their fellow students and instructors [1, 2]. Those relationships in turn provide a larger network of *weak ties* [3, 4] that is indirectly available to the friends, coworkers, and community members who live and work near the students. Creating a model of *community-embedded learning* (CEL) that takes advantage of these strong and weak ties, and is appropriate to ICT modes of delivery and to the life circumstances of students, is important for two reasons. The wide variety of clients being served by students at work while they earn their degrees will have an impact on LIS education pedagogy and outcomes; and LIS distance education offered via interactive ICT has the potential for a great and direct impact on the clienteles being served.

Our prior research has shown that online learners bring "the Internet" into their home and work worlds; they also bring the educational content they are learning into their workplaces [5]. This paper provides a further examination of the effects of individuals being embedded in their own communities while using ICT to take courses or earn a degree. It provides an exploratory analysis used to create the concept of *community-embedded learning*—in conjunction with Granovetter's idea of *embeddedness* [6]—that indicates how LIS education can have positive influence on communities in new ways because of distance learning. It then presents possible benefits plus open issues that need more research for verification and assessment of the CEL concept.

Use of ICT in online distance learning has two major functions that shape the experience and outcomes of the community-embedded learner: Education programs use ICT to *deliver course content*, and they use ICT to *enable and support interaction among students*. Of course, there are many other factors that shape students' experiences and outcomes. One example is the student's employment situation. Students who undertake degrees online in LIS are often already employed in information settings such as libraries, and want to increase their knowledge and improve their status in the workplace [5].

Semi-structured interviews and grounded theory analysis

The ideas presented in this paper come primarily from a study on the disengaging processes of distance learners, and also from an earlier study about community development processes among distance learners. In total, the data comprise 122 semi-structured interviews conducted with 47 distance learners, collected in two longitudinal waves over five years. The first wave was conducted as part of a study of community among online learners [7]. Interviews were conducted four times over a one-year period with 17 students. All but one of these 17 students participated in four interviews; the remaining student participated in three. The second wave was conducted three times over

a one-year period with 30 learners [8, 9]. Twenty-five of those students and graduates participated in two interviews; the remaining five students participated in one. Each interview was tape-recorded and transcribed completely.

Analysis of data from both sets of interviews form the basis of the ideas presented here. The analysis method used was grounded theory, with coding, axial coding, and constant comparison techniques used to build the final models of community building, individual disengaging, and community-embedded learning [10, 11]. This qualitative method uses the basic techniques of questioning and making comparisons within the context of a close examination of the interview data. The analysis is interactive and on-going throughout data collection; that is, each interview and round of interviews is analyzed beginning as soon as it is completed and continuing throughout the project data analysis. This continuous analysis is used to design the further data collection instruments, which then act as a "feedback loop" with more focused exploration of emerging important ideas. These techniques are then used throughout the processes of coding and memoing to build up the overall analytic narrative and the specific concepts and sub-processes that are characteristic of the process being studied.

Initial findings from these data included a description of community development among online learners [7], the development of a multiple social world perspective for understanding distance learners' experiences [5], and a model of disengaging from online social worlds [8]. This paper explores yet another aspect of the data, that of community embeddedness and its effects on learning outcomes and institutional relationships. Because this is still a rather new approach to online learning, it raises many more questions than were answered by the available data. Therefore, the final section of the paper is devoted to identifying key questions and directions for future work that were highlighted by this data analysis.

Community embeddedness and interactive learning

Discussing the effects of community embeddedness requires an explanation of community-embedded learning and of the ICT-based interactive distance learning model that provides the basis for this work. Community-embedded learning means that students already have ties to their communities: family and friends, memberships in clubs and social groups, and civic and volunteer activities (this idea of embeddedness is informed by Granovetter, [6, p. 487 and p. 504]). Inherent to the definition of community-embeddedness is that students are also employed in workplaces in their communities and the jobs they hold are often directly related to the degree they are earning. As well, the job and workplace are part of and shaped by the norms of the community and the clientele served. When students who are

embedded in communities like this take courses at a distance, they bring what they learn in their courses back to a job and a community they know well and that knows them as well. Taken together, all of these conditions define community-embedded learning.

