

## CONSTRUCTIVIST WORKPLACE LEARNING: AN IDEALIZED DESIGN PROJECT

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*“If you wish to know, learn how to act.” Heinz von Foerster.*

### ABSTRACT

In this project, systems thinking methodologies, populated by information competence principles and practices, guide organizational learning. Workers “learn by doing” as they collaboratively design new information systems that anticipate system beneficiaries’ needs. Sustainable information capture and sharing strategies, embedded in organizational culture, promote workers’ practice of lifelong learning skills.

### INTRODUCTION

Amidst dynamic and even turbulent environmental conditions, driven by rapid technological change, aggravating financial uncertainty, and escalating customer expectations, organizations are required to learn continuously. Guided by a clear understanding of “what business we’re in”, leaders must frequently reinvent processes, procedures, and products. Concurrently, workers seek sense making and personal growth through their work place activities.

In response, we explored implications of the contemporary environment for leaders (Mirjamdotter & Somerville, 2004) and concluded that the purpose of leaders is to extend workers’ interpretive understanding of, and relationship with, information. The process involves rethinking both the nature of organizational information and the purpose of workplace activities. Workers’ heightened understanding of their own relationships to information permits them to make their tacit expertise explicit, through collaborative exchanges with colleagues and other organizational stakeholders. This conversational process supports the conversion of data into information and, from there, into knowledge. These activities sustain ongoing workplace learning.

As the next phase in our applied research, we focus on desirable changes in the way organizational workers think and what they think about. We employ constructivist methods to initiate and to sustain organizational learning, i.e., “the process through which an organization (re)constructs knowledge” (Huysman & de Wit,

2003, p. 29). This paper suggests that lifelong learning can be successfully accomplished by actively involving information workers in the planning of their organizational infrastructure, and related activities. Enabled by the analytic and synthetic processes embodied in system thinking, workers are readied to plan for an ideal organizational future. In this real-world initiative, we create the “roadmap” (Bellows, 2003) necessary to direct activities toward a mutually negotiated destination, with recognizable landmarks. En route, we cultivate workers’ thinking skills in the hope of facilitating their improved abilities to extract context and implication from new situations. Better equipped, they should be able to demonstrate greater facility in improvisation amidst considerable future change.

### PROJECT CONTEXT

This paper reports results from a pilot project among some members of the Information and Instructional Services (IIS) group at the Robert E. Kennedy Library at California Polytechnic State University (Cal Poly) in San Luis Obispo, California, USA. The framework for this organizational transformation effort is “systems thinking” which contextualizes issues in terms of a multifaceted, but unified, whole and how the whole’s properties are defined by the interactions of its constituent parts with one another and the external environment. The project intends to produce “better thinking about thinking” (Bellows, 2003) for the ultimate purpose of creating a learning organization that is reflective of lifelong learning principles and practices.

Our work has its origin in the literature of learning organizations as advanced by Peter Senge (1994) and others. As such, it recognizes that organizations are products of the ways that people in them think and interact. For instance, planning processes are usually strategy oriented and depend on input solicited using both top-down and bottom-up data generation techniques. However, without an articulated process for analyzing the seemingly disparate data, organizations are only infrequently able to convert data into actionable information.

Stated differently, the all-too-frequent failure of traditional planning processes is attributable to concern with planning for the future, but not planning the future itself. Few initiatives are carried out to completion because the futures planned for were different to the unfolding realities in significant ways. Lacking relational understanding of the organizational situation, in an environment of cognitive and motivational disincentives, workers are insufficiently prepared to improvise amidst considerable change. This recognition prompted our pilot project, in which we intend to devise a means to enable workers to extract context and implication through their work experiences.

### SITUATIONAL ANALYSIS

Since Cal Poly has valued the “learn by doing” pedagogy throughout its one hundred year history, library leaders at the institution maintained this time-honored tradition in their selection of a project methodology: the systems thinking practice of Soft Systems Methodology (Checkland & Holwell, 1998). The first of four constitutive elements is the “finding out” phase in which “gaps in understanding”, from a variety of points of view, generate research question and data-collection strategies. Following this is the visual “modeling” of findings, for the purpose of clarifying the needs of the populations to be served. This leads to the third phase, “comparing”, in which the adequacy of current organizational programs and services is evaluated. In the fourth and final stage, “taking action,” participants redesign systems and services to better align with the needs of their user community.

