Workplace Information Literacy: Co-designed Information Experience-Centered Systems and Practices

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Abstract. A collaborative design initiative in a North American academic library was initiated in 2016 to enhance information literacy and enrich learning conditions in the workplace. This paper describes co-workers' information intensive and learning centered design processes, which intend to further collective capacity for 'using information to learn' over a twelve-month period. Throughout, attention focused on aspects of informed learning - being aware of the kinds of information we are using, how we are using information and how different forms of information come together to inform and transform our work. Reflection and dialogue on information experience stories further aimed to inform information experience design - to allow individuals and groups to experience information and the information environment surrounding it in a range of increasingly complex ways which offers them a richer, broader and more effective information engagement experience.

Keywords: Informed learning · Informed systems · Information experience
Co-design · Information experience design

1 Introduction

Within University Libraries at the University of the Pacific in Stockton, California, USA, co-workers commenced collaborative design of a workplace communication system and an information exchange initiative in August 2016. The project originated during a campus visit by Dr. Christine Bruce, who founded the concepts of informed learning and information experience. She facilitated three sessions to guide University library participants' exploration of their usage of information to learn in the workplace. Outcomes supported co-design of enabling conditions for learning, through using information, within communication systems and with professional practices. These activities aligned well with the University's strategic plan priorities to: 1. *Foster a vibrant organizational culture by developing a system of shared values and establishing practices that cultivate mutual respect and trust and engaging in effective communication* and 2. *Refine or develop systems and learning opportunities to enhance*

S. Kurbanoğlu et al. (Eds.): ECIL 2017, CCIS 810, pp. 3–10, 2018.
https://doi.org/10.1007/978-3-319-74334-9_1

faculty and staff [1]. In addition, the design activities coincided with University of the Pacific's institutional aspirations to *do more, better*.

With the aspiration to encourage other institutions to consider information experience-centered co-design of organizational systems and practices customized to their local circumstances, this paper situates a workplace information literacy initiative within the scholarly literature, followed by presentation of research methodology and findings. Project phases and concluding reflections summarize progress to date.

2 Background

A relational perspective of information literacy [2], which acknowledges information and learning as core dual components, defines information literacy as having a full repertoire of effective information use experiences. This perspective is the foundation of the more recent concepts of informed learning [3] and information experience [4]. The relational view has also been used to reveal nuanced understanding of information literacy experience in different contexts, such as community [5–7], academic [8–10] and workplace [11–13] settings. Additionally, based on the relational perspective, and to advance information literacy, frameworks such as informed learning design [8], information experience design [11], and informed systems [14, 15], have evolved.

In this organizational effectiveness initiative, informed learning, informed systems, and information experience design are combined to create the theoretical framework of the study. Informed learning, which simultaneously focuses on information use and learning, recognizes the qualitatively different ways of experiencing information and information use, including the relationships between information and its contexts of use [3]. 'Learning' here, adopting the phenomenographic position [16], is a change in how some aspects of the world are experienced or seen. Informed systems advances holistic design thinking to co-create technology-enabled and human-centered systems for workplace communication, decision making, and planning [17], using information to 'learn in action' [17]. Information experience design (IXD) focuses systems and practice design efforts on information experience enrichment [11].

Initial 'proof of concept' evidence linking advancement of workplace information literacy and participatory systems design activities was generated in the academic library at California Polytechnic State University, San Luis Obispo, USA [13]. Soft system design methods [18] that use information to learn guided the organization's three-year exploration, from 2003 to 2006.

A second systems design implementation, conducted from 2008 to 2015 at the University of Colorado Denver, USA, coincided with Bruce's advancement of relational information literacy to informed learning. In response, this research-to-practice initiative focused on "being aware of the kinds of information we are using, how we are using information and how different forms of information come together to inform and transform our work" [19, pp. 8–9]. Soft systems design practices [20], which explicitly advance information and learning, were used to co-create workplace systems and associated practices to further co-workers' engagement with information through what came to be known as informed systems.

In the current customization of informed systems at University of the Pacific, USA, information experience design (IXD) [11] amplifies workplace learning through design activities informed by and focused upon workplace information experience. IXD offers a holistic approach for translating information literacy theory into practice, originating with co-workers' information and learning experience stories. Theoretically grounded in the relational perspective to information literacy [2], this approach ensures inclusive workplace processes that enable use of information in a range of different ways, both during the design process and as a result of the design process.

IXD focuses on a fundamental aspect of relationally viewed information literacy: information experience [4]. Customized to local circumstances, IXD begins with exploration of individuals' information experiences within the situated context. Addressing the centrality of variation in the relational view, information experience design then attends to uncovering variation in revealed experiences. Based on the identified variation, suitable interventions are collaboratively designed and collaboratively implemented to amplify collective experiences of engagement with information to its fullest extent. The enrichment of engaging with information - as well as the capacity for iterative design of learning conditions - expresses workplace information literacy within the relational perspective.

