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A Knowledge Lens for information literacy: conceptual framework and case study

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Abstract

Purpose – The purpose of this paper is to introduce a Knowledge Lens for information literacy. This lens shifts the focus and potential outcomes of information literacy in three ways. First, it promotes self-reflection as a means of integrating information. Second, it promotes creation, emphasizing it as a social process. Third, it promotes the ability and value of working with imprecision and lack of direction.

Design/methodology/approach – The author designed a Community of Practice (CoP) with a loosely structured guidebook to operationalize the Knowledge Lens. The initial stated purpose of the CoP was to provide innovative solutions to issues of race relations in South Carolina. A group of 19 participants – representing four churches – met twice a month for one year. After one year, a core group of 6 participants were interviewed to identify elements of this new lens.

Findings – Participants indicated that they changed in many ways after the CoP, suggesting that the Knowledge Lens increases the impact of literacy work. In particular, they were able to utilize internal tension to spark innovation, found value in direct engagement with one another without the need to first codify their thinking, and increased their reliance on information encountering.

Originality/value – Information literacy has attempted to move beyond stale concepts, and the Knowledge Lens facilitates this movement. It takes information literacy beyond the mere provision of access to existing information. It recognizes barriers to information integration. And it involves individuals in co-creation to solve problems that lack an existing codified solution.

Keywords Information literacy, Innovation, Complexity, Knowledge management, Communities of practice, Race relations

Introduction

Conceptualizations of information literacy have shifted from a focus on identifying universal standards for finding information, to outlining dynamic skills, subjectivities, and creation processes that develop this information. This can be seen in literature on information literacy in the workforce, which calls for a broader socio-cultural approach that is “more complex than skills training, and allows for the differing needs and contexts of workplaces” (Weiner, 2011, p. 8). The current research furthers work in this area by conceptualizing information literacy through the lens of knowledge. This Knowledge Lens is more than a mere buzz word (Tuominen, 2007) or set of “‘cherry-picked’ ideas to form [a new] conception [of information literacy]” (Stordy, 2015, p. 458). Rather, it is the addition of extant literature in Knowledge Management (KM) and organizational learning to continue the development of a conceptualization of information literacy that works outside of the classroom.

The Knowledge Lens first reveals that several barriers exist to the meaningful integration of information into one’s existing cognitive structure. Information is not inherently powerful, and it is only through an honest and reflexive uncovering of beliefs and assumptions that individuals can allow information to impact them. Second, the Knowledge Lens reveals that the new insights gained from a meaningful integration of information are limited unless they spark action – in particular, the collaborative action of creating new knowledge that questions existing rules and information. Finally, the Knowledge Lens reveals the need to work with the imprecision of social contexts, where multiple imperfect solutions exist.

Thus, the central driving goals and questions of the current research can be summarized as follows:

- to conceptualize information literacy as the ability to question and overcome the barriers of beliefs and assumptions in order to integrate information in a meaningful way that sparks collective knowledge creation to provide solutions that – although imperfect – are good enough;
- to operationalize this Knowledge Lens for information literacy in a Community of Practice (CoP) that provides the guidelines and space for these essential components to occur; and
- to determine the outcomes of this new view of information literacy instruction through a case study of a designed CoP focused on race relations in South Carolina.

Literature review

This section will look first at paradigm shifts in information literacy in order to place the Knowledge Lens within existing momentum and changes in the conceptualization of information literacy. This includes a discussion of challenges facing the field of Library and Information Science (LIS) in moving information literacy instruction to a more prominent place in education. It is suggested that the structure and language of the Knowledge Lens helps reposition the importance of information literacy. Next, definitions of important terms are offered. These are necessary to understand the conceptualization of the Knowledge Lens, especially as it concerns transitions among information, knowledge, and knowing. After the definitions are offered, the model for the Knowledge Lens is provided. The three primary elements of this lens are then situated in relation to existing literature in the fields of KM and organizational learning, providing a solid conceptual foundation for its operationalization.