This enterprise-level thinking process was introduced in a pilot project, utilizing interactive planning methodology. During the initial situational-analysis phase, leaders guided the application of systems thinking to the

consideration of qualitative and quantitative research data. The traditional measures of circulation statistics, “reference desk counts”, interlibrary loan numbers, and collection volumes were enriched by qualitative data. Usability studies produced evidence of faculty and student difficulties in using high-quality subscription databases. Focus-group transcript analysis revealed students’ opinions of the library within the larger, “Google-ized,” digital-information environment. Phenomenographic interviews probed deeply into students’ internal conceptions of information and information usage in their personal lives and their work lives.

More research was conducted by class members of an upper division human-computer interaction (HCI) class at Cal Poly. Student teams employed focus groups, paper-and-pencil surveys, and usability studies to compare library workers’ perceptions of their roles, as well as their systems and services, with those of the campus user populations. In addition to making recommendations for more user-centered programming, students produced conceptual prototypes for redesigned commercial search engines and created user-relevant Web pages for information seekers working virtually.

Systems thinking then guided “sense making” activities which crossed traditional work-group boundaries. Among the groups most impacted by the library-wide findings were the paraprofessionals who staff a public information desk. This paper tells the story of these individuals’ planning and early implementation experiences, in response to data analysis, as they practiced thinking systemically.

An appropriate “feeling tone” for this journey was set by the group leader who conducted personal interviews with each team member, using appreciative inquiry techniques to probe individuals’ unique talents and workplace ambitions. Typical questions included, “What is your greatest contribution to the organization?” and “Tell me a story about your proudest moment in this organization.” The intention of the latter was to set a reassuring, celebratory feeling tone which facilitated “positive possibility” thinking. Rather than focus on the more traditional questions, such as “What are the problems?”, she asked group members: “What are the potentials?”

Within a refreshed culture of appreciation and driven by research-derived insights, workers next applied their developing skills to identifying their purposes within the larger organization. This inquiry produced transformative notions of the group's vision and mission which underscore the importance of both possessing and expressing information competence (IC). Group members, for instance, are understood to be master learners who apply Cal Poly's "learn by doing" approach to the ongoing analysis of users' learning needs and, from that, create value-added information for dissemination in responsive programs and services. The group mission reflects a new understanding of the "business we are in": it states that through a process of intentional learning, staff members develop the personal heuristics to support their own information-handling work and to better coach, collaborate, and co-learn with members of the academic community.

These realizations, in turn, animate the group's working understanding of their responsibility for their own learning process. They share a commitment to actively employ systems thinking in transforming organizational culture to one devoted to explicit learning about information work through firsthand experience. This assumes an ongoing, iterative process in which individuals access and internalize new information and then purposefully leverage it in the act of making new intellectual connections through information sharing. In this way, workers are constantly re-valuing, reinterpreting, and reconstructing information competence – through the sense-making processes of question framing, information searching, resource evaluation, and idea generation. This work set the stage for interactive planning and, specifically, idealized design, which is the focus of this project report.

### INTERACTIVE PLANNING

Interactive planning, as described by theorist and educator Russell Ackoff (2001), begins with the scenario that the organization has been completely destroyed but the environment remains as it was. Then planners design an organization with which they would replace the existing organization immediately, subject to only two constraints – technological feasibility and operational viability – and one requirement – an ability to learn and adapt rapidly and effectively. Of the latter, Ackoff says,

The organization should be designed so as to be able rapidly to learn from and adapt to its own successes and failures, and those of relevant others. It should also be capable of adapting to internal and external changes that affect its performance, and of anticipating such changes and taking appropriate action before these changes occur. This requires, among other things, that the organization be susceptible to continual redesign by its internal and external stakeholders. (p. 8)

