CHAPTER 1

INTRODUCTION

This is a monograph on a particular approach to learning in professional education at the college level. We call this approach *learning-in-community*. To describe its most basic assumption in the simplest of terms, we believe that learners learn best when they take classroom learning out into the local community and apply it to real problems faced by real (organizational) clients; we term this active learning. Learners learn in many ways when they engage in such an experience. They learn by subjecting theories and principles to the real world. They learn through interaction with other learners like themselves who are engaged in the experience with them. They learn about the community they live in by working on its problems. *Learning-in-community* is not a new method, nor is it unique. However, looking back over the more than ten years that we have used it in our teaching, we can say that it changes both *what* is learned and *how* it is learned. It fundamentally changes the instructor's role. In this sense, it can be revolutionary in professional education.

In our instructional practice, we restrict the pool of clients to non-profit organizations. A small number of clients have been public institutions – government agencies, public schools, and public libraries. The rest have been community-based organizations – considerably smaller non-profits. Additionally, we restrict our focus to information and communication technologies (ICTs). Non-profits struggle daily with a host of challenges, and ICTs certainly are one of them. Most lack access to technical expertise and ICT resources, and CBOs tend to particularly poorly equipped in this regard. Our choice of client pool and problem domain was thus simple: we felt that we could help fill the knowledge gap to a certain extent through our classes, while simultaneously providing our students with active learning opportunities in the community.

As a method, learning-in-community involves small student teams, in the role of consultants, working closely with a non-profit client on their ICT problems. The first author began using the method in one of his upper level classes in 1991 at the School of Information Studies, Syracuse University. The decision to try the method was prompted by students. In their course evaluations from previous semesters, students had emphasized the value that "hands-on" learning might add to the course content, which was focused on telecommunications and computer networking. Subsequently, a faculty colleague helped identify a client site (a public high school). The first author developed a consulting exercise for use with the networking class in the 1991 Fall semester. The semester-long consulting experience offered through

regularly scheduled, for-credit graduate and undergraduate-level classes today constitutes the core of our active learning model and has been used continuously by the first author since 1991. Our active learning model, presented in the following chapter, is an operational level description of the learning-in-community approach.

The first author established the Center for Active Learning in 1997 at the School to expand the range of technical services that could be offered to non-profit clients through the School's classes. Client evaluations suggested that while they found the consulting intervention useful, their needs often exceeded telecommunications and networking and included other areas – such as database and systems analysis, and user training. The Center was established to serve as a clearinghouse to meet these needs by matching them up with courses at the School. Relevant faculty were recruited to use their classes to address specialized needs of clients. However, with the growing indispensability of the Internet to non-profits, ICT networking has remained a staple client need throughout. Training the user on appropriate use of ICTs emerged as a vital new area under the second author's leadership. Again, the growth of the Internet and the increasingly important role that ICTs in general play in the life of non-profits has been a major impetus.

In 1998, a year after its establishment, the Center became part of a larger entity at the School – the Community & Information Technology Institute (CITI). CITI's objectives are broader than learning-in-community interventions and include prototype development and testing, and a research and development focus on the planning, design and implementation of advanced ICT solutions such as broadband. CAL continues as the main learning-in-community vehicle under CITI. CITI's service focus continues to be the non-profit sector in the local community. CITI's prototyping projects offer students additional opportunities for learning-in-community involving non-profit clients. Unlike with CAL projects, however, such opportunities are made available to students outside regular classes on account of the longer-than-a-semester duration of the average application prototyping cycle. Students interested in CITI projects undertake them as part of an independent study arrangement for credit.

