



Conference Paper

Informed Systems: Enabling Collaborative Evidence Based Organizational Learning

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Abstract

Objective – In response to unrelenting disruptions in academic publishing and higher education ecosystems, the Informed Systems approach supports evidence based professional activities to make decisions and take actions. This conceptual paper presents two core models, Informed Systems Leadership Model and Collaborative Evidence-Based Information Process Model, whereby co-workers learn to make informed decisions by identifying the decisions to be made and the information required for those decisions. This is accomplished through collaborative design and iterative evaluation of workplace systems, relationships, and practices. Over time, increasingly effective and efficient structures and processes for using information to learn further organizational renewal and advance nimble responsiveness amidst dynamically changing circumstances.

Methods – The integrated Informed Systems approach to fostering persistent workplace inquiry has its genesis in three theories that together activate and enable robust information usage and organizational learning. The information- and learning-intensive theories of Peter Checkland in

England, which advance systems design, stimulate participants' appreciation during the design process of the potential for using information to learn. Within a co-designed environment, intentional social practices continue workplace learning, described by Christine Bruce in Australia as informed learning enacted through information experiences. In addition, in Japan, Ikujiro Nonaka's theories foster information exchange processes and knowledge creation activities within and across organizational units. In combination, these theories promote the kind of learning made possible through evolving and transferable capacity to use information to learn through design and usage of collaborative communication systems with associated professional practices. Informed Systems therein draws from three antecedent theories to create an original theoretical approach.

Results – Over time and with practice, as co-workers design and enact information-focused and evidence based learning experiences, they learn the way to decision-making and action-taking. Increasingly more complex experiences of information exchange, sense making, and knowledge creation, well supported by workplace communication systems and professional practices, further dialogue and reflection and thereby enrich analysis and interpretation of complexities and interdependencies.

Conclusions - Research projects and evaluation studies conducted since 2003 demonstrate the transformative potential of the holistic Informed Systems approach to creating robust workplace learning environments. Leaders are responsible for design of workplace environments supportive of well contextualized, information-rich conversations. Co-workers revisit both the nature of organizational information and the purpose of organizational work. As colleagues better understand the complexities of the organization and its situation, they learn to diagnose problems and identify consequences, guided by Informed Systems models. Systemic activity and process models activate collaborative evidence based information processes within enabling conditions for thought leadership and workplace learning that recognize learning is social. Enabling communication systems and professional practices therefore intentionally catalyze and support collegial inquiry to co-create information experiences and organizational knowledge through evidence based practice to enliven capacity, inform decisions, produce improvements, and sustain relationships. The Informed Systems approach is thereby a contribution to professional practice and workplace renewal through evidence based decision-making and action-taking in contemporary organizations.

Contextual Introduction

The search for a robust approach for catalyzing organizational learning experiences arose in 2003 within a North American academic library experiencing unprecedented changes and persistent uncertainty. Volatile forces within the scholarly ecosystem had irrevocably altered traditional relationships among researchers, librarians, publishers, and vendors (Somerville, Schader, & Sack, 2012; Somerville & Conrad, 2013; 2014), requiring new workflows and workplace competencies. In addition, changing

pedagogical practices and new business models in higher education (e.g., Coaldrake & Stedman, 2013; Crow & Dabars, 2015) necessitated redesigning facilities, reconsidering collections, and reinventing services. These converging forces required that staff members learn to see their organizations and understand their roles in new ways because "library services in higher education will continue to be crucial to the core processes of learning, teaching, and research as long as the key library structures, processes, services, and staff roles evolve to accommodate epochal changes occurring in publishing and

communications" (Wawrzaszek & Wedaman, 2008, p. 2).

More than a decade later, unrelenting disruptions in both higher education and scholarly communication ecosystems continue, fundamentally challenging traditional assumptions about academic library roles, responsibilities, services, and facilities. As a consequence, academic librarians around the globe are asking:

- How could the library organization better reflect the vision of the institution of which it is a part?
- How could the library and its collections, services, and spaces best serve the institution?
- How do library outcomes add value to the academic experiences of students and faculty?
- How might the library function more interdependently with other campus learning and teaching activities?
- What programs not in the library at present should be in the facility in the future? (Lippincott, 2014; Hemmasi, Lefebvre, Lippincott, Murray-Rust, & Somerville, 2015).