He then clarifies:

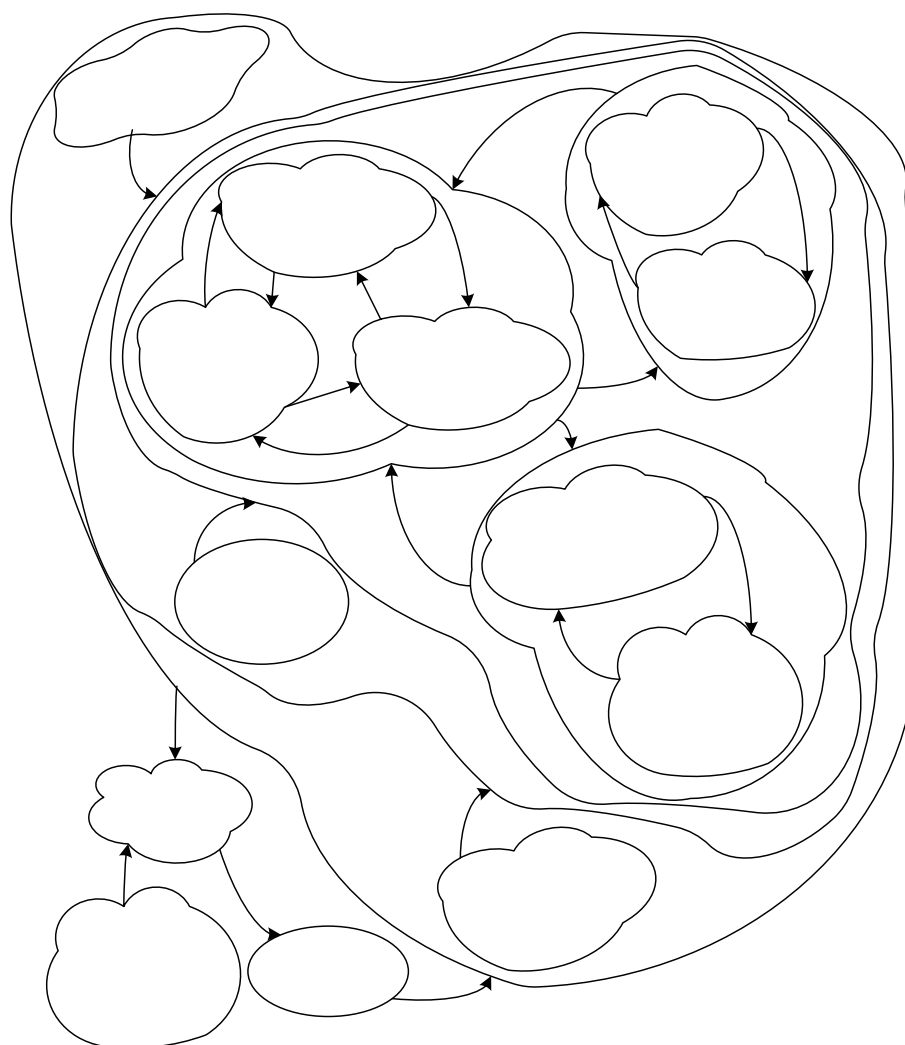
It should be noted that the product of an idealized design is not an ideal organization; because it is subject to continuous improvement, it is neither perfect nor utopian. The design produced should be that of the best ideal-seeking system of which its designers can currently conceive. They may, and probably will, be able to conceive of a better one later. (p. 8)

### IDEALIZED DESIGN

Russell Ackoff (2001) has said of the idealized design process that it,

is directed at creating the future. It is based on the belief that an organization's future depends at least as much on what it does between now and then, as on what is done to it. Therefore, this type of planning consists of the design of a desirable present and the selection or invention of ways of approximating it as closely as possible. It creates its future by continuously closing the gap between where it is at any moment of time and where it would most like to be. (p. 3)

Within this context, having reflected on findings from the initial situational-analysis phase, IIS group members identified a "perfect world scenario". Named the Research and Information – Services and Education (RISE), this organizational information system both educates and informs workers at an academic information desk. It encourages learning through ongoing conversation facilitated by computer-based tools, including an online discussion forum, an educational courseware stream, and a knowledge database. It is, in turn, part of a larger activity



*Figure 1. RISE System Activity Model.*

system that exists to promote information sharing and knowledge generation. Conceptualization and construction of the design and content is the responsibility of RISE team members, as is its maintenance and enrichment.