Paradigm shift in information literacy

Earlier work in information literacy was focused on finding and gathering information for easily identifiable purposes, with little attention paid to more complex and dynamic contextual issues. This could be seen in Information Literacy Competency Standards for Higher Education from the Association of College and Research Libraries (ACRL). These standards defined information literacy as a set of abilities to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (American Library Association, 1989). The UK laid out a similar approach in 1999, when the Society of College, National, and University Libraries (SCONUL) outlined seven pillars for information literacy. They included recognizing one’s information need; identifying different ways of addressing information gaps; constructing search strategies; using tools to locate and access information; evaluating information; and organizing, using, and communicating information (SCONUL, 1999).

Yet, conceptualizations of information literacy have been shifting as researchers understand more about its potential to make an impact in the lives of people. This includes a shift to a socio-cultural approach, suggesting that “the way in which information literacy manifests itself as practice and process will be influenced by the narrative of the landscape and its interpretation within context” (Lloyd, 2010, p. 29). Lloyd (2012) conceptualized a collective view of information literacy through a people-in-practice perspective that considers complex social realities and situated learning. Gullbekk (2016) argued that this social focus must move away from viewing these contexts as having “rather stable norms, conventions and socially shared understandings or assumptions” (p. 717). In addition to this focus on context, Salisbury and Karasmanis (2011) called for increased awareness of a student’s existing knowledge.

This required a move away from standards and skillsets. Elmborg (2006) argued that the focus on standards ignores the multiple contexts, participants, and stakeholders that impact acceptance of information literacy standards. For instance, standards generally assume students have already developed “middle-class literacies formed in English speaking homes with plenty of reading and writing” (Elmborg, 2006, p. 82). Bawden (2001) argued that information literacy “is a broader concept than the skills-based literacies” (p. 246). There is a movement toward “less mechanical and more rich and more human-centered understandings [of information literacy]” (Elmborg, 2006, p. 78).

In the place of standards is a view of information literacy as a process of learning, as individuals reflect on their learning about and with information, and they “transfer their learning to new contexts” (Bruce and Hughes, 2010, p. A3). Kurbanoglu (2003) called information literacy one of the “keystones of lifelong learning” (p. 635). The increasingly complex and changing nature of organizations has renewed focus on the ability of individuals to continually learn: “Employers consider information literacy to be important to the workforce because they need a workforce that has the willingness and the ability to continually learn new skills” (Weiner, 2011, p. 8).

This also includes a shift to the creation activities of those who are information literate, highlighted in Kutner and Armstrong’s (2012) recognition that students “are increasingly becoming producers of information in addition to information consumers” (p. 30). Similarly, Forster (2015) advocated altering the definition of information literacy “to make explicit that information literacy is always involved in the development of specific, contextual knowledge” (p. 71).

These shifts can be noted in professional associations. In 2011, SCONUL updated its pillars following a survey of the uses of the original model. This update “now pays more heed to learning through personal experiences and reflecting on those experiences” (SCONUL, 2015). It also developed a series of lenses for different contexts in which information literacy can be adapted. And in 2016, ACRL introduced its new Framework for Information Literacy for Higher Education, suggesting that “information literacy as an educational reform movement will realize its potential only through a richer, more complex set of core ideas” (ACRL, 2016, p. 2). It introduced the less tangible issues of creation, ethics, engagement, and learning.

The current research situates information literacy specifically within the KM literature, drawing important connections between the fields of librarianship and KM. This follows Breivik (2005), who drew attention to the “importance of information literacy skills within a knowledge management organization” (p. 23). It also follows Bruce (1999), who noted the importance of information literacy in “the character of ‘learning organisations’” (p. 34). It continues the move toward reflection in information literacy, yet adds a specific awareness of barriers to information integration. It continues the move toward a creation-based view of information literacy, situating this firmly as a social process. It also continues the move toward an increased awareness of context, yet specifically defines this context – and the information within it – as imprecise: “In school, teachers assign projects, papers, or presentations during courses that must be completed within a specified time period. In the workplace, tasks and problems tend to be complex, messy, and open-ended” (Weiner, 2011).