Such enterprise level questions hold considerable promise for catalyzing constituent engagement, creating shared vision, and building stakeholder partnerships. Their profound importance in forging vital new directions underscores the inadequacy of reliance on mere 'busyness' statistics, such as gate counts and PDF downloads, for evidence. Rather, "systemic changes require systemic responses because a case-by-case or incident-by-incident response was inadequate, given the magnitude of transformation underway" (Somerville, 2015, p. 45). In response, Informed Systems – which integrates complementary information- and learning-focused theories – addresses a research-in-practice problem – i.e., the lack of an integrated model to inform

workplace learning in contemporary information and knowledge organizations. The Informed Systems approach supports evidence based professional activities to make decisions and take actions. It enables co-workers to make informed decisions by identifying the decisions to be made and the information required for those decisions. This is accomplished through collaborative design and iterative evaluation of workplace systems, relationships, and practices. Over time and with experience, increasingly effective and efficient structures and processes for using information to learn advance organizational renewal and nimble responsiveness amidst dynamically changing circumstances.

Informed Systems principles and practices exercise and enable participatory design, action learning, and perpetual inquiry through "using information to learn" (Bruce, 2008) in ever expanding professional situations. A persistent focus on cultivating rich information experiences through information-centered and action-oriented dialogue and reflection serves to advance information exchange and knowledge creation, through which transferable learning occurs and organizational capacity builds (Somerville, Mirijamdotter, Bruce, & Farner, 2014). This conceptual paper presents systemic activity and process models that activate collaborative evidence based information processes within enabling conditions for thought leadership and workplace learning.

Antecedent Thought

This integrated approach to fostering persistent workplace inquiry has its genesis in three theories that together activate and enable robust information usage and organizational learning. The information- and learning-intensive theories of Peter Checkland in England, which advance systems design, stimulate participants' appreciation during the design process of the potential for using information to learn (Checkland & Holwell, 1998). Within a co-designed environment, intentional social

practices continue workplace learning, described by Christine Bruce in Australia as informed learning (Bruce, 2008) enacted through information experiences (Bruce, Davis, Hughes, Partridge, & Stoodley, 2014). In combination, these theorists promote the kind of learning made possible through evolving and transferable capacity to use information to learn through design and usage of collaborative communication systems with associated professional practices.

In addition, in Japan, Ikujiro Nonaka's theories foster information exchange processes and knowledge creation activities within and across organizational units. An organization is thereby considered a knowledge ecosystem consisting of a complex set of interactions between people, process, technology, and content. Knowledge emerges through exchange of resources, ideas, and experiences through which individual knowledge becomes corporate knowledge (Nonaka, 1994). This "knowledge-related work requires thinking – not only monitoring, browsing, searching, selecting, finding, recognizing, sifting, sorting and manipulating but also being creative, always questioning, interpreting, understanding situations...with particular focus on how to put questions, draw inferences, give explanations and conclusions, prioritize" (Materska, 2013, p. 231) within increasingly complex and ever-changing environments.

Stated differently, Informed Systems learning outcomes emerge through integration of multi-disciplinary theory from around the world. According to Checkland's Soft Systems Methodology (SSM), learning emerges through collaborative design of organizational systems and professional practices (Checkland & Scholes, 1990; Checkland & Poulter, 2010). In a complementary fashion, Bruce recognizes that collective understanding advances through intentional use of information to learn in the workplace (i.e., Bruce, 1997; 1998; 1999; 2008; 2015), while Nonaka emphasizes the possibilities for social knowledge creation within workplace

environments (Nonaka, 1994; Nonaka & Takeuchi, 1995; Von Krogh, Ichijo, & Nonaka, 2000; Nonaka, Konno, & Toyama, 2000; Nonaka & Toyama, 2007). In a highly synergistic fashion, these antecedent ideas have, in combination, informed the evolution of models for enabling and enacting collaborative evidence based decision-making, both creating requisite conditions and guiding learning processes. At its essence, Informed Systems recognizes that when information is managed effectively, it facilitates collaboration among co-workers that furthers decision-making and advances organizational learning based on that information (Chatzipanagiotou, 2015).