Community-embedded learning is not a completely new concept, though the way it is developed in the remainder of this paper is novel. Hunter, for example, describes such embedded learning in discussing the National School Network, an online learning community for teachers [12]. She states that there is "interdependence between NSN [National School Network] as a virtual community and the changing practices in its member institutions and communities" [12, p. 103]. Other studies and projects have examined the role of online learners in their local communities, exploring instances where a desired outcome is that learners "use newfound skills within their local context" [13, p. 548; see also 14, 15]. Many of these studies are about online professional development or other support programs for school teachers [16]. Several such studies examine the implementation of agenda-based programs for teachers, online learning programs that are designed so that the teachers will spread the message of the program to their local colleagues and students. Lakatos, Csobod, Kiss, Meszaros, and Szabo [17] describe a program for teaching sustainable development (SD) to teachers in order that they can teach SD to their students and implement SD in their communities. Kriesler, Snider, and Kiernan [18] evaluate the use of distance education to support community activism by instructing teachers in an anti-smoking campaign aimed at teenagers. Both groups of authors find that achieving community outcomes when teachers are involved in distance learning is a viable option.

Adding the offset learning social world

Some approaches to community-embedded learning have assumed a learning network that is a mirror of the local community [19-21]. Students share both a physical location and an interactive learning network, and do not interact with students in other geographic areas as an explicit part of their learning experience. Such approaches include "overlaying" the online learning social world onto the local community [19, p. 216], and the community network, where ICT are deployed specifically to support local community activities [20, 21]. In either of those cases, the participants in the online learning social world also live in the same on-ground community.

On the other hand, Hunter [12] demonstrates an "offset" of learning social world and local community. Adding such an offset learning social world is different from many other models of community-embedded learning. In such an offset, the learning social world has members from many different geographical locations. The members use a variety of mechanisms, in this case ICT, to interact with one another and create a social world. This is made

possible by the affordances of the ICT, because they allow for geographically dispersed learning communities [22, 23]. This social world has little and only incidental overlap with community membership and in the locations of the members. The social world has members from many different physically located communities, and they create the shared space needed for a social world via the ICT they use.

Interactive Learning

The focus on interaction in ICT-based distance learning that underpins this work is another key part of the embedded learning model. This online learning model is exemplified by programs such as the LEEP program at the Graduate School of Library and Information Science at the University of Illinois at Urbana-Champaign [24], and also the distance learning program at the College of Information at Florida State University [25]. This type of distance learning has four distinctive features: a) it uses multiple ICT that allow for private, group, and public communication; b) there is both synchronous and asynchronous activity; c) students interact regularly with one another as well as with their instructors; d) and courses are not self-paced. Also, there may be occasional face-to-face meetings. The importance of such an interactive learning model is also highlighted in other LIS settings, although community embeddedness and its effects on learning outcomes have not been addressed there [26, 27]. The result of this interactive learning model is that students form an online learning social world, in which members share activities, technology, and space, and communicate with one another [8, 28]. Students create friendships, provide emotional support, work together, study together, and develop future professional networks.

Throughout this paper, this distinction will be maintained [29]: Students are members of a local *community* and of an online learning *social world*. When distance learners who have the kinds of strong community-embedded ties mentioned above enter an online learning social world as described above, they create a cross-transfer between the community and social world. The students bring aspects of their home communities into the online learning environment, and they bring aspects of online learning into their local community. More detail about this cross transfer follows, but a simple example here should clarify what is meant. A student may bring a real experience from the workplace into the online classroom as an example to be used by the whole class during discussion. This same student might take an idea or technique from the online class discussion and apply it right away in the workplace. The effects of one environment on the other are not always positive, because sometimes the demands of community embeddedness overwhelm the learning process (see [5] for more about the juggling of and synergies between the multiple worlds). Whether positive or negative, community-embedded learners do experience such cross transfer. The purpose

of this discussion is to explore ways to make the transfer beneficial for the student, the community, and the educational institution.

Community-embedded learning: The CEL concept

The previous section described the concept of community-embedded learning as indicated by other research. It also described how the kind of offset learning social world seen in the current study differs from other existing modes of community-embedded learning. As well, it described the type of interactive learning that is assumed to be the educational method used in building the new model of CEL. With that discussion of others' prior research in this area thus providing a basis for understanding the relevant concepts to be used, this section provides the results of the current data analysis used to define CEL via five types of community/social world transfer.

Results: CEL involves five types of transfer

There are many links between the local community of an individual learner and the offset (and distributed) online learning social world, even though they do not have many of the same members or a shared geographic location. The links between local community and an online learning social world are indicated by our data and are based in the many kinds of transfer that occur across the boundary between community and social world.