Adopting an information experience design lens in this study, the results of analyzing individuals' stories about how they use information to learn (that is, targeting the building blocks of information literacy mentioned in the IXD framework above) guided systems design and produced organizational practices (as in designing and implementing interventions mentioned in the IXD framework above) that heightened engagement with information in more varied ways, through which collective workplace information literacy capabilities evolved. To advance continuous amplification, reflection and dialogue practices are now integrated into the organizational culture to ensure continuous evaluation and iterative re-design of systems and practices. Collective commitment aims to enable richer experience of and engagement with information to advance workplace information literacy.

3 Stories of Using Information to Learn in the Workplace

Information experience design (IXD) - which places information in the foreground - guided the collective learning catalyzed by analysis of stories about using information to learn and co-design of workplace systems and associated practices. It thereby advanced informed learning, which recognizes that learning is about a shift or change in understanding a phenomenon - in this case, information use. The information stories in this action research initiative were generated over three, 3-h sessions. A facilitator, Dr. Christine Bruce from Queensland University of Technology, in collaboration with other team members, guided participants' thinking and talking about how they used information to learn. Insights, particularly about sharing, saving and using information, subsequently guided choice of technologies and development of practices that produce the conditions for using information to learn within open communication, decision-making and planning systems.

The co-design initiative began with collecting 19 participants' stories of workplace information literacy. In advance of the workshop, participants were asked to reflect on a "best experience of using information to learn at work." The stories were comprised of recollections of job-related information needs and the processes used to obtain information needed. The stories were then shared - through brief spoken summaries - and discussed within the library group. On the second day, department heads convened to identify the 'what, how, and why' aspects of the stories, which has been collected for further reflection and analysis. These questions guided analysis of the stories:

a. What is valued?
b. How does informed learning happen?
c. Where does it happen?

Initial analysis focused on revealing the wide variation in the what, how, and where elements of the information experience stories. Because of their 'thought leadership' responsibilities within the organization, the unit heads both performed analysis on the second day and reported results to the library group on the third day. Concluding discussion explored the next step, coding for analysis of information experience stories. Results would deepen the understanding required to achieve IXD aspirations for informed systems.

4 Informed Learning Story Coding Categories

Stories were next coded according to informed learning categories, which simultaneously focus on information use and learning. More specifically, Academic Support Librarian Robin Imhof led analysis of the qualitatively different ways of experiencing information in the workplace. Coding explored the relationship between information and its contexts of use, including what information is used for, as represented in these categories:

1. Information and communication technologies: harnessing technology for information and knowledge retrieval, communication, and management,
2. Information sources: using information sources (including people) for workplace learning and action taking,
3. Information and knowledge generation processes: developing personal practices or heuristics for finding and using information for novel situations,
4. Information curation and knowledge management: organizing and managing data, information, and knowledge for future professional needs,
5. Knowledge construction and worldview transformation: building knowledge through discovery, evaluation, discernment, and application,
6. Collegial sharing and knowledge extension: exercising and extending professional practices and knowledge bases to workplace insights, and
7. Professional wisdom and workplace learning: contributing to collegial learning through using information to learn to take better action to improve [19].

Coding results revealed that most of the stories recounted individual learning, absent the collective learning activities needed for organizations to be nimble and responsive

amidst uncertainty. More specifically, many stories discussed informed learning categories 1–3 that emphasize aspects of information use (technology, sources, processes). Fewer stories described category 4–5 (information curation, knowledge management, knowledge creation, worldview transformation). The workplace informed learning categories of 6–7 (information sharing and workplace learning) were largely absent.

5 Designing New Information Experiences

In response, an Information Curation and Knowledge Management Team (ICKMT) was convened, with representatives from all organizational units and levels. The group's stated purpose was advancement of relational information literacy in both physical and virtual workplace environments. Based on needs identified in information experience stories, team members aimed to co-create conditions for workplace learning. Due to absence in the workplace, informed learning category 6 - collegial sharing and knowledge extension for exercising and extending professional practices and knowledge bases to workplace insights, and category 7 - professional wisdom and workplace learning for using information to learn to take better action to improve - were prioritized. The requisite capabilities necessary to 'bridge' individual and collective learning - categories 4 and 5 - were also determined to be important. So information curation and knowledge management - which provides the foundation for knowledge construction and, ultimately, worldview transformation - were of significance as well. As the co-design team moved from stories to data analysis to informed systems design, participants were guided by information experience design (IXD) perspectives, which places information experience in the foreground. In addition, they knew from organization-wide conversations about the information experience stories that co-workers valued learning from and with each other, and they recognized this as a strength upon which to build. Lastly, they recognized that technology tools and catalytic processes were required to heighten learning within the organization.