Learning-in-community engages the learner actively in the content of learning[1]. The learner as *apprentice* must apply principles in practice, test their validity in that particular situation and modify as necessary, and demonstrate the suitability of the proposed solution to co-learners on the team, the instructor, and the client. The context could be simulated, as when the learner is placed in an artificial environment and asked to respond to stimuli there. Simulated contexts can be valuable tools for learning. A consulting case study, for example, may be designed to present a range of technical and social issues in a simulated organizational setting. However, actual work settings are usually richer and present the learner with a broader range of stimuli than would be possible with a case study. Importantly, the stimuli are "raw" in that the learner must process them. The learner must decide what the problem is before attempting to deal with it. Problem formulation, in other words, is a challenge

[1] Active learning has much in common with *experiential learning* – which is learning from direct experience and reflection. *Learning by doing* is another closely related approach.

that confronts the learner in actual work settings in a way that it cannot in a case study, however rich and ambiguous it is by design. Natural settings also allow client-centered effort, an important feature of learning in the professions. We believe that learning occurs in and through particular social configurations when learners work with other learners and relevant other actors in natural environments. Learning is thus *situated* in a multiple sense, with the consulting team's configuration (size, available skills, internal social climate) and its relations with the work setting contributing as much to learning as book principles. Learning arises as much from the learner's social participation in the experience as from technical skills mastery and cognitive operations. The content of learning – *what* is learned – and the social contexts in which learning occurs are intimately related.

2. LEARNING-IN-COMMUNITY: FOUR ELEMENTS

Learning for practice is an appropriate emphasis in professional education. Our program is founded on four elements: client-centered work in organizational work settings, apprenticeship, the social dimension of professional action, and project task design. The first three are enablers of learning and socialization in professional practice and may be influenced through the last. The instructor can design the learning stimulus – the project task – so as to influence the process and outcomes of learning for practice

2.1. Client-centered Work in Natural Settings

Providing a product or service to a client or clients is a hallmark of professional work (Schein & Kommers, 1972). The first challenge the professional often faces is locating the client. Who is the organizational sponsor and appropriate target of her effort and the recipient of its outputs? There is usually a related question that needs definition as well: Are there other, secondary clients? In our experience, learners tend to view the representative who functions as the liaison between the consulting team and the client as their client, at least initially. This person may well be a sponsor of the effort, but the person who decides whether or not to implement the team's recommendation may be someone else in the organization. In such cases, the primary client (i.e. the decision-maker) and the project liaison (who may be a secondary client) may have divergent views on the project's objectives. Should these differences be resolved and if, so, how should the project team resolve them? The project team must learn how to manage client expectations and client relations over the course of the project. Such functions form part of social maintenance functions (versus project task functions) (Hackman & Oldham, 1982) that an effective consultant learns never to discount. Project success depends on how well she manages task and maintenance demands.

Learners working collaboratively in teams also have *internal* clients. A team member is a client for a fellow member's outputs. The learner must manage task and social maintenance functions within the team, not just with the client(s) outside. Effective collaborative work depends on her ability to manage interdependence. An important aspect of this is her ability to learn from other members who may have

CHAPTER 2

AN EXTENDED MODEL OF LEARNNING

1. INTRODUCTION

The youth center was located in the city's economically derelict south side. The center itself was precariously funded, barely hanging on to its faux-modern building in a seedy-looking lot on a tree-lined side street. Its director, however, was an energetic woman with ideas on the center's potential role in the neighborhood. She wanted to develop the center as a place where children from the neighborhood could come to learn basic computer skills – word processing, designing World Wide Web pages, online information search skills. This was good for character building and for discipline, she felt. Such skills would prepare "her kids" for jobs in the real world.

She had other ideas too. The neighborhood's (many) elderly residents felt isolated. Why not connect them to the Urban-net, an advanced ICT-enabled community network being developed in our community, through the center? They could talk to other seniors in the city's residence homes and exchange email and browse the Web over the Urban-net's Internet connection. They would be a part of the city in a way they were not at present. The network could connect the city's growing elder population and help enrich their lives.

The center's education room had a handful of very old personal computers. These were not connected to a local network or the Internet. The center's administrative computing infrastructure was modest as well. The technical staff, such as it was, was one person who "wore many hats" at the center. The receptionist helped out when she could.

This is one of many stories playing out on the shadowy margins of the digital revolution. Here's another.

