

Digital Citizenship: Lessons Learned as Service-Learning Meets the Digital Divide

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Abstract

This paper reports preliminary first year results from an “itr”-funded National Science Foundation (NSF) grant enabling two central Iowa universities--Drake and Iowa State--to assess the efficacy of service-learning interventions in the dissemination of Information Technology Literacy (ITL) beyond the campus gates. It introduces service-learning, a pedagogy that promotes mutually beneficial partnerships between academic institutions and communities, and reflects on the particular challenges it poses in practice. After the first eight months, a number of lessons learned are emerging that will significantly impact implementation in years two and three.

1.0 Background

Citizens increasingly interface with government using Information Technology (IT). A number of studies have identified unequal levels of IT literacy as a significant barrier to equity in citizenship. While access to the Internet steadily expands, the ability to take advantage of increasing access hinges on the level of ITL among citizens. Community members, particularly in certain more vulnerable groups, often lack basic skills and concepts required when navigating an expanding electronic interface with government. Whereas IT should make it easier for all citizens to conduct their routine business with the government, in fact, it appears to be widening the gap between the IT literate and those without basic navigational skills.

Income and education are among the variables that correlate positively with levels of access to and familiarity with the Internet (NTIA, 2000; UCLA, 2000; Wilhelm, 2000). Studies consistently show race, age, language, and disabilities are also significant factors even when controlling for socioeconomic status (Cooper, 2000; Goslee, 1998; Novak & Hoffman, 1998). Less data-based information exists, however, about the effectiveness of educational interventions that seek to identify and remove these barriers in a comprehensive and systematic manner.

The primary objective of this research is to test the efficacy of service-learning programs that seek to expand digital citizenship. The project asks community members and local agencies to help identify ITL needs that Drake undergraduate students can fulfill as part of their education. To that end, we proposed three related objectives:

- Define Information Technology Literacy (ITL) using broad and systematic criteria.
- Develop best practices for using service-learning in the dissemination of ITL.
- Test the hypothesis that service-learning lessens the digital divide.

A service-learning Digital Citizenship class (held each fall) and a fieldwork laboratory (held every semester) links undergraduates and experimental groups from the community. The researchers, students, and the serviced communities are developing and refining interventions that promote basic ITL. Structured citizen surveys and focus groups are used to analyze the data on program impact. Experimental groups complete a survey and are exposed to the service-learning treatment, while control groups complete only the survey.

Two strategies have been employed to date with varying levels of success. During the fall of 2001, the team partnered with a Polk County Senior Center and a 501(c3) serving central Iowa's African American youth, setting up a series of experimental interventions. While the sessions with seniors went

quite well, the partnership with a 501(c3) highlighted the difficulty of working with an off-campus group without a well-developed relationship, or some other basis for trust. For example, while Drake students showed up to Saturday sessions trained and eager to engage in their service-learning activities, the non-profit partner could not deliver its clients to the computer lab in a reliable manner. This created frustration for the university students as well as management and pedagogical issues for the professor leading the project.

A second method for recruiting trainees involved the use of mailed brochures and surveys that invited a low-income urban population living close to Drake to come to campus for free computer lessons. Free tickets to the popular Drake Track and Field Relays were offered as a possible prize for completion of the survey. This approach highlighted shortcomings in the research design. The response rate, which was 3% for the experimental group and 6% for the control group, suggests at the very least that mailing brochures is not an effective method for reaching out to community, particularly to digitally or otherwise disenfranchised citizens. Furthermore, we suspect that asking the target population to come to Drake's campus is problematic. Campus-community relations have been rocky for several decades, driven by class and racial issues. As a result, low-income and African American community members may not feel the university is a place where they are welcome. Focus groups with a sample of non-respondents will be used to explore this possibility.

The data gathered to date through structured surveys shows statistically significant differences that exist between the groups show that the control group generally has more or makes greater use of word processing, email, computers, printers, CDROMs, DVDs, scanners, experience using the Internet, and use of a computer at work or school. In addition, the treatment group has significantly more frequent responses at both extremes of software use and has a significantly greater response rate at the "low skill" level for distance education, and the controls are less likely to rent and more likely to own their dwelling.