Since 2003, Informed Systems evolved to foster information exchange, reflective dialogue, knowledge creation, and conceptual change. Results from evaluative studies (e.g., Somerville, Schader, & Huston, 2005; Somerville, Rogers, Mirijamdotter, & Partridge, 2007; Somerville, 2009; Mirijamdotter & Somerville, 2009; Somerville, 2015) reveal that, over time and with practice, this collaborative learning approach progresses co-workers' capacity for creating systems and producing knowledge, activated by participatory design, amplified by systems thinking, and exercised by informed learning. In "working together" (Somerville, 2009) to generate knowledge, colleagues contribute complementary knowledge skills, work responsibilities, and social statuses which advance social, relational, and interactive aspects of work life (Townsend, 2014). Capacity builds through using information to learn in ever expanding professional contexts that exercise evidence based decision-making and action-taking.

Approach Fundamentals

Research-in-practice project results from 2003 to 2006 at California Polytechnic State University in San Luis Obispo (e.g., Mirijamdotter & Somerville, 2009; Somerville, 2009) and at the University of Colorado in Denver from 2008 through 2015 (e.g., Somerville & Howard, 2010;

Somerville & Mirijamdotter, 2014; Somerville, 2015) demonstrate the efficacy of cultivating informed learning experiences within enabling, co-designed workplace systems. After considerable dialogue and reflection among the international research team, Somerville, Mirijamdotter, and Bruce, the approach was named Informed Systems in 2012 and introduced in a multi-author book on international information experience in 2014 (Somerville & Mirijamdotter, 2014). In California, some early principles for workplace leadership emerged from pilot projects. These elements recognize the recursive nature of systems perspectives and knowledge practices for workplace leadership that aims to further organizational learning.

- Integral to creation of a robust learning organization, leaders are responsible for design of workplace environments supportive of information-rich conversations.
- Systems thinking can be used to contextualize workplace issues in terms that revisit both the nature of organizational information and the purpose of organizational work.
- It follows that as leaders apply systems thinking methodologies and tools to understand the complexities of the organization and its situation, staff members learn to diagnose problems, identify consequences, and make informed responses within a holistic context (Somerville, Schader, & Huston, 2005, pp. 222-223).

Evaluative results from this early development work demonstrate that application of these principles changes how co-workers think and what they think about.

- More specifically, individuals see the underlying context and assumptions for their decision. This new relational understanding predisposes them to adjust their assumptions and strategies

as they learn – in other words, as they change appreciative settings.

- Over time and with practice, individuals' adoption of systems thinking and thinking tools provides a collective strategy for successfully responding to new information and unique situations.
- And, finally, sustained conversations rich in relational context provide the substance of a robust organizational learning environment. This dialogue has transformative potential when it activates and extends prior learning (Somerville, Schader, & Huston, 2005, p. 223).

Building upon this foundation, University of Colorado Denver leadership activities focused on exercising and elaborating informed learning capacities as transferable outcomes of "using information to learn" (Bruce, 2008) within Informed Systems. These capabilities were catalyzed during organizational systems design and extended through professional workplace practices, and include:

- Information and communication technologies to harness technology for information and knowledge retrieval, communication, and management,
- Information sources and information experiences to use information sources (including people) for workplace learning and action-taking,
- Information and knowledge generation processes to develop personal practices for finding and using information for novel situations,
- Information curation and knowledge management to organize and manage data, information, and knowledge for future professional needs,
- Knowledge construction and worldview transformation to build new knowledge through discovery, evaluation, discernment, and application,

- Collegial sharing and knowledge extension to exercise and extend professional practices and knowledge bases which generate workplace insights and informed decisions, and
- Professional wisdom and workplace learning to contribute to collegial learning, using information to learn to better take action to improve (Bruce, Hughes, & Somerville, 2012).

In recognition of the requisite conditions for furthering these essential elements, Informed Systems models foster boundary-crossing knowledge creation and systems-enabled knowledge management in the workplace.

