

Institutions of Learning:

A Report From The Trenches

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Introduction

In 1995 NYNEX, the Communications Workers of America, the International Brotherhood of Electrical Workers, and a consortium of state and community colleges in New York and New England embarked upon an experimental and exploratory joint learning process which presents its stakeholders with an instructive set of institutional, theoretical, and practical challenges. The program, which is called Next Step, was created as a matter of contract between NYNEX and two major unions in order to foster development of "the workforce of the

21st century” in the face of unpredictable changes in market, technology, and organizations in the volatile telecommunications industry. Next Step is a collaboration between institutions -- and layers within those institutions -- each informed by historically distinct understandings of teaching and learning but now committed to synthesizing a new learning strategy for the future. The parties have agreed to approach Next Step as a work in progress, and as an opportunity to investigate how learning happens in the context of challenging work in a volatile industry.

The degree-granting program was designed to educate students in the theoretical underpinnings of telecommunications practice such that those underpinnings can be brought to bear upon the real-world work challenges posed by rapid social and technological change in telecommunications. Its creation brought very different assumptions about teaching and learning together, and presented all of the participants with challenges to their explicit and implicit assumptions about learning and working. Unlike the technical training with which NYNEX employees are familiar, the college program entails both technical and general education subjects -- not to mention graded examinations, grade point average requirements, and other academic practices and policies. And none of the courses offered employs the kinds of embodied, practice-oriented instruction familiar to both technicians and their supervisors. Many of the research and organizational questions entertained by Next Step stakeholders revolve around how, as the program unfolds, NYNEX and its unions and workers can best leverage the investment represented by the program to help develop the capabilities of its field workforce -- taken as a whole, and in the context of the entire NYNEX organization.

The bare bones of the Next Step program include an Associate in Applied Science in Telecommunications Technology degree program linked with new technician job categories in the two major NYNEX regions (New York and New England. Increased technological support for collaborative teaching and learning has been built into the program from the start in the form of laptop computers issued to all program students and faculty, and Lotus Notes™ support for program participants. The first New York Next Step class began in the Spring in 1995; the first New England group began classes in January of 1996. The phased launches and part-time study -- both necessary for administrative and operations reasons -- mean that the business operations effects of Next Step may take a few years to become visible within the company. This long cycle contrasts sharply with the more visible and immediate effects of traditional technical training.

The College Program

The core of Next Step is a company-supported Associate of Arts program for which students are released, with pay, for one day each week of the academic year. The course is expected to require four years to complete. Some students in the program have worked as telephone company technicians for as long as thirty years; others transfer into technician positions upon entering Next Step.

Over the past two years, the colleges have encountered a new set of administrative and intellectual processes as they develop uniform curricula across six states and more than thirty traditionally autonomous colleges. The questions that arise -- what is the use of algebra to a working adult? where does the purview of physics end and the purview of electronics begin? is English instruction to be practical technical writing training or part of a broader exposure to the humanities? -- have new piquancy in a field shared with a corporate budget, students adjusting to unfamiliar intellectual, time, and working demands, and unions working to protect the employment viability of their members. During periodic “Faculty Institutes” for staff and faculty, parties to discussions of curriculum, computer use, and other issues have been passionate and committed to innovation. Like their NYNEX technician - students, Next Step faculty members are in the process of forging a new community of practice which promises to embody more diverse and sophisticated approaches to learning in the classroom setting.

Unlike traditional in-house or vendor-provided training, in which set content is delivered by professional instructors with an eye to uniform achievement of explicit objectives (and often related to competent physical

performance of technical work), college education historically is informed by a very different set of objectives and assumptions about the utility of general, theoretical teaching in which each instructor is accorded considerable leeway. Community college technical faculties are accustomed to working within content-oriented sequences, but still operate on the assumption that individual teaching style differences are not only tolerable but actually contributions to the richness and variety of each student's college experience. And laboratory work historically is designed to illustrate and support theoretical teaching, not necessarily to teach embodied skills -- although many community colleges now provide tailored programs at company sites, and offer to the public specific technical training on, for example proprietary computer programs as well. The challenges for all the parties to Next Step is to honor the colleges' role in teaching theory neither limited by nor ignorant of current technological practice while honoring the company's need to equip its workforce for technological and cultural competence in an unpredictable future.