The faith-based social agency had been established some years before and represented a coalition of over a dozen clerics from the Christian and Islamic faiths. Lay residents were also part of it, drawn by the possibility of using religious institutions and democratic means to improve social relations in the city's poorest sections. Fairly or unfairly, the city's poor felt victimized by the police. Periodically, they would get exercised over police action against a minority resident. The coalition would rally its members and other faithful in a church or mosque, meet with the Mayor and the police chief to press petitions, meet with the press, and, if the infraction was serious enough, organize a candlelight vigil later in the day in a public space downtown.

The coalition was headed by a pastor. He had obtained a donation of used personal computers and distributed them to several members of his board. A

volunteer trained recipients on basic computer skills (this was apparently arduous: with a few exceptions, members were technophobes or slow learners). The plan was to connect all the machines to the Internet. The pastor used the telephone to get the word out to members on developments demanding the coalition's attention, but calling each member took time and effort.

Community-based organizations grapple with social issues at the grassroots but face significant barriers to ICT use. The youth center had outdated equipment they could not replace for financial reasons. The technical support available in-house was inadequate for realizing the director's dreams. The faith-based coalition had some donated equipment but depended on volunteer (and unreliable) technical support. They needed technical help to think through the problem vexing the pastor: how to mobilize the faithful without relying entirely on the telephone? The Digital Divide – the gap between individuals and households with ICTs and those without – is not as well known in its institutional form. But at the youth center and the coalition, the implications of the divide are real, urgent, in your face, and felt every day. Sadly enough, they are hardly atypical. Small entities like these have little in the way of technology and knowledge. They are often are critical components of a community's social infrastructure. If they are left out of the digital revolution, so are the populations they serve.

As it happened, the youth center and the coalition received help through our classes at the university. We were able to donate used personal computers to the youth center. Students enrolled in one of our classes then worked with the center's technical staff to connect the donated machines. The project was completed over two successive semesters, with two sets of student teams working on the problem. For the coalition, a student team proposed an Internet fax solution. All members of the coalition had a fax machine, and fax was easier to use than email. A team the following semester realized the solution, installing an Internet fax server (a computer that receives and sends fax out over the Internet) and demonstrating it live for the pastor (he was delighted). The software, obtained free over the Internet, could send out the pastor's message as an email message or as fax, depending on the recipient's preference. The team wrote a user's manual as well as part of their project.

The help we provide through our classes only highlights for us the enormity of the problem. Agency A has no computers. Agency B has a few but has no network; its director's husband had started wiring the place up in his spare time but the job was not completed. The wiring plant was undocumented, which meant no one except the husband knew which wire went where. Agency C, a community arts group, has this vision of digitally capturing and transmitting community arts programming to a community center over a network but doesn't know how. The list goes on and on. CBOs are severely challenged. The larger institutions, such as public hospitals and K-12 schools, are better off with respect to common office technologies but are under resourced when it comes to *emerging* technologies and applications. The need for technology and knowledge resources is deep, varied and significant in scope in our community institutions.

Based on our experience, we can say that learning-in-community programs can help with the knowledge problem. Such programs can offer a local, sustainable way

to assist needy institutions. They can help infuse professional education with social values. We believe the following to be important if such programs are to thrive:

- The learning experience has to be offered as part of the regular curriculum, through regularly offered, for credit courses. Organizations should be able to count on help on a continuing basis if needed. Students lose interest if the experience cannot count toward their academic program. Being included in the regular academic curriculum is an endorsement from the school: it signals the learning as valued, relevant.
- Learning-in-community programs have to be prepared to offer help in a range of subject areas. A client may need help with computer networking one semester and systems analysis and database the next. Similarly, students should have an opportunity to work in diverse subject areas through different classes as they go through the program.
- Such programs should have access to technical resources to allow hands-on learning by students and clients. Learners' ability to test hardware and design and develop software applications (we refer to the latter as prototyping) depends on access to a technology lab or resource center. The resources may range from common office ICTs (computer hardware and software and local area networking gear) to more advanced technologies.
- The learning stimulus has to be carefully thought through and continuously refined. As it stands now, the stimulus we use structures the learning experience in terms of planning and design elements and fosters student peer learning. The client is often a co-learner with the student; the instructor becomes a guide and a coach. The motivating properties of the learning stimulus for the student are as important as the social benefit produced through it for the client