Knowledge processes assume that people can learn to create knowledge on the basis of their concrete experiences, through observing and reflecting on that experience, by forming abstract concepts and generalizations, and by testing the implications of these concepts in new situations. Process-based learning activities lead to new concrete experience that initiates a new cycle. It follows that reflective practitioners learn through critical (and self-critical) collaborative inquiry processes that foster individual self-evaluation, collective problem-formulation, and inclusive active inquiry (Somerville & Mirijamdotter, 2014, p. 206).

Learning the way to action-taking thereby advances when participants have increasingly more complex experiences of information exchange, sense making, and knowledge creation, well supported by workplace communication systems and professional practices, further dialogue and reflection and thereby enrich analysis and interpretation of complexities and interdependencies. It naturally follows that learning is a socio-cultural process that cultivates “resilient workers” (Lloyd, 2013) as, over time and with practice, co-workers

design and enact information-focused and evidence based learning experiences.

Learning Essentials

Within Informed Systems, the working definition for a learning organization is “a purposeful social interaction system in which collective information experiences are fostered by professional information practices to bring about change in organizational awareness and behavior and thereby further knowledge creation processes” (Somerville, 2015, p. 49). Within such a ‘whole systems’ framework, organizational leadership must establish and embed sustainable social interactions and enabling workplace systems that can successfully determine: “What information...experiences do we want to facilitate or make possible? What information and learning experiences are vital to further our...professional work?” (Bruce, 2013, p. 20).

Within this framework, co-workers gain progressive insight into nuanced dimensions of using information to learn through exploring such questions as these: “What constitutes information?...What is being learned? How is understanding/experience of the world changing? What can we do to enrich informed learning experiences?...to introduce new experiences? How would...range of experiences, and awareness of these experiences, be demonstrated?” (Bruce, 2012, n.p.).

In addition to consideration of experiential dimensions of workplace information, the Informed Systems learning approach recognizes that assumptions and conclusions, including norms and values on which collective judgements are based, is the result of previous individual, group, and organizational experiences and history. So explicit reflective practices are designed to promote individual and group awareness of tacit thinking and reasoning. Questions for making thinking visible include: “What is the observable data behind

that statement? Does everyone agree on what the data is?...How did you get from that data to these abstract assumptions? When you said '[your inference]', did you mean '[my interpretation of it]?' (Senge, 1994, p. 245). Such workplace practices encourage individuals and groups to reconsider and reframe thinking, feeling, and responding.

Improved understanding occurs because "the knowledge that individuals and organizations have of themselves provides the framework in which they choose alternatives from among a huge, often unaccountable, range of possibilities" (Leonard, 1999, n.p.). Self-knowledge is also mediated by the culture and language in which discussions take place and the extent to which it is possible to integrate various perspectives. Informed Systems models, therefore, guide participants in moving beyond surface topics to explore deeper issues through reflective inquiry and collaborative action (Somerville, 2015). Taking action to improve then produces changes in the ways of perceiving and of becoming newly aware and thereby learning.

Enactment of workplace learning requires an enabling environment for information exchange, sense making, and knowledge creation activities that advance information use and learning relationships through socio-cultural processes and practices co-designed by co-workers. Collective capacity for discussion and analysis of complexities and interdependencies grows through intentional construction and reconstruction of the learner during interactive relationships and sustainable networks comprised of information, technology, and people. Such "construction of learning, of learners and of the environments in which they operate" (Hager, 2004, p. 12) evolve to adopt and adapt, create and recreate, contextualize and re-contextualize through wider and wider circles of consultation, cooperation, and collaboration.

Viewed through an information experience lens, colleagues collectively expand the information

horizons of their work environments through wider and wider circles of consultation, cooperation, and collaboration. While engaging with new information types and communication processes, they establish productive information-sharing relationships which extend beyond team boundaries through critical and creative information use and through generation and sharing of new knowledge necessary to taking purposeful action (Somerville & Mirjamdotter, 2014). Informed Systems thereby offers models for (re)learning processes, conducted within enabling systems infrastructure for collaborative evidence based information practice.