Information literacy challenges

As the Knowledge Lens for information literacy continues – and adds to – these movements, it also helps to reassert the importance of information literacy. Many outside of LIS continue to define information literacy as the mere finding of static texts, in spite of the preceding outline of research suggesting that it is more. This may be because information literacy “has been mainly used in the context of library practice” (Limberg *et al.*, 2012, p. 96).

And library practice is very narrowly defined in the minds of many outside of LIS, with LIS professionals rarely given the opportunity to articulate this expanded role. Cooney (2005) found that business information literacy instruction in higher education came, 92 percent of the time, through “on-demand instruction presentations” (p. 11). Conley and Gil (2011) argued that this type of quick literacy instruction “just barely allows [the librarian] to instruct students on how to locate and retrieve information” (p. 223). Information literacy instructors do not have the time to get into deeper contextual issues. The current research suggests that adding to the conceptual depth of the term and showing its impact – through the Knowledge Lens – can help LIS reaffirm the proper place of information literacy instruction.

Definitions

In any conceptualization, definitions are important. It is especially important in a study of information literacy, as Bawden (2001) argued that a difficulty in understanding information literacy is that “writers tend to eschew definition in the interests of giving practical advice” (p. 219). A clear understanding of the definitions of information, knowledge, and knowing is necessary to understand two essential components of the Knowledge Lens: the move from information to knowledge that is part of overcoming barriers; and the move from knowledge to knowing that is part of the action of knowledge creation.

These definitions are intentionally narrow, and are not offered to suggest the need for a universal agreement. Zins (2007) outlined 130 definitions of data, information, and knowledge from just 45 scholars. Limberg *et al.* (2012) argued that the definition of information, in particular, is “neither simple nor unambiguous” (p. 97). These definitions are intended only as a foundation for shifting the operationalization of information literacy. Pilerot (2012) cited Waismann’s (1945) argument that “every definition [of a concept] stretches into an open horizon” (para. 10). Yet, a “thorough understanding of a concept can [...] be reached by taking into consideration the concept’s systematic connections to the context in which it is aimed to function” (Pilerot, 2012, p. 561). It is only as it pertains to the research context – and with a keen awareness of disagreements surrounding these terms – that they are defined.

Information. Individuals create information by “processing [data] directed at increasing its usefulness” (Ackoff, 1999, p. 170). And this information exists as objects, following Buckland’s (1991) information-as-thing: “Objects, such as data and documents, that are referred to as ‘information’ because they are regarded as being informative” (p. 351). These information objects may be an outcome of data processing, but also of the codification of the subjective knowing of others. The introduction of utility and meaning strip data of its objectivity, as humans decide the nature of both.

Knowledge. Knowledge is created when information is purposefully internalized and integrated into one’s cognitive structure. Davenport *et al.* (1998) defined knowledge as “information combined with experience, context, interpretation, and reflection” (p. 43). This combination does not happen innately. One need only reflect on students reading text or listening to lectures without internalizing either to recognize that simply handling information does not necessarily lead to a purposeful internalization of it. At this point we move away from things: “Knowledge is not a ‘thing’ [...] knowledge itself cannot be stored, nor [...] managed” (Stacey, 2001, p. 3). Instead, knowledge is inextricably connected to humans and cannot be defined outside of its internalization in the human mind. This was a defining factor of Drucker’s (1994) conceptualization of the knowledge society, where knowledge workers “own their knowledge” (p. 8). It was also part of McElroy’s (2000) distinction between 1st and 2nd generation KM, with the later shifting away from technology toward “thinking [that] is more inclusive of people, process, and social initiatives” (p. 4). KM has tended to ignore the distinction between information and knowledge to its detriment (Wilson, 2002).