The students interviewed for this study provided hours of rich interview data, all of which contributed to the results presented here. The quotes from their interviews that are included in this section demonstrate how actual participants spoke about their LEEP experiences, and were selected because they exemplify sentiments expressed by other participants as well (i.e., they were selected precisely for their ordinariness, rather than for uniqueness). Quotes are identified by the pseudonym of the participant who made the statement. Pseudonyms reflect the gender of the participant. Some quotes contain the mark […], which means that identifying details have been removed from the quote in order to protect the anonymity of participants.

Community-embedded learning is defined by five major types of transfer that emerge from our data and are discussed in detail here. They can be summarized as: a) community knowledge to social world; b) course knowledge to workplace; c) social world contacts to home community; d) course knowledge to home community; and e) institutional connections.

Community knowledge to social world

The first transfer across the boundary between local community and online learning social world is the knowledge and information that the individual learners, from their embedded positions, provide to other

individuals with whom they take courses and to the learning world in general. As indicated by the interview data, the embeddedness of each learner contributes to the evolving knowledge of the learning social world. This is a cyclical, or feedback, process: each student's contribution shapes the learning world, and the knowledge in turn is used by each student in a local community. The local community in turn affects what experience each student has to bring to further the knowledge of all learners, and so forth.

Transfers of knowledge from one student to another can include, as Jennifer says here, "nuts and bolts" information about standard workplace practices:

> *She would email me and say, [I need help] with a nuts and bolts kind of thing, you know, she would say, how do you take inventory? […] Do I have to move all the books over to the computer, and I said, no, you know, so those kinds of things, that she would ask me just the practical things. (Jennifer)*

Transfers of knowledge from students' communities in which they are embedded to the classroom can also involve leveraging expertise from unexpected sources. In this case, Edith describes a situation where her elementary school students share their expertise with Edith's LEEP classmates, through the conduit of a storytelling assignment.

> *And I'd tell them my story, and they'd give me feedback, or say they thought it was great, or whatever, and then at least I could run that by them, any setup situation, because even for storytelling by LEEP, I had to tell it over the telephone. So I practiced at least in a group, some kids, and got their responses. (Edith)*

As Belinda indicates here, sharing knowledge about her local community with her fellow students has extended well beyond their time together in the LEEP program:

> *I've gotten a couple of different e-mails from people that I haven't heard from since they finished the program a year ago, who are looking for jobs in the area that I live, who have contacted me just for information about the area. (Belinda)*

A more generalized perspective on the knowledge that is brought to the learning social world from the students' local settings is brought out by Edith, who says that "being able to talk to people who have worked in them [libraries] for a long time, who have had different experiences" is a high point of the learning she has achieved via LEEP. Desmond reinforces this point when he says about his LEEP colleagues, "I think the thing I miss most is daily contact with so many people, that's kind of exhilarating."

Course knowledge to workplace

The second transfer is the "return" part of the cycle begun in transfer one. The research participants indicate that they bring what they learn in their courses into the workplace. This, of course, could be the case for any worker who is also attending school. But when there is a distributed and interactive learning social world, there is an important difference in what they learn. The course knowledge itself, if the course is taught in a way that properly leverages the advantages of distributed interactive learning, is different from what it would have been if the course were an on-campus face-to-face course. Properly leveraging the advantages of distributed learning means that students share their knowledge and ideas with each other as an intrinsic part of the class. In the case of community-embedded learning, the benefit of this sharing is enhanced for all students because those ideas are informed by every student's ongoing, situated, work and life experience.

Students can transfer their course knowledge back to their workplaces in a variety of specific ways. Some participants in this research provide examples.