6 Informed Systems Co-design: Phase One

Because the organization is engaged in a multi-year, multi-phase facility renovation, ICKMT members decided to focus a co-design pilot on the multi-faceted theme of spaces, services, and resources re-invention. After considering several technology options, which compared and contrasted communication needs and software purposes, the design team unanimously chose the LibGuides blog software for communication, for multiple reasons. First, the Springshare products and platform were used to create research guides and web pages, so software conventions were familiar. Although the LibGuide blog had not been used before, examination revealed that it facilitated easy posting of new information, using similar familiar procedures. Then team members discovered a file size limitation, when they attempted to upload architects' high resolution renderings. So they decided to add a second environment, SharePoint, to which

LibGuide entries could point, if needed. This software had the additional advantage of support by the University's office of information technology.

Very organically, the SharePoint site soon became a repository for other organizational work. For instance, to satisfy the workplace need to curate and preserve committee activities, the SharePoint site became the platform in which to accomplish this work. Coincidently, a mobile computer monitor was built to enable visualization of meeting agendas in library gatherings. This innovation in workplace practices was subsequently furthered when, during unit heads' meetings, the computer-on-wheels (COW) was used to both display meeting agenda and to produce real-time minutes. Through such processes, co-workers learned - with time and practice - to curate, share, and understand workplace information. In addition, they learned to identify information needs and compare needs with available communication channels and possible technology solutions.

7 Informed Systems Co-design: Phase Two

Later this year, Phase Two will look at the breadth and depth of learning achieved through the co-designed systems and associated practices related to comprehensive organizational re-invention and evidenced in the LibGuide and SharePoint environments. Priority will continue to focus on informed learning category 6 - collegial sharing and knowledge extension for exercising and extending professional practices and knowledge bases to workplace insights - and category 7 - professional wisdom and workplace learning for contributing to collegial learning through using information to learn to take better action to improve. In addition, team members will more intentionally look for evidence of categories 4 and 5 - information curation, knowledge management, knowledge construction, and worldview transformation. These elements constitute the 'bridge' capabilities that both enable individuals to contribute their insights to the evolution of collective workplace learning and also enable groups to capture, organize, interpret, and apply information to generate knowledge and, ultimately, wisdom.

Guided by information experience design processes, the ICKMT members will analyze a new set of systems- and practices-enabled stories, which use information to learn. They will expand the original analysis framework - How is informed learning happening? Where is it taking place? What is valued? - and add three more questions: who, why, when. These "6 Ws" constitute the questions used for investigation within the field of journalism. Illustrative of their developing efficacy, team members will also look for these attributes of relational informed learning principles, with the aim of furthering collective workplace information experience:

- Learning is about changes in conception – that is, learning to develop new, more complex ways of conceiving of, or experiencing information.
- Learning always has content as well as process – that is, individuals should be learning about something (disciplinary content) as they engage in learning to be effective information users.

- Learning is about relations between the learner and the subject matter – that is, learning to be an effective information user involves the relations between the learning and the information.
- Improving learning is about understanding the learner's perspective – that is, helping individuals to become better information users requires understanding their ways of conceiving of effective information use [2, p. 174].

This information experience design initiative recognizes that the outcome space represents the relationships between those categories. It depicts the phenomenon as a whole within which learning happens. In other words, learning to fully realize the potential of information experiences requires developing new, more complex ways of conceiving and experiencing the multi-faceted phenomenon. It follows that this manifests as a range of contextualized experiences of varying complexity: a complexity reflecting the purpose for which the information is required, and the subjective knowledge that is developed through the locating and critiquing of the information [2]. The questions then become: "What information … experiences do we want to facilitate or make possible? What information and learning experiences are vital to further our… professional work?" [21, p. 20].

8 Informed Systems Implementation Discussion

Two earlier workplace design studies demonstrated that when professionals become aware of new ways of experiencing the use of information to learn, they can become more effective within new contexts as they learn what is required to make that possible. In other words, professionals' engagement in those knowledge development and learning processes allow them to achieve competence and effective practice. Awareness can be additionally furthered through reflective engagement guided by intentional learning-centered information practices – a process of subjective knowledge development leading to increased understanding [12].

Building upon this strong evidence about the value of explicitly linking information and learning, information experience design is combined in this study with informed systems, to originate organizational capacity building through analyzing informed learning stories. Results in phase 1 informed co-designed systems and practices, which continue to inform redesign efforts in phase 2 that transform collective attention from transactions to transformations [14].

This workplace information literacy approach, grounded in relational information literacy, informed learning, and information experience, anticipates that as understanding of technologies mature, focus shifts naturally from the technology itself and the capabilities needed to use those technologies towards the process of galvanizing information and learning experiences. As results to date at University of the Pacific illustrate, collaborative design of information and learning experiences transforms both learning experience and information experience. This is especially so because IXD has been paired with reflection and dialogue practices that promote iterative design and evaluation processes focused on information use experience. Within this frame, lively conversations quite genuinely catalyze and amplify relational workplace information literacy.

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