Collaborative Evidence-based Information Process Model

An inquiry-intensive and evidence based Informed Systems workplace requires significant attention to both process and content. While exploration of peer-reviewed publications oftentimes initiates evidence based practices, authoritative evidence may include a wide range of information sources and professional knowledge. Quantitative and qualitative research results, local statistics, open access data, and even accumulated knowledge, opinion, relationships, and instinct may prove useful, depending on local circumstances (Koufogiannakis, 2011; 2012; 2013a; 2013b; 2015).

Understanding that librarians use evidence to convince, allows an entire organisation to proceed with this as a known entity, and should enable that organisation to look more completely at what the pertinent forms of evidence contribute to the decision, to weigh those pieces of evidence, and to make a decision that is more transparent. The use of evidence for convincing illustrates the complexity of decision-making, particularly within academic libraries, and points to the fact that evidence sources do not stand alone, and are not enough in and of

themselves. The EBLIP process must account for the human interactions, and organisational complexity within which decisions are being made (Koufogiannakis, 2013a, p. 172).

A holistic workplace approach therefore requires consideration of elements of organizational design and professional practice essential to collaborative decision-making. This includes fostering a culture of well elaborated organizational processes and knowledge practices (Somerville, Rogers, Mirijamdotter, & Partridge, 2007; Pan & Howard, 2009; 2010; Mirjamdotter, 2010; Somerville & Howard, 2010; Somerville & Farner, 2012; Somerville, 2013; Howard & Somerville, 2014). Evidence based learning processes are also necessarily collegial, conducted within a positive work environment, and enabled by appropriate processes for open discussions for decision-making and action-taking. "Knowledge and understanding are thereby learned through active...practice by an individual, within the larger body of practice" (Schön, 1983, p. 50), which situates and contextualizes intersubjectively created meaning and changes over time through renegotiation.

The Collaborative Evidence-Based Information Process Model (Figure 1) delineates these collaborative processes that advance using information to learn through interactive relationships between the organizational context (elements 1-5), in which individuals and groups create meanings and intentions, which leads to purposeful action (element 6) being taken, with the support of information transfer and knowledge generation systems (element 7).

The model recognizes that individuals select information from the workplace (and extended) environment based upon a worldview consisting of existing interests, experience, and values. In other words, unless purposeful intervention occurs, individual perception is highly selective and tends to reinforce existing assumptions. So the first step in designing a sense making process for organizational

(re)learning is to initiate conscious reconsideration. Raising awareness to stimulate re-thinking requires catalyzing the innate mental processes that are performed tacitly, without individuals making conscious decisions about what is being admitted for consideration, and can eventually widen consideration about what assumptions to make or which data to select. Elements 1 and 2 and the interaction between them involve selectively perceiving reality and making judgments about it through filtering processes that influence what individuals choose to mind and, consequently, use as perception and interpretation filters. These dimensions of information experience are negotiated through sense making processes, including dialogue and reflections (element 3). Learning thereby emerges within the context of workplace vision and shared assumptions, including cultural beliefs and associated interpretations and workplace practices, as depicted in element 4. Organized information systems (IS) and appropriate information technology (IT), together with information and information technology skills (element 7), further inform, enrich, and enable learning. In this way, tacit assumptions represented in a worldview are explicitly reconsidered in the light of emergent new norms and values. Judgments evolve and are explicated among employees through dialogue, which then become the bases for forming intentions (element 5) towards particular actions to be carried out (element 6). As is characteristic in systems models, the seven elements are seen as interacting, i.e., element 7 informs and enriches element 4, and it enables and supports element 5, even as it helps to create the perceived world (element 2), including vision, values, and practices (Somerville, Mirijamdotter, Bruce, & Farner, 2014).

Within this systemic context, thought leaders and knowledge activists offer filters to select what is important from available information models to expand individuals' ability to understand and use information to learn (Nonaka, 1994). These interventions are

challenging because tacit knowledge “consists of mental models, beliefs, and perspectives so ingrained that we take them for granted and therefore cannot easily articulate them” (Nonaka, 2007, p. 165). However, as “new explicit knowledge is shared throughout an organization, other employees begin to internalize it – that is, they use it to broaden,

extend, and reframe their own tacit knowledge” (Nonaka, 2007, p. 166) through “purposeful discourse focused on exploring, constructing meaning and validating understanding” (Garrison, 2014, p. 147).