Lorraine indicates that she was able to do projects that fulfilled the requirements for assignments in LEEP and also let her implement her new knowledge in her job:

> *And so I was able to pick a topic that would both satisfy the requirements of the course and apply at my library. […] I was able to do a final project for both of those classes […] that was really helpful, because I got to explore all these resources, and put together a project proposal, service proposal for things that I was actually doing at my library. So that was cool, I love doing stuff like that. (Lorraine)*

Dagmar presents a more complicated scenario that highlights the give-and-take between course work and work settings. She explains that she implemented some coursework in cataloging at a practicum—still coursework, actually—she completed at a site away from her workplace, and then in turn is able to implement the knowledge from the practicum at her "real" job:

> *I've had the cataloging stuff ahead of time, I had done an independent study on the issues with cataloging Internet materials, of cataloging […] materials for firm intranets, and this was kind of like a follow-up of that, and it's basically working, having the opportunity to work […] in a current environment, and understand how they are utilizing the electronic resources along with the print resources, and how they were trying to reach out to the different researchers and audiences […]. That was a fabulous*

experience for me, that I'm actually able to draw on on a regular basis with my work right now. (Dagmar)

Martha shares briefly the profound impact that the knowledge she gained in the LEEP social world has had on her professional identity, saying that "it really changed my whole feeling about what kind of service I'm supposed to be providing to people. And I think the whole program did, in general. It was very very much, it really helped you to create a kind of a professional identity." On the other end of the spectrum, Hillary points out that course knowledge from LEEP—in this case in the form of recorded audio lectures and archived chat sessions—influences professional practice, saying, "I'm still using, going back and listening to some old recordings of course work for classes. When I think, oh, now how was that done again?"

Social world contacts to home community

The third link between the local community and online learning world is closely intertwined with the previous one. This is the connection of weak ties, or indirect contacts shared from community to community through the students' social world [3, 4]. Since all students are connected to the communities of all the other students, they can—and do, according to the interviewees—in turn pass any associated benefits back to their own communities. Above, we said that what the individual learner takes from a particular course is shaped in part by what the other people in the course know and share. If they do not share, all students do not benefit, which is one reason the interactivity is so important. But fellow students have more than knowledge and experience to share; they also have their own home, work, family communities, which expand the array of information available to all students.

This array of weakly tied people is specifically characteristic of community-embedded learners, because the ties are constant and ongoing. As a point of comparison, think of the circumstance where all of the students have left their home communities and come together geographically at a school or university. In that case, while students may still have knowledge of, and some level of contact with, the people from their home town, there is not the constant friction of ambient awareness and the likelihood and actual occurrence of accidental encounters. Distance learners have access to an array of proximate weak ties that on-campus students simply do not.

As Jennifer states, "you do need […] that camaraderie of, of others through the LEEP program, and through the types of contacts that you make as an extension of the LEEP program." It is not just learning from the other students that is important, but the contacts available through them.

Lorraine highlights that the kinds of intellectual contacts she made in the learning social world not only shaped what she learned, but also have led her to crave that kind of intellectual stimulation elsewhere, thus in turn shaping how she manages her contacts in her local community.

> *I do miss having that set time to get together with people in an intellectual way. I try to keep up with that but sometimes it's hard to make yourself really get into some of the in-depth subjects rather than just skimming over the top of it. But that's something that once I'm a little bit further out from having completed the program I'll probably find places, different committees or whatever, groups locally from library associations or whatever, where I can kind of get that outlet. I do miss that. (Lorraine)*

Course knowledge to home community

The fourth transfer indicated by the interview data is again closely related to the previous two. It reflects the learning taken from specific courses, and knowledge shared by the learning social world as a whole, that is brought by the embedded individuals—specifically because of their embeddedness—into home, social, educational, and civic activities. This transfer highlights one other assumption of this approach: that the student is taking courses or a degree that are related to their workplace and not directly with any of these other social worlds in which they are involved. That is why non-work worlds in the home community are treated separately now.

This transfer of knowledge is how the learning social world gets linked to the non-work environments of the student. This transfer serves the important role of bringing educational benefits beyond even the acknowledged clientele served by the student's workplace. For LIS, this means the benefits of online learning can reach beyond the walls of the library as well as strengthening the link between learning institution and community. The nature of this knowledge varies. Sometimes this is subject knowledge based on course content. One example from our interviews is a student learning library science who helps a friend with database searching. Alternatively, this kind of transfer also frequently involves non-subject knowledge. While transfers of non-subject knowledge happen with each of the five kinds of transfer discussed here, since non-work social worlds are least related to the subject being studied, it follows that they are more likely to involve non-subject skills or expertise. One major example of this, demonstrated in the interview data, is sharing technology skills. Students who use ICT for learning a subject also frequently learn a lot about the technology. Their knowledge is often even more powerful than simply learning the technology. They know how powerful the technology can be when it works well enough to be put in the background as a support for an important other task. Being able to harness the technology is what really encourages them to cross the boundary to non-work local

activities. They know how to use the technology, and because of community embeddedness, they know enough about the activity being supported to be able to deploy the technology most usefully.