The RISE System Activity Model shown in Figure 1 is comprised of the activities necessary to fulfill its purpose: information sharing and knowledge capture. The work is advanced by ongoing conversations which seek to make tacit knowledge explicit, and by using systems thinking to analyze and synthesize. In the first of these activities, RISE workers initiate and sustain conversations among themselves, through which they learn to appreciate their first hand knowledge and that of others. Staff also conduct conversations with university students, in which they clarify information needs, and apply what they know. Further learning occurs

when an individual's own expertise is supplemented by what other colleagues teach them through proactive information sharing.

The second activity aims to capture data, information, and knowledge for formal representation in the information system. This analysis is next reconstructed for subsequent application, in context, by RISE information desk workers. On an ongoing basis, workers assume responsibility for envisioning an even more ideal information system – as a result of insight gained through real work requirements, as depicted in the third activity.

Finally, the model acknowledges that all these activities need to be evaluated in relation to the system purpose. Group members chose Bruce's (1997) seven phases of relational information competency theory as a guide for building

database content and also for assessing system adequacy. Bruce's work features a series of maturational levels that begin with a basic capability with technology and move the individual to an increasingly more sophisticated appreciation of information sources, information use and problem solving, and information management. The model acknowledges the importance of "understanding...the characteristics of information...[as well as] issues of intellectual property, authenticity, and provenance...[especially in] networked environments where the traditional signifiers of quality are absent" (Lougee, 2002).

## LEARNING OUTCOMES

The rapid pace of change in and around modern organizations requires heightened levels of competence and new areas of expertise from organizational workers. This project assumes that the abilities necessary to sustain ongoing organizational learning can be forged by actively involving information workers in the planning and implementation of the new organizational infrastructure.

In this paper, we reported on a pilot project to plan and construct an organizational information system that supports information need satisfaction at a public service desk. These activities provided opportunities for workers to take part in re-thinking designed to inform re-acting. Our results-to-date suggest that workers can better anticipate and respond appropriately to change through the application of systems thinking in an environment designed for organizational learning. We intentionally advance workers' learning by enhancing their relationship to information through both systemic physical (face-to-face) and virtual (computer-mediated) exchanges. Group learning was further enhanced by the addition of other collegial experts' tacit information, made explicit and supplied "upon demand" to the RISE workers. Throughout, organizational learning was captured in the computer-based RISE information system to facilitate subsequent recall on an as-needed basis. Continuous improvement occurs as workers continue to reflect upon, talk about, and reconsider improved pictures of idealized design.

## CONCLUDING THOUGHTS

We now stand poised to introduce systems thinking throughout the organization. In doing so, we envision a sustained, nourishing, workplace environment rich in relational information opportunities, in which information workers' commitment to shared images of the future promotes ongoing dialogue. We anticipate that cross-functional teams will dynamically mobilize their energies and actions to achieve common goals and draw forth an intelligence and ability greater than the sum of individual members' talents. As participants become able to better leverage their interdependency, we anticipate that they will, through intelligent, conscious choice, advance in their abilities to deal effectively with the forces that shape the consequences of their actions.

Our attention has now turned to better understanding the many challenges of building and sustaining the behavioral, cultural, and organizational dimensions of a perpetual learning organization. In so doing, we employ a social constructivist approach to knowledge, grounded in systems thinking, which understands organizational learning as an institutionalizing process through which individual knowledge becomes organizational knowledge. Institutionalization is the process whereby practice becomes sufficiently regular and continuous to be described as institutional. Hence, our attention is now on the process through which individual or local knowledge is transformed into collective knowledge as well as on the process through which this socially-constructed knowledge influences, and is part of, local knowledge.