Knowing. Knowing is doing something with knowledge: “We use the term ‘knowing’ to refer to the epistemological dimension of action itself” (Cook and Brown, 1999, p. 387). In other words, while knowledge is necessary for action, it does not itself constitute action. Following the work of John Dewey, Cook and Brown (1999) argued that “we must see knowledge as a tool at the service of knowing not as something that, once possessed, is all that is needed to enable action or practice” (p. 388). Knowing is similar to the definition of wisdom noted in what has been called the Data-Information-Knowledge-Wisdom (DIKW) pyramid: “The essence of wisdom [...] lies not in what is known but rather in the manner in which that knowledge is held and in how that knowledge is put to use” (Meacham, 1990, p. 187).

Conceptual model

These definitions were used to develop a conceptual model that serves as the foundation for the Knowledge Lens for information literacy (Figure 1). The model comes out of the researcher’s own experience both teaching and researching in the areas of information literacy and KM, and is backed extensively by existing literature. It includes the three components of the Knowledge Lens: integration, creation in relation, and imprecision. This section will describe the model and further elaborate on each component. It is important to keep in mind the initial goal of this research:

To conceptualize information literacy as the ability to question and overcome the barriers of beliefs and assumptions in order to integrate information in a meaningful way that sparks collective knowledge creation to provide solutions that – although imperfect – are good enough.

Integration is depicted in the first scene in Figure 1. Here, an individual is depicted inside a box with heavy borders. This box represents beliefs, assumptions, social norms, etc. The Knowledge Lens reveals the areas where these barriers can be questioned and broken down to allow information – here depicted as a book – to enter through. Here, it is combined with one’s existing cognitive structure in a conversion from information to knowledge.

Creation in relation is depicted in the second scene. This is a move away from individuals in isolation working with information, to individuals in groups working together with knowledge. Here they are knowing as they share knowledge, repackaging knowledge, and combine knowledge in new ways. This is the conversion from knowledge to knowing. This may involve the creation of new knowledge as they develop new insights, or new information as they codify knowledge.

Imprecision is depicted in the circle that surrounds these groups, and the outcomes of that knowing. Surrounding the groups are an infinite number of possible outcomes,

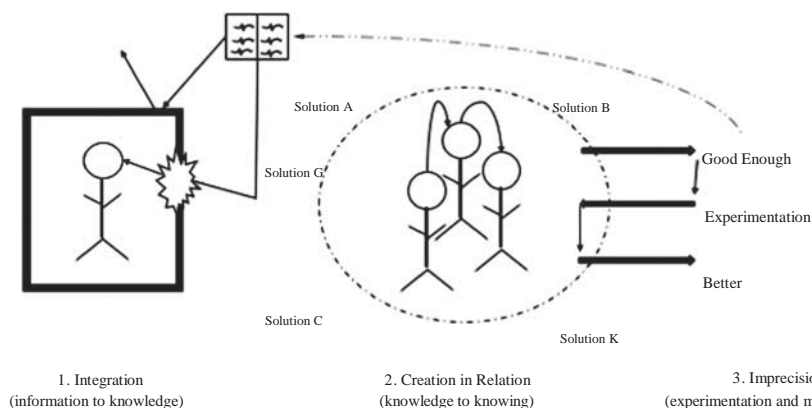


Figure 1.
Conceptual model for
the Knowledge Lens

e.g. newly created solutions. This represents the equifinality of social systems, as any of these solutions is adequate. The outcome of this process is moving forward with one of the newly created solutions that is good enough. Rather than stay in the circle until a perfect answer emerges, groups act on solutions they think will work. They are given room to experiment with these solutions, the results of which feed back into the group processes. This is new knowledge for the group to process. The interplay of collaborative creation and experimentation results in increasingly better solutions.