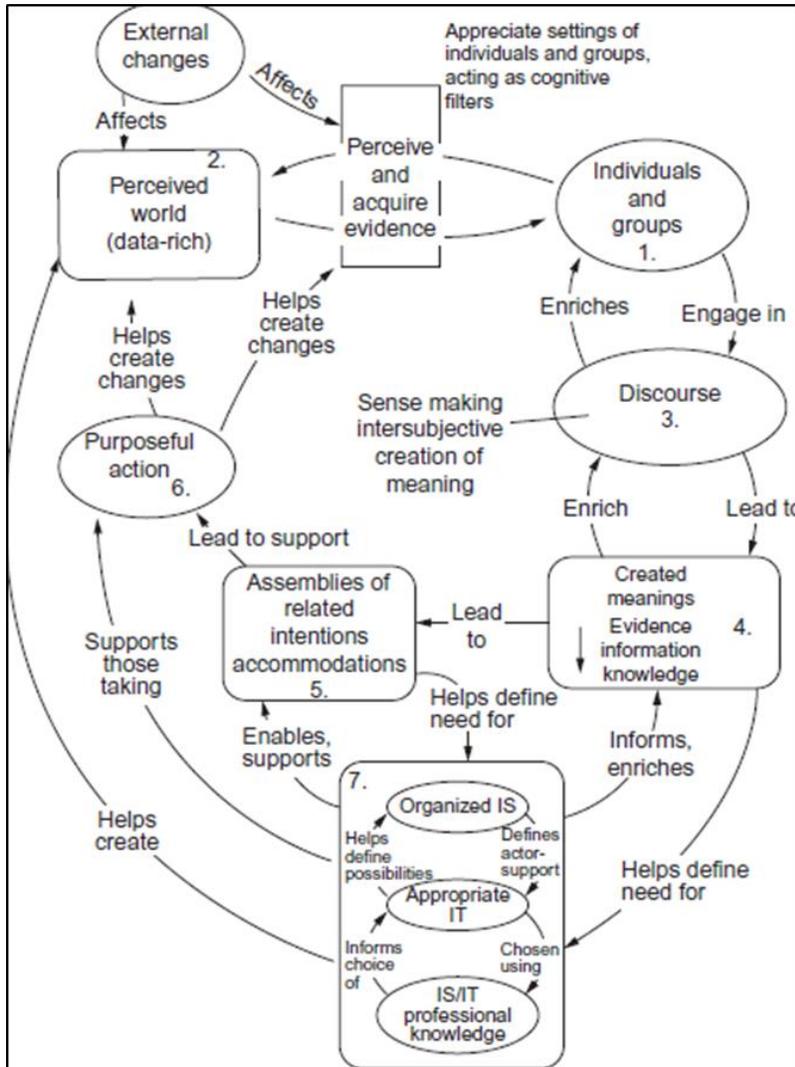


Figure 1
Collaborative Evidence-Based Information Process Model

Note. Adapted from: Checkland, P., & Holwell, S. (1998). *Information, systems, and information systems: Making sense of the field*, p. 106. Chichester, England: John Wiley & Sons. Reprinted with permission from John Wiley & Sons.

Published in: Somerville, M. M. (2015). *Informed systems: Organizational design for learning in action*, p. 52. Oxford, England: Chandos Publishing. Reprinted with permission from Chandos, an imprint of Elsevier.

Informed Systems Leadership Model

The Informed Systems Leadership Model identifies essential elements for such organizational leadership, supported by collaborative learning relationships that catalyze systemic outcome and process evaluation cycles.

This systems model visually represents purposeful activities necessary to construct and sustain an environment that enables informed learning experiences through informed leadership. The model presents activities that together comprise processes for action and, ideally, for transformation through high-level leadership activities.