## REFERENCES

- Ackoff, R. L. (2001). *A brief guide to interactive planning and idealized design*. Retrieved January 14, 2004 from, <http://www.sociate.com/texts/AckoffGuidetoIdealizedRedesign.pdf>.
- Bellows, W. J. (2003). *From profound knowledge to inthinking and enterprise thinking*. Lecture at the W. Edwards Deming Institute Meeting, October 18-19, 2003, Georgetown. Notes retrieved April 3, 2004 from, [http://in2in.org/resources/2003/bellows\\_from\\_pk\\_to\\_et\\_and\\_in\\_thinking.pdf](http://in2in.org/resources/2003/bellows_from_pk_to_et_and_in_thinking.pdf).

Bruce, C. S. (1997). *The seven faces of information literacy*. Adelaide: AUSLIB Press. A summary is available and was retrieved October 1, 2003 from, <http://sky.fit.qut.edu.au/~bruce/inflit/faces/faces1.htm>.

Checkland, P., & Holwell, S. (1998). *Information, systems, and information systems – making sense of the field*. Hoboken, NJ: Wiley & Sons.

Huysman, M., & de Wit, D. (2003) A critical evaluation of knowledge management practices. In M. S. Ackerman, V. Pipek, & V. Wulf (Eds.), *Sharing knowledge: Beyond knowledge management* (pp. 27-55). Cambridge, MA: The MIT Press.

Joint, N. (2003). Staff development and training in the digital library environment. *Library Review* 52(9), 417-421.

Lougee, W. P. (2002, August). Library roles in a digital age. In, *Diffuse libraries: Emergent roles for the research library in the digital age*. [Electronic version]. Washington, DC: Council on Library and Information Resources.

Retrieved November 10, 2002 from, <http://www.clir.org/pubs/reports/pub108/contents.html>

Mirijamdotter, A., & Somerville, M. (2003). Toward creative systemic thinking processes: An information competency based transformation model for organizational leadership. *Information Technology, Transnational Democracy and Gender – Reloaded (ITDG)*, Luleå, Sweden.

Mirijamdotter, A., & Somerville, M. (2004, May 19-21). *Systems thinking in the workplace: implications for organizational leadership*. Paper presented at the International Conference on Systems Thinking in Management, University of Pennsylvania, Philadelphia USA.

Senge, P. M. (1994). *The Fifth Discipline*. New York: Currency.

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## EXPERIENCES OF NEW PROFESSIONALS PROMOTING INFORMATION LITERACY IN A CORPORATE ENVIRONMENT

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### ABSTRACT

In this paper, the authors argue that most new library graduates are not being equipped with the knowledge and skills they need to effectively implement an information-literacy program in the workplace. They share their experiences of promoting information literacy in a non-educational environment, and offer some suggestions on effective workplace learning for new librarians.

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### PREPARATION FOR WORK

Professional library degrees in Australia are accredited by ALIA (Australian Library and Information Association) and teach a core set of skills for librarianship. We, the authors (Pamela and Carmel) found that when comparing our university education our qualifications and senses of preparedness for training roles were vastly different.

Carmel graduated in 1997 and embarked on her library career with an understanding of, and commitment to, adult learning theory, and saw information literacy as central to what librarianship was about. This can be attributed to Carmel's full-time job of teaching research skills in an academic law library during her studies. Her exposure to adult education, problem-based learning, and information literacy on the job led her to focus on these areas

in her studies. Having a mentor in Christine Bruce also encouraged Carmel's passion for information literacy.

In contrast, Pamela graduated unaware that teaching could be part of a corporate librarian's role. Although familiar with the concept of information literacy, her degree had ill-equipped her with the skills to articulate and teach lifelong learning skills to others. But as her training opportunities at the law firm, Blake Dawson Waldron (BDW) expanded, Pamela became convinced of the importance of teaching in librarianship. Pamela graduated with the belief that librarianship is a service profession. Our motivation comes from a genuine desire to help. Information-literacy training was an opportunity to express this.

We both consider that a thorough grounding in teaching and learning theory is now a core