As a result of these two experiences, the researchers are re-tooling their efforts. The most likely outcome is a return to the literature on service-learning, which suggests building more substantial relationships with a diverse group of 501(c3) partners, and also engaging in service-learning practices off-campus after a more personal, rather than mass-produced, outreach effort. The challenge, which in fact plagues much of the research on service-learning, is to retain the elements of the experimental design (randomization and control groups) that allow for reliable inferences, while pursuing survey respondents and ITL trainees via good service-learning practices.

2.0 Challenges in Conducting Service-Learning Research

Service-learning is a young, interdisciplinary sub-field. Research on service-learning is still in its infancy. Learning best practices from limited and conflicting research creates challenges for contemporary scholars. A related problem involves conducting research on the impact of service-learning. Unfortunately, conducting research on service-learning is often as problematic as the implementation of the service projects. There are many unexpected problems, unforeseen circumstances, and preconceived notions that impede progress toward the desired ends. Since service projects are replete with problems involving logistics, management, motivation, and perceived effectiveness, not surprisingly the research on service-learning is difficult to manage and to measure.

One such complication is the problem of definition. With over 200 published definitions of service-learning researchers, educators, and community agencies are often unable to define or agree upon that which they perceive as the same thing. Service-learning is an amorphous term. Some think of service as volunteerism while others describe it as pedagogy. Still others service-learning is a program with features or a meta-philosophy, such as social constructivism. The many existing definitions of service-learning lead to confusion among faculty and students regarding the intentions and purposes of this approach (Furco & Ammon, 2000).

Service-learning is therefore broadly defined, allowing for considerable variation during implementation. Core principles are nevertheless discernable. According to Jacoby (1996, 5), service-learning “is a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities intentionally designed to promote student learning and development.” These activities generally rely on two guiding principles: reflection and reciprocity. The experience of service is a necessary, although not sufficient, condition to foster innovative learning opportunities. Structured classroom reflection upon service activities creates a feedback loop that links the community intervention to an analysis of class-related theories and the design of future practice. Reciprocity exists to the extent that the community being served is able to define the scope of the service tasks and influence the manner in which service becomes part of the academic curriculum (Cuoto, 1996; Jacoby, 1996).

Some of the limitations in previous service-learning studies include small scale studies rather than multi-site or cross programmatic analyses, sampling problems with no control groups, data collection using a limited number of instruments, limited number of data sources, and analysis based on short-term impact rather than longitudinal investigations (Furco, 2002). Not only is there a lack of research in service-learning, but also the research that is conducted may reflect poorly designed teacher-research or action research models (Billig, 2002). Research is likely to be descriptive rather than experimental in nature. In addition, many studies are primarily qualitative and tend not to receive competitive funding from federal agencies such as the United States Department of Education (USDE) or Corporation for National Service (CNS). Even if studies are robust, analysis of results over claim the benefits of service or analyze the service activity and not the findings.

A key question concerns the measurement of outcomes. The literature on service-learning, while emphasizing the need for reciprocity in practice, tends to look most intently at the effect on the students rather than the recipients of the service (Giles & Eyler, 1994). When researchers are assessing the impact of service on “the cognitive dimensions of citizenship” (Eyler & Giles, 1999, 18), for example in the analysis of indicators such as development of social problem-solving skills or the sense of citizenship, it is often through a student-centric lens. If, as Eyler and Giles (1999, 153) suggest, service-learning is to be a building block in the creation of social capital, researchers need to devote greater attention to the study of effects upon service recipients.

Practitioners are not using the research to improve service-learning programs. They do not know that research is available and researchers do not widely publish it in journals. Most service-learning research is not published in a consolidated body of research studies or in scholarly research journals. In order to make an impact on current service endeavors, research must be both available, as well as, consumed. Meaningful service-learning is reflected in standards to promote quality in academic-based and community-based service-learning programs. Members of the Alliance for Service-Learning in Education Reform (ASLER, 1993) recommend that effective service-learning efforts strengthen both service and academic learning using concrete opportunities for youth to learn new skills and think critically. Although service activities need skillful adult guidance and supervision, students need to be involved in the planning process (Hamner, 2002). Preparation, reflection, and celebration of youth efforts are essential to making a meaningful contribution to their community. Indeed, service-learning gives students an authentic opportunity to “promote the general welfare” (Beisser, 2002).