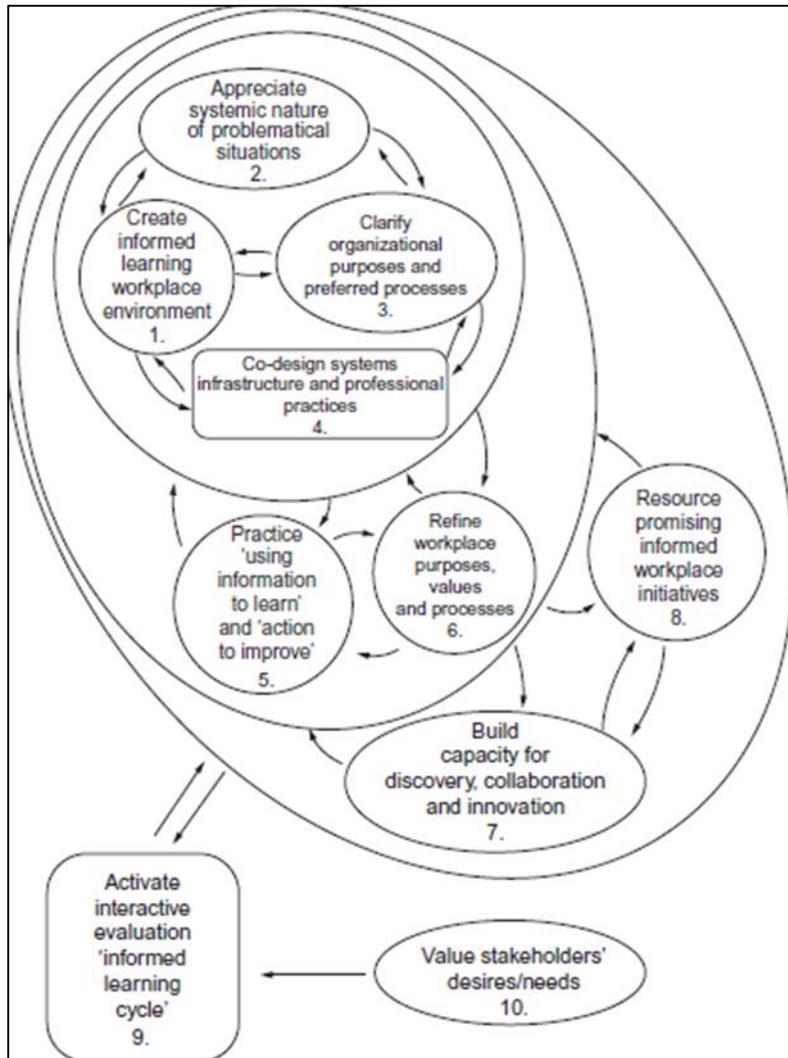


Figure 2
Informed Systems Leadership Model

Note. Originally published in M. M. Somerville. (2009). *Working together: Collaborative information practices for organizational learning*, Chicago, IL: The Association of College & Research Libraries/American Library Association. Used with permission from ACRL.

Re-published in: M. M. Somerville (2015). *Informed systems: Organizational design for learning in action*, p. 55. Oxford, England: Chandos Publishing. Used with permission from Chandos, an imprint of Elsevier.

The activities in purposeful activity models are expressed as verbs in imperative form and are linked in sequence, illustrated by arrows – which denote communication. Additionally, when there are arrows in two directions between activities, this illustrates two way communication and interaction. For example, in Figure 2, Activity 1 represents the initiating activity. However, Activities 2, 3, and 4 also contribute to Activity 1 and thus must also be carried out to complete the full cycle. Additionally, activities can be ordered in layers to connote that they form a grouping. Activities outside the layered group, but with an arrow pointing to or from a boundary line, illustrate interaction and communication with all activities inside the layered boundary. For example, Activity 5 may lead to insights that promote modifications and improvements in any of the activities in the “core grouping” of Activities 1 through 4. Finally, feedback processes are illustrated, as are related activities such as monitoring the performance of all activities so that pro-active decisions can be made about changes needed to adapt to changing internal or external conditions, rather than passively reacting to the inevitable.