2. MICRO AND MACRO-SOCIAL RELEVANCE

Computing is a social technology. A particular configuration of ICTs is the result of social and political choices, and the designed product is better equipped to satisfy some users and needs than it is to satisfy others. The political and economic interests of powerful players shape such choices. ICTs can be used to consolidate the status quo or challenge it. It can bestow power or take it away. Technology choices have profound social implications at two levels. First, ICT planners and designers have to consider solutions within the context of the work practices, culture and power in the adopter organization. We call such an awareness the micro-social level of relevance in professional education. Learning that is relevant in this sense involves understanding the context within which ICTs are embedded and within which it is used. Attempts at changing the context have to start with a good appreciation of it; technical knowledge alone is not enough. Technology choices often do have many unintended consequences for the adopting organization. Contextualized learning confronts the learner with basic questions about the nature of technical professional practice: What is a consultant's role in the client organization? Who is the client? How can I be an effective agent of change in this milieu? The following example illustrates the urgency of such questions.

CHAPTER 3

LOCATING LEARNING

1. INTRODUCTION

Active learning can occur anywhere. Providing opportunities to the learner to actively engage in the experience of comprehending, reflecting and doing – acting out the learning – can be done in a laboratory setting, in a classroom using a case study as stimulus, or out in the "field" – under actual living and working conditions. The instructor may not have a choice always in terms of the location. Some types of questions and areas of learning call for a laboratory and are best engaged there. Evaluating different ICT design options on user attitudes may be an example; evaluations of this type would be far easier to attempt in a controlled setting. A case study is very well suited to stimulate thinking and learning on the effects of automation on worker displacement in industries with varying degrees of labor organization. Here again, the criterion of feasibility would recommend the case study method versus study in the field. A case study would be able to cover more ground, by simulating conditions in a greater variety of industries more efficiently and perhaps even more effectively than would be possible by other means. Such methods have significant strengths even if the instructor could avail of field-based instructional methods. We are not arguing for the superiority of learning-in-community over these others. However, for our purposes, we have found the field – the non-profit sector in the immediate geographical community – to be invaluable as an enabler of the kind of learning we wish to foster

As we noted in the previous chapter, our approach to active learning is to locate it in the proximate community. Engaging real problems in real organizational settings can provide important benefits to the learner. We discussed the four levers of our approach: client-centered work, learning through social participation, task motivation, and the social side of professional action. We focus on the last in this chapter – in particular, we discuss the historical opportunity for greater professional involvement in the proximate community and how our teaching has responded to it. The learning-in-community opportunity we provide through our classes has helped our students appreciate, albeit in a limited sense, the social benefits that professionals can bring to some of the neediest constituents in the locality they live in. Clearly, transformation – in terms of change in the learner's values and in the broader social context of their action – is a complex process over time and no class or single course of study, however intensive or elaborate, can hope to accomplish it. Our classes simply provide one opportunity (for many of our students they have

tended to be the first) for students to get involved in what we term technological activism – civic engagement locally in a technical consulting capacity.

Underlying our approach to locating learning in the proximate community are the ideas of John Dewey. As a pragmatist, Dewey believed in the civic responsibility of education through humane action. His view of the educational enterprise is centrally relevant to the ideas discussed in the last chapter and to the objective of the present one.

> To learn in a humane way and to humane effect is not just to acquire added skill through refinement of original capacities. To learn to be human is to develop through the give-and-take of communication an effective sense of being an individual distinct member of a community; one who understands and appreciates its beliefs, desires and methods, and who contributes to a further conversion of organic powers into human resources and values (Dewey, 1927, p. 21).