Hillary indicates that she uses skills developed during her LEEP coursework to shape decisions about her non-work local community activities, and to assess characteristics of communities in which she may choose to become embedded.

> *Looking at moving companies, all that kind of stuff, too. Starting to research various things like that about moving, checking out web sites that compare cost of living from one community to another. Checking out crime rates of different communities, all those wonderful things. (Hillary)*

Martha specifically points out here that her coursework not only helps her in her day-to-day job functions, but also in shaping the larger institutional setting in which she works – as well as in her family, because her income is increased:

> *I've got a few committees that I'm on now, and I've been able to work in an advisory role on a technological issue that other librarians were having trouble kind of getting their minds around, but I seemed to be able to understand it. So I feel, not only am I making more money, but I feel like I'm actually helping make my environment a much better place. (Martha)*

Overall, the theme of the broader benefits to various kinds of local community settings (work, family, public) is mentioned again and again. Dagmar says that LEEP coursework "brought me back first of all into the idea of the function of libraries in society"; Martha says "It has continued to affect my responses to the world in general, and my responses to users"; Edith echoes, saying about a specific technological skill, "it's not something I necessarily need for my job per se, but it is definitely a skill that is a good one."

Institutional connections

The fifth transfer that is discussed here as characteristic of the link between the learning social world and the local community of the learner is that of institutional connections. It has been acknowledged that it is important for libraries to make extensive connections and partnerships with their local communities, but these connections have not extended to LIS education programs [30]. Community-embedded learners provide institutions of higher learning with opportunities to build relationships with communities in ways not possible before. This is a new circumstance, different from that of a college or university that has strong ties with the town in which it resides. It is also different from what happens when students leave their homes to attend

school elsewhere and then come back when they graduate. In the type of community embeddedness described here, the student stays in one community and the school or university is not there. This absence reveals an opening, or a potential for a relationship to be forged, if (and that may be a big "if") the institution of higher education wants to build ties to a remote locality. If they do, potential opportunities include person-to-person contacts between online students and their local co-workers, friends, family, and acquaintances.

One primary example of this that we have found through our data analysis is recruiting. Community-embedded students have many opportunities to recruit new students and often act as "gatekeepers." Because they know the online program well and they know their local colleagues well, online learners help to assess which of those colleagues would be best suited for the program and encourage them to apply. Recruiting activities emerged so strongly as a theme in first-round interviews that a question addressing recruiting and gatekeeping was added to second-round interviews. It revealed that most participant undertake this activity in some way, ranging from formal recruitment efforts to the most casual conversations about librarianship and distance learning.

Other potential opportunities include institution-to-institution contacts. These may be built between the educational institution and a library system, school system, or municipality, for example. Such contacts might in turn result in continuing professional development of other types of training for employees or residents. Or, the school or university might use their good relationship through one student as a point of entry to create a larger educational service, for example for an underserved state.

Discussion: CEL has strengths and weaknesses

The CEL model of online learning has the potential for some important strengths and weaknesses. Its primary strengths lie in the possibility of different and improved learning outcomes for online learners. Its primary potential weaknesses derive from the community embeddedness of the students, and the influence of such embeddedness on the students' perception of what they are learning.

CEL allows different learning outcomes

Having examined five primary types of transfer that occur across the offset boundaries of the learning social world and the local community, it is time to discuss how those transfers, and the accompanying changes in personal and institutional relationships that accompany them, operate from the educational perspective to change the learning outcomes for online distance students in desirable ways. These changes in learning outcomes can lead to

improved service for the local community, improved learning for each student, and increased impact and visibility of LIS education in remote communities.

The idea of purposefully changing the desired learning outcomes for online learners may be viewed skeptically by some educators. Many approaches to distance learning have taken it as a given that students in an online distance class should strive to achieve the exact same learning outcomes as students in a face-to-face class that covers the same subject. This has led to the "no significant difference" phenomenon that has been quite well documented (after four editions online, the annotated bibliography of studies that demonstrated there is "no significant difference" went into print) for distance learning in general [31]; that is, it has been shown many times that it is possible to duplicate classroom outcomes in online courses.