In this spirit, the model illustrates essential aspects of workplace learning, enabled by design thinking. Activity 1 encourages collective exploration and, thereby, fosters robust learning. Its centrality in the model reflects the conviction that contemporary organizations cannot be managed in the traditional sense. Rather, co-workers should be encouraged to actively engage in information exchange and knowledge creation through using information to learn within enabling co-designed systems.

Activity 2 recommends appreciative inquiry and systems thinking to advance understanding of organizational parts, their interrelations, and their synergies. Emphasis on big picture and life affirming understanding crosses organizational boundaries and bridges individual silos. In the Informed Systems Leadership Model, this concept is reflected in organizational vision,

mission, values, and goals, which constitute Activity 3.

Activity 4 recognizes the critical importance of enabling the expression and extension of thinking through purposefully designed systems that connect people with ideas, oftentimes with technologies. Such workplace infrastructure facilitates using information to learn and to share, with the aspiration to generate collective knowledge reflective of improved understanding.

Activity 5 acknowledges the significance of engaging in collegial activities to improve professional practices and local situations. Therefore, Activity 6 represents the importance of ongoing reflection and dialogue to create continuous improvements in using information to learn how to take action to improve situations. Activity 7 indicates that sustained movement forward depends upon establishing strong learning relationships inside and outside the organization. Organizational leaders are responsible for coordinating and resourcing outcomes of Activities 1 through 7, as indicated in Activity 8.

In order to nourish learning experiences and support worldview maturation, Activity 9 recommends using interactive evaluation to ensure responsive adaption. In this way, Activity 9 initiates a feedback cycle, where performance can be monitored to inform modifications that anticipate changes. In addition, Activity 10 acknowledges the importance of high-level alignment of mission and vision with human and fiscal resources, negotiated within learning relationships exercised through action-oriented inquiry and inclusive decision-making (Somerville, Mirijamdotter, Bruce, & Farner, 2014).

In combination, Informed Systems leadership and collaboration models design enabling systems and informing activities that cross professional and organizational boundaries through a strong “people oriented” approach,

customizable to local circumstances. It recognizes that workplace learning originates from interactions and relationships among organizational members, which enable investigation and negotiation of diverse interests, judgments, and decisions. Reflection and dialogue processes promote learning through critical (and self-critical) inquiry experiences that foster individual self-evaluation, collective problem-formulation, and nuanced professional development (Somerville & Mirijamdotter, 2014). Informed Systems thereby promotes transformation in organizational awareness and workplace behavior through intentional design that nurtures engagement among individuals and with information.

Concluding Reflections

Contemporary organizations must develop workplace environments that enable nimble decision-making and action-taking. In response, at the macro level, Informed Systems models guide how and why organizations build knowledge bases. At the micro level, design methodologies and learning theories guide how and why co-workers use information to learn to co-create enabling systems and evidence practices. Along the way, attention moves from transaction based activities to organizational transformation outcomes enacted through intuiting, interpreting, integrating, and institutionalizing knowledge together.

In response, Informed Systems appreciatively explores the intersection of information, technology, and learning experiences in organizational knowledge creation. Thought leaders create and refine information activities that produce learning experiences and, over time and with experience, advance integration of evidence based practice into workplace culture, as detailed in the Informed Systems Leadership Model. Within this enabling framework, a companion Collaboration Evidence-Based Information Process Model guides collective decision-making and action-

taking to ensure perpetual learning and continuous improvement. As detailed in this conceptual paper, these models illustrate the efficacy of integrating the work of three theorists, Bruce, Checkland, and Nonaka, into a hybrid theory with an associated methodology for workplace transformation.

Informed Systems results since 2003 demonstrate that change, and ultimately transformation, occurs through using information to learn. This depends on learning-centered and information-focused workplace relationships fortified by professional practices that amplify evidence based collaborative processes for decision-making and action-taking. Within this organizational environment, colleagues learn to initiate inquiries and to design experiences that are information-centered, evidence-grounded, action-oriented, and learning-focused. Mental models and collective conceptions change. Co-workers reinvent roles, responsibilities, processes, and relationships, as they co-design potential futures.

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