2. A DIFFERENT DIMENSION OF THE DIGITAL DIVIDE

The Digital Divide – the gap between those with access to ICT and those without – has been called "one of America's leading economic and civil rights issues"(U.S. Department of Commerce Report, 1999). The divide is pervasive, and it appears to be growing. However, present characterizations of the divide are mainly concerned with individual and household access to ICT devices – computers, telephone modem and the Internet. Access to ICTs on the part of non-profit organizations and public institutions is an important but less publicized dimension of the divide. Public institutions and CBOs struggle with access issues; the problem gets worse for CBOs located in semi-urban and rural locations. As we show below, the organizational dimension of the divide – the challenges faced by organizations with respect to ICT access – gets more pronounced as the ICTs get technologically more advanced. Public institutions and CBOs can facilitate access to ICTs and their benefits quite effectively for residents in low-income communities by virtue of their public function. Their lack of access thus presents a two-fold social problem of considerable urgency. ICT access can help public institutions CBOs (particularly the latter) with operational efficiency and fund-raising; lacking access translates to fewer funding opportunities and less operational efficiency. Second, if they lack access, then so do the populations they serve, and these are usually among the neediest groups in a community. These groups lose in two ways: directly, in that they cannot benefit from ICT-enabled innovations in service delivery; and indirectly, from preventable operational inefficiency. Improving organizational access to ICTs is, we believe, a key to narrowing the Digital Divide.

The many, many consulting projects undertaken through our classes have underlined for us and for our students the extent of the need for ICT resources and technical knowledge in the non-profit sector. We cannot do much to help with the first – ICT resources (as we note in Chapter 5, we did run a program as part of CITI devoted to supplying used PCs to needy organizations, but Project CORE, as it was called, had to be discontinued). We can and have helped with the second – access to technical knowledge. Access to know-how is foundational: even to acquire the appropriate ICT resources, buyers need technical know-how. Our students have seen

too many examples of organizations getting into "solutions" pushed by some consultant and finding that they had unwittingly tied themselves into non -standard and proprietary systems. Know-how is key to ICT acquisition, planning, use. In fact, know-how is technology in its own right, as some have argued (Mackenzie and Wajcman, 1985).

Over the years, access to ICT resources has improved in our community. A local library, for example, recently received six new PCs from a major vendor; a faith-based coalition received 100 used PCs from a local utility company. However, the lack of know-how is a problem each time recipients attempt to upgrade technology or explore new uses of them.

In the over 250 projects that our students have completed since 1991, the majority of the clients (92 per cent) have been CBOs. LAN planning, design, and installation account for nearly 50 per cent of all needs addressed by our students. For most clients requesting help in these areas, the planned network was the very first in the organization. Internet access is a closely related need and accounts for 35 per cent of all projects. The fact that 85 per cent of our projects so far cover LAN and Internet connectivity shows the magnitude of the Digital Divide as it applies to non-profit organizations. As noted, over 90 per cent of our clients are CBOs. Most CBOs are active at the grassroots level in a community. The services they provide range from senior and infant daycare, support services for disabled residents, youth and minorities, and services in community arts and information access (libraries, legal services providers). A proposal to improve low-income residents' access to healthcare services recently noted the advantages with CBOs as a delivery mechanism: "CBOs are the best-equipped to design and deliver effective outreach and enrollment services...after all, it is the local CBO (that) is the most in touch with the community they serve. CBOs are uniquely positioned to deliver a service that requires a trusting relationship with the target population in their own community"(Greater Springfield Health Access Project, 2002, p. 1.10). Improving CBOs' access to ICTs can improve that of their clientele to resources accessed through ICTs.

This portrait of widespread disparities in access to ICTs and technical know-how was corroborated by the Urban-net planning effort in our community and by the planning efforts in four other communities funded under the same statewide program to develop advanced ICT community networks. The Urban-net planning effort, conducted in 1997 under the direction of the first author, comprised analyses of user requirements, constraints and resources. Two surveys were disseminated among eligible institutions -clustered into eight functional sectors (e.g., healthcare, government, K-12 schools)—and disseminated through the Urban-Net steering committee. The first survey elicited application needs – what users would like to use the network for. The second survey, the longer of the two, elicited details on the ICT and human support infrastructure and constraints at the respondent site. The surveys were distributed to 300 eligible organizations in the community; 85 completed both surveys, for a response rate of 28 per cent. The surveys were followed up with individual and focus group interviews with 45 individuals from 16 respondent agencies, using structured and unstructured questions. The surveys confirmed what we had learned from our consulting projects: LANs were not yet a common