The American Political Science Association (APSA) devotes considerable attention to service-learning on its Web site (APSA, 2000). According to Battistoni and Hudson (1997), “political science has maintained as one of its prime objectives the linkage between ‘real world’ experience and theoretical understanding.” Political science is not alone in this regard. The American Association of Higher Education (AAHE) lists studies from 18 disciplines at its service-learning site (AAHE, 2000). The American Association of Community Colleges (AACC) also hosts a “Service-Learning Clearinghouse” at its Web site (AACC, 2000). While resources for initiating service programs are easily accessible online, as are data concerning the extent of service-learning in the United States (Shumer and Cook, 1999), there

are few studies that explicitly link ITL and citizenship to the implementation of a service-learning regime. To the extent that this linkage does appear, it focuses on efforts to increase student notions of citizenship through Internet use in the classroom (Ball, 1997; Canfield, 1997).

3.0 Initial Observations from the Digital Citizenship Labs

Flexibility adapting to unforeseen events is paramount. While the university faculty involved with the project adopted this philosophy early on, it was not always embraced by the undergraduate service-learners. In the next phases of the project, the university service-learners will be invited more frequently than in the past to help solve problems associated with the tension between flexibility and structure in scheduling, lesson plans, and intervention strategies. The critical theme of flexibility needs to be systematically infused in every aspect of the project. For example, although the brochure stated that the classes were for beginners, the service-learners encountered a wide range of computer experience in the community members attending the sessions. In fact, a few community members asked university students to teach intermediate IT skills, such as creating macros or databases, for which they were not prepared. Flexibility must also be a theme in the communication paths chosen for future phases of the project. Scheduling problems were particularly vexing. Sometimes service-learners arrived at the lab, but there were no community members present. Other times they found too many community members present and not enough service-learners to make the sessions effective. Better use of student interns (for reminder calls) and listservs (for planning, reflection, and updates) should lessen these difficulties in year two and three.

Although these university students are part of the first generation of Americans to grow up digitally, their intuitive understanding of technology does not always translate into teaching technology skills to others well. Many of the university students were initially frustrated at the amount of patience required to teach senior citizens with impaired hand-eye coordination or to hold the short attention span of the inner city middle school kids who just wanted to know how to shop online or download questionable images. The university student learners need better preparation in pedagogy and more opportunities to build those skills. In coming segments of the project, the university student learners will practice one-on-one teaching several times before embarking on larger lab class experiences. In addition, teaching and service-learning both require reflection and analysis. Future university service-learning classes will take greater advantage of listservs and face-to-face meetings in a seminar room (rather than a computer lab) to air frustrations and recount successes encountered in the service-learning environment.

One of the most problematic issues of the lab experience was the unanticipated conflict between the desires and expectations of the university service-learners and the community clients. For example, university students are busy during the day, but that was the time period the senior citizen constituency identified for assistance wanted instruction. The senior citizens are intellectually active in the day and are they are not willing to be out in the community at night. Another conflict involved a different aspect of scheduling. The university student population attracted to the lab course was already highly motivated to serve as many of them hold leadership positions on campus or are actively involved in campus or community volunteer groups. Those university students were frustrated when Saturday mornings, a particularly personal time for that population, turned out to be one of the most popularly attended community instruction sessions, and one at which many university students were needed. Finally, university student service learners appreciated the teaching sessions being held on campus, but anecdotal evidence suggests that classes on a university campus, particularly for an under-served population, were intimidating. This dilemma is an on-going matter of discussion and may be addressed in target population focus groups exploring the reasons for low class attendance.