Here, however, we join the growing group of researchers ([32-34] and evidenced in another web site called "The Significant Difference Phenomenon" [35]) who do not agree with the desirability of "no significant difference." Research indicating that improved learning outcomes online are possible is increasingly common [34], but still tends to focus on pedagogy, delivery, and technology and not on the local life circumstances of the students. Findings by Frey, Alman, Barron, and Steffens [26] about the distance learning program at the University of Pittsburgh (which echo findings indicated by Kazmer [37] about the University of Illinois LEEP program) also focus on students and their roles and learning within the confines of the learning social world, with little mention of integration with their local community. It is also worth noting that some of these studies [34, 38] emphasize the important of an interactive online learning method in order to achieve learning outcomes online that are better than those achieved face-to-face.

If what is really wanted is in fact "no significant difference," it is of course achievable. However, after examining some of the potential transfers of learning, skills, and expertise that community-embedded distance learners can effect, why would educators, students, or communities settle for "no significant difference"? The following discussion of learning outcomes for community-embedded learners is derived from our research data and from the above discussion of links between local communities and online learning social worlds. We present three possible major shifts in learning outcomes for online distance students.

Community-embedded students build *more course knowledge* in addition to learning the basic materials in a class. Because the knowledge built by the students in a distributed learning social world is different from the knowledge built by students who all come to the same campus, course knowledge shared in the learning social world is enhanced by all students'

community embeddedness and the fact that each student is embedded in a different local community. Students have experiences in the workplace and are able to share them, while at the same time can understand and share the circumstances surrounding those experiences. Even if students come to campus from a variety of backgrounds, and have previously had a diversity of experiences, they still do not have those experiences co-temporaneously with what they are learning. The effect on learning is substantively different because the feedback loop described above is not in place.

There are numerous examples that could be provided to demonstrate the way course knowledge, and therefore learning outcomes, are changed by community-embedded students. One simple example is an online course in information (reference) services that includes students from a variety of communities. Many students work in information settings, while some of them do not. The class is designed according to the interactive methods described, and the students share their experiences in information settings (as provider or as client) with one another, constantly contextualizing and comparing those experiences for themselves and for others in two ways: a) by examining them in the context of their own communities, workplaces, and clienteles; and b) by examining them within the conceptual foundation created through course readings, lectures, and assignments.

ICT-based learning communities turn into ICT-based *professional networks*, with wider access to dormant relationship ties. (In a dormant relationship as defined here, participants do not interact regularly, but contact one another only as needed, relying on shared friendship history to provide a basis for help-seeking in the future [8, p. 168].) A second specific difference in learning outcomes is that the learning social world supported by ICT becomes, after the students finish their degrees, a professional network supported by ICT. The data indicate that the interpersonal links among professional graduates are *not* trivially easy to *maintain* on a constant basis just because they are accustomed to using ICT for communication, even though some students predict that will be true. Instead, the relationships between alumni become primarily dormant ones, characterized by infrequent contact and interaction via fewer media. These dormant relationships, however, *are* trivially easy to *re-kindle*, and in fact are re-kindled in a variety of circumstances such as association meetings, encounters on email lists, or periodic informal group emails. An additional circumstance that can cause a graduate to re-activate a dormant tie with a fellow alumnus is a targeted question or need. Since their interaction as students was primarily via ICT, and since students who learned within this interactive social world model know a lot about each other's professional experiences, the graduates are comfortable asking for help in this way.

A third difference in outcomes arises from the basic assumption being made in the community-embeddedness model that one way to *measure outcomes is through application*. In other words, the difference is not in the learning outcome itself, but in how it is measured. In the classroom, learning is often measured by papers or examinations; embedded learning on the other hand is measured by application. One conclusion to be drawn is that learning outcomes of degree programs are in many ways not measurable before the student graduates. This is also true for on-campus students who take the historically typical route of moving away from the campus and starting a new job after graduation. When those students apply their new knowledge, they are no longer being measured by the educational institution, but rather by the people in their workplace (bosses, colleagues, and clients). However, for community-embedded students who learn-while-doing and do-while-learning, application is intertwined with learning and should be included in assessment measures.