Research and Thinking About Contextual Learning

Research and thinking about learning in the NYNEX technician's working context is central to long-term development of the Next Step approach. If college-based "theoretical" education is to contribute to NYNEX's capacity to field technicians who are competent to meet rapidly evolving customer and system demands, then how technicians embody knowledge on the job must be better-understood. The staff of the Work Systems Design Group of NYNEX Science and Technology is working with the Next Step staff, faculty, unions, managers and students to understand how technicians learn to work with new technologies. This research and attendant joint sensemaking activity is based on workplace ethnography, focused particularly on the working lives of current NYNEX technicians as they provision new telecommunications services such as frame relay and ISDN. Understanding job competence to be an attribute of the community of practice, NYNEX researchers are looking closely at how new knowledge comes to be reliably embodied in work practice. As is the case with the academic aspect of Next Step, this inquiry asks all stakeholders to look at things in new ways, and to consider eliding old dichotomies in pursuit of the "lean and nimble" workforce envisioned by process re-engineers. How does a central office switch technician who ten years ago was climbing ladders to rewire switches learn to work at a Sun SPARCStation correcting split translations? What knowledge is embodied in his individual work, in his working group, and, crucially, how does the entire NYNEX system support that learning?

Organizational Challenges

No learning can take place if the logistics involved are, in the end, impossible. The colleges are learning to deal with an enrollment process that is in effect a standard seniority-based bidding process combined with a standard college entrance screening examination. And because NYNEX students are working technicians, scheduled classes are subject to cancellation when weather conditions force NYNEX maintenance operations to go onto emergency status. Managers in NYNEX operating organization must work with reduced forces when technicians go to school, and to think about a long-term learning strategy rather than a focus on technical training. Next Step students are coping with the difference between a one-week residential fiber optics course and courses that meet every week for several hours, exclusive of study time that eats into private lives. The Next Step staff is learning to balance the interests and assumptions of students, professors, administrators, managers, union leaders -- and their own. Although the research focus is on learning within identifiable -- and delimited -- communities of practice, contextual learning properly conceived occurs and is significantly facilitated (or hindered) by the structure and practice of the entire organization.

Organizational Rewards

Each identifiable stakeholder or participant group is starting to recognize the rewards of the kind of cross-fertilization that results when institutions work to create new hybrid forms. For example, professors who have never before been able to make instructional use of computers are now looking at classrooms full of laptop computers, discussing course content with students and curriculum plans with colleagues on-line, and considering the philosophical implications of teach entirely on-line. Faculty members have taken company-run courses in

telecommunications technology, toured NYNEX technical training facilities -- pole climbing classrooms and all - and have begun to become familiar with the texture of their students' working lives.

Technology

Next Step participants' use of Lotus Notes™ is a focus of ongoing research, precisely because many of the communities of practice represented in the NYNEX field and central office organizations are spatially dispersed over the course of the working day . As noted above, every Next Step student and every Next Step instructor receives a laptop computer loaded with Microsoft Office™ and other programs, including Lotus Notes™ . Students, instructors, and many Next Step staff members can dial into local file servers from any telephone; planners envision widespread discussion, distribution of course materials, conduct of examinations, and other uses of Lotus Notes™. As students relate their working and in-class experiences, Lotus Notes™ may become a more general medium of exchange for these technicians. There are analogous systems in use among field technicians in other companies; the research questions here revolve around (1) the educational use of Lotus Notes™, and (2) the work-related use of Lotus Notes™. At the same time, all of the participants in Next Step have traditionally had access to other communications media, including hand-held field terminals, and the same questions obtain.

Conclusion

The new syntheses built into the Next Step program and research projects require that the participants work with old dichotomies in creative ways:

- academic education/technical training
- individual/group knowledge
- theoretical/embodied learning
- learning to do/doing
- societal/corporate priorities
- unions/managements
- workers/managers
- work life/private life
- explicit/implicit knowledge
- formal plans/informal solutions
- official approvals/flexible facilitation of learning
- training/learning

The organizational rewards and challenges of Next Step push the boundaries of issues ordinarily classified as "school to work transition." As such, a number of bridges are being built in the form of meeting colleagues from other institutions, experiencing many kinds of work settings, and striking conversations on-line and off. Literally "wired" together while physically and socially separated, interacting both at a distance and in proximity to one another, and operating in environments whose balance between learning and working activity differs considerably, the emerging Next Step community offers an important opportunity for investigating the social, psychological, technological and organizational issues significant to learning and work.