4.0 Low Response Rates

The low response rate (166 out of 1784 deliverable surveys—some were undeliverable due to incorrect address or for other reasons) probably is attributable primarily to the difficulty inherent in using a mailed instrument to collect survey information from an underserved component of the Des Moines

population. The greatest difficulty was to get an accurate list of household addresses in that part of the city to which the survey would be mailed. In addition, the mailing itself would not have rated highly on any index of attractiveness, probably leading to a high discard rate. Finally, the subject matter may not have been of sufficient interest to many prospective respondents to make their use of time and effort appear to be worthwhile.

The initial sampling frame, that is, the list of household addresses available for potential contact through the mailed survey, was inadequate. A systematic spot check revealed very little correspondence between the mailing labels generated from the initial list (based on City of Des Moines utility billing) and names and addresses in the Des Moines Qwest Dex telephone directory. After a lengthy period compiling an accurate mailing list from an alternative source (the Polk County Assessor's database of land parcels), a better list was obtained and used in the subsequent mailing. As a consequence of this reliance on a differently-compiled sampling frame that was based on home (or land parcel) ownership for the purpose of evaluation assessments, it is very likely that the resulting sample may have over-sampled the relatively better-off component of the Drake University-area population. The intent had been to attract attention from those who were underserved in their computer access or knowledge, but targeting surveys to get them into the hands of such prospective respondents is difficult to achieve with existing sampling frames built from lists of almost certainly better-off residents who would show up in extant databases as paying utility bills or owing property. One particularly awkward problem was the difficulty of targeting the survey instrument to renters. In addition, homeless persons or those with episodic residences almost by definition certainly would be missed using such starting points.

An additional problem was the lack of an attractive envelope in which to "package" the survey instrument. The survey showed up in mailboxes, and subsequently on people's dining room or living room tables (if it got that far without being circular filed as junk mail) in a plain, white, first-class envelope undistinguished except for the external statement "Open Now!," which, in retrospect, probably served to convey the sense that this was indeed a come-on typical of junk mail efforts. In discussion with the Iowa State University printing office, it was determined that efforts within budget to enhance the external appearance of the envelope to make completing the survey more attractive would not be acceptable to the U.S. Postal Service. Hence, an opportunity probably was lost to make the effort involved in filling out the survey appear to be worth the expenditure of time and mental commitment.

Quite possibly, too, many prospective respondents may have seen the survey, if it was opened and read (or at least skimmed) as an intrusion on a busy schedule on a topic that may have been of only minimal interest. Whether this lower degree of interest is correlated with characteristics of the prospective respondent group is unknown, but speculatively it is possible that the demographic and/or attitudinal traits associated with living in a relatively underprivileged part of town may have led to a lower propensity to respond to a survey on a topic that was not seen as being of much relevance to residents. It also is conceivable that, if the survey disproportionately was received by the better-off segment of the population in that part of the city, those prospective respondents might already have had lots of computer experience and were likely to have adequate access, and therefore would have been less likely to regard redressing what to them might seem to be a nonexistent digital divide as an important issue worthy of a survey response.

5.0 A Motivational Divide, Digital Divide, or Simply a Design Flaw?

At this stage, despite the low response rate, it is too early to declare, as some might, that the problem of the digital divide is better understood as a motivational divide (Powell III, 2001). A safer bet is to conclude that a sustained process of trial and error is needed to identify the proper tools and methods for more completely testing the efficacy of service-learning as a means to expand ITL. The experimental design set out in the grant narrative simply did not account for many of the obstacles encountered in practice. For example, the most inflexible university students often showed their resentment when

scheduled interventions failed to materialize. Next semester, the service-learners will be regularly reminded to “look upon it as an adventure in life and keep a positive outlook” (Hamner 2002).

As much of the literature suggests, there is no magic bullet for getting “outside the box” of traditional university practices, attitudes, and pressures. Service-learning is tough sledding not because the principles are elusive, but rather because the practice is vexing and incremental, placing high demands on the students, faculty, and broader community to get past pre-existing notions of the proper role of the university. It may be the case that undergraduate students are poorly situated to fully engage a service-learning regime, especially one that requires a high level of flexibility and higher order critical thinking about how to carry out a complex, interpersonal, and multifaceted assignment.

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