The usefulness of the interaction between learning and practice has been acknowledged by educators who promote practica, internships, and other forms of experiential learning for students [39-41]. Those experiences are explicitly part of the educational process from the points of view of the student, the classroom instructor, and the employer/supervisor. Application as a learning outcome is included in the practical experience and is assessed for educational purposes by the instructor and the employer. But for a community-embedded learner, the employer is often *not* an explicit part of the educational process. They have neither an educational purpose nor an assigned role (or skill) in educational assessment. On the other hand, they do assess the student's learning, although usually indirectly. In large part because of this difference in educational role, there is a difference in assessment that is directly related to the experiential learning outcome.

In addition to the three differences in outcome mentioned here, there may be many other beneficial differences in outcomes from community-embedded learning. Many of these, however, will need to wait for further exploration of this type of learning (see below, Is CEL a useful model?)

CEL indicates real and potential issues

Having discussed the five transfers between local communities and online learning social worlds that make up the community-embedded learning model, and described some examples of new outcomes as a result of CEL, it is time to question this exploratory model to identify gaps that require further research. Although there are extraordinary successes to come from embedded learning, there are as with any proposed change some potential issues to be recognized and examined. Here we examine five potential issues associated with the embedded learning model, and then proceed to discuss some of the

questions these issues pose and the continuing research that is needed in this area. The issues discussed also emerge from the analyzed data, as viewed through the lens of community-embedded learning.

Community resistance to change

Individual learners, separated physically from the support of fellow classmates, may find that implementing what they learn in the community encounters the resistance of community members to any change at all: "We always did it this way, why do you now want to do it that way?" This is one way that the familiarity of the students with their communities can be a drawback rather than a benefit, because the community members are already familiar with the students and expect their behavior not to change drastically [6, p. 498]. Similarly, implementation can also encounter resistance to change similar to the "not invented here" phenomenon [42]. The members of the community, even others in the workplace, may be mistrustful of "academic" ideas being brought into their environment [6, p. 491]. This mistrust is compounded in the case of online learning, because colleagues, clients and others may doubt the effectiveness or quality of education gotten "through the computer." Is such resistance more likely met in this case, or in the case of a newly graduated professional who enters a new workplace and a new town and meets resistance on the same grounds? Is it more likely to be met in the case of CEL because of continuing distrust of online education?

Workplace as classroom

Difficulty may also arise because the students are in mission-critical situations, at least to the students. They are in their homes, and their communities, with the colleagues and clients they will continue to see daily. As a result, students might think there is little room for error as they practice what they learn [6, p. 490]. Students taking a practicum, internship, or other type of experiential learning are expected learn as they go, and allowed some leeway for mistakes in their application of their classroom knowledge. The student who is being paid full wages, and is expected to be "doing his or her job," does not enjoy either the same tolerance for error or the explicit instructional support that is provided in experiential learning settings.

Limited worldview

Another possible issue is that students who stay in their (overly) familiar environment while they go to school miss the opportunity to experience new physical and geographical places. At the same time, they do not get the chance to be out of their home environment and cast a distanced eye over their circumstances there. While they are gaining from interacting via ICT with other students from a variety of cultural, geographical, and

professional settings, they are not gaining perspective from time away from home, or from actually living in the academic environment, or at the very least, in a new town.

Forced interactivity

A fourth possible issue associated with community-embedded learning outcomes being reified into the practice of online distance learning—and thus by the argument made here requiring high interactivity—is that some students choose distance learning specifically because they want to be alone [43, p. 362]. These students are not necessarily loners and introverts, but may be people whose learning styles cause them to work best without various types of outside distractions, or who do not find that interactivity is a successful mode of learning. Simpson and Du reinforce this point, that pedagogy must match learning styles to "maximize students' success" [44, p. 133]. Required interactivity therefore detracts from a main advantage of distance learning for these students. Is the answer to force interactivity via assessment and evaluation methods, or to allow such learners to refuse to interact and thus detract from the key success points of the embeddedness model?

Tunnel vision in the classroom

The last issue addressed here is also highlighted by Wilson and Bagley, who provide the results of a study indicating that students (in their case, community pharmacists) decide what distance learning modules they prefer based on whether or not they address "commonly encountered problems" [43, p. 363]. Such students focus their attention toward course materials that they believe will address their own current situations, and ignore those course materials that seem irrelevant to them. At first this sounds like it could be of great benefit to the learner and to the community. Based on the initial argument of community-embedded learning, it should be: students can target the needs of their local community, efficiently gleaning from their education exactly what they need and no more. Alternatively, it may mean that community-embedded learners have tunnel vision in the online classroom, and only pay attention to those things that they already think they need to know. At the same time, students may ignore other topics (often the conceptual or theoretical topics) and other details that they think are unnecessary to their specific situation. This could be seen as a benefit, in that the student is able to focus on what is important. In the end, from an educational standpoint, it has more potential as a downside because students receive an incomplete education. Unless the teaching is geared toward making connections clear and plausible to all students, students will only learn what they think they want to learn.

Conclusion: Is CEL a useful model?

Having at this point described the model of community-embedded learning; the close links that can be created between communities, learning worlds, and educational institutions; potential differences in learning outcomes; and potential issues that may arise; it is time to examine some of the questions that emerge from this approach. Although many questions emerge from the learning outcome perspective, some important questions also arise from the kinds of transfer that can occur between the local community and the online learning social world of the student. These questions emerge from the CEL model as described above, and guide us to think about educational practice as well as leading us in new research directions for LIS education.

What happens when we mix online and face-to-face students? How does that mix affect learning outcomes? We need further to explore how the learning experiences of on-campus students are changed by taking ICT-based classes and by working with community-embedded learners. We also need to explore the increasingly popular "hybrid" model, where portions of the course occur with all students on campus or with the instructor and sub-groups of students meeting off campus. According to the community-embedded learning approach, mixed and hybrid classes should be a benefit to on-campus students, who would receive more knowledge and access to more weak ties but not be able to contribute many, and a detriment to online students for the same reason. However, it seems both silly and defeatist to claim that there is not a way to make a mixed class beneficial to both kinds of student. Learning more about those benefits of CEL is another avenue for exploration.

Another question about mixed and hybrid classes that comes from the community-embedded approach is about the relationship of learning, and the learning institution, to each student's home community. How does having on-campus students in online classes affect those relationships for the online students and for the on-campus students? Given that ICT are used more and more frequently in face-to-face classes, are there concomitant changes in the ways that on-campus graduates bring their new knowledge into their communities (resumed or new)? Are there similarities in the way they are able to facilitate relationships between their communities and the educational institution after they have physically departed? And, finally, not only are ICT used more in face-to-face classes, but they are also used increasingly for interactions among on-campus students (especially including text messaging and various kinds of IM). Do graduates of face-to-face degree programs create the same kind of relationship dormancy with the accompanying ease of re-connection that distance learners do, because they also use technology to communicate?

One further area of interest arises from the fact that this work and much of the work cited here relies on studies of professionals: librarians and other information professionals, pharmacists, and several studies of teachers. Can the applications and relationships inherent to CEL succeed for students who take just a class or two online, for example through one of the increasingly common professional development programs? Or, since community-embedded learners integrate their learning with their practice the whole time they are earning their degree, perhaps CEL can result in practitioners who are likely to practice ongoing professional development activities. As well, the experience of CEL may perhaps mitigate some of the factors (including job status) that keep practitioners from such updating activities [45].

An assumption that has restricted this work is the rather narrow focus on people who are not only staying in the same community but are also staying in the same workplace. How does the community embeddedness model apply if the student does not have a work setting? What if he or she is a full-time student who will be looking for a job after earning the degree? Our data indicate that there is still a robust amount of synergistic transfer even in this case, in particular when the community does not change [5]. But what if the graduate is taking a new job in a new community? Any logical extension of the community-embeddedness model indicates that the model would not apply at all. Is that true? And what about a changed work setting in the same community? Does the graduate leave behind in the original workplace any personal social capital, or any good feelings toward the educational institution? On the other hand, does changing work settings within a community work quite well, functioning something like an internship?

When people embedded in local communities become simultaneously students in an online learning social world, they create the potential for many types of beneficial cross-transfers between the communities and the social world. Community-embedded students in ICT-based degree programs have experiences, knowledge, and relationships that enrich the learning of other students in the program. At the same time, community-embedded students have the opportunity to achieve learning outcomes that exceed those of on-campus students in face-to-face classes. The interactivity afforded by ICT to social worlds of learners is key to achieving these benefits.

Although community-embedded learning holds the promise for highly successful future relationships between educational institutions and distant communities, there are still questions to be asked and potential problems to be examined. We predict that as online and offline worlds continue to blend, as technologies change and as people further internalize the experience of using them, educational institutions will recognize and embrace the embedded

learner. The end result will be significantly different learning outcomes and institutional outcomes, purposefully attempted and fruitfully attained.

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