Nonaka and Takeuchi (1995) referred to the output of socialization as externalization. Most of the time this results in new knowledge that remains implicit, as existing knowledge is combined in the minds of individuals in unique ways. It produces “metaphors, analogies, concepts, hypotheses, or models” (Nonaka and Takeuchi, 1995, p. 64). At times, though, it may be important to document and make explicit these outcomes into a new information product that can be shared with others as new fodder for future integration. This is depicted by the dotted line from imprecision to information, e.g. the book. Wilson (2002) criticized the labeling of codified knowledge as information, yet in this case it is a logical label – as individuals produce new documents as a result of their knowing together – rather than an attempt to “avoid talking about information.” Wilson (2002) is also correct that knowledge is “only in the mind” and that “messages do not carry knowledge.” Yet, it is reasonable to suggest that there is something different between a formalized and documented information thing stored in a database, and the metaphors expressed in an informal exchange of ideas, e.g. a brainstorming session. This distinction is maintained in the Knowledge Lens.

Components of the Knowledge Lens

This section will further define each component of the Knowledge Lens. Table I outlines the definitions for each component, along with the existing momentum in information literacy research it continues or adds to.

Integration. First, because it recognizes one’s existing knowledge state, the Knowledge Lens focuses on how individuals integrate external information with internal beliefs, assumptions, experiences, social norms, etc. Several factors complicate this process. Freeburg (2017) found that an internal rather than external orientation among religious groups tends to close them off from the influence of external information. Existing beliefs often introduce a barrier to disconfirming information as one attempts to defend against it (Batson, 1975). Caplan (2001) argued that an individuals’ desire to be rational in his or her approach to information stems from the perceived costs of being wrong. Thus, integration requires a recognition and surfacing of one’s existing mental models – those internalized images and assumptions that “determine not only how we make sense of the world, but how we take action” (Senge, 1990/2006, p. 164).

Table I.
Knowledge lens
components and
hidden information
literacy practices

Knowledge lens components	Definition	Information literacy momentum it complements
Integrating intentionally	Uncovering existing mental models to encourage learning	Going further than simply helping individuals find information (Bruce, 1999)
Creation in relation	Listening to internal tension to go beyond what already exists Creating ideas by intentionally combining existing knowledge Creating non canonical knowledge and information by engaging with the knowing of others	Moving beyond individuals in isolation working with information, to a people-in-practice perspective (Lloyd, 2012); considering individuals as producers of information (Kutner and Armstrong, 2012)
Accepting imprecision	Searching for plausible solutions with contextual quality	Moving beyond universal standards (Elmborg, 2006; Bawden, 2001)

This also requires increased awareness and acceptance of existing information: “To become motivated to change, we must accept the information and connect it to something we care about” (Schein, 1996, p. 60). This is a change that requires unfreezing to “break open the shell of complacency” (Lewin, 1947, p. 35); movement toward new behaviors; and refreezing these behaviors to ensure they are not merely short-lived (Lewin, 1947).

Creation in relation. Second, the Knowledge Lens emphasizes collective knowledge creation. Individuals come to a particular problem with existing experiences and expertise that can be utilized for creative purposes. Yet, although this knowledge creation “begins in the minds of individuals” (McElroy, 2000, p. 45), the refinement of this knowledge occurs in groups as individuals “seek each other out; they co-attract one another; and they engage in a process of commiseration and constructive dialogue” (McElroy, 2000, p. 46).

The relational nature of knowledge creation comes out of the view of individuals as existing within larger human systems (von Bertalanffy, 1968; Stacey, 1996; McElroy, 2000). Here, they organize themselves as they respond as a system to changes in the environment: “[Individuals] interact with each other according to sets of rules that require them to examine and respond to each other’s behavior in order to improve their behavior and thus the behavior of the system they comprise” (Stacey, 1996, p. 10). Cook and Brown (1999) argued that “knowing is dynamic [...] and relational” (p. 387). Creativity is a social process: “We cannot view creativity purely as an attribute of an individual [...] ultimately, creativity, and thus innovation, lie in interaction within a group” (Stacey, 1996, p. 139). This is similar to what Nonaka and Takeuchi (1995) called Socialization, where engagement in shared experience is “the key to acquiring tacit knowledge” (p. 63). Through this interaction, much of the richness of experience is retained, as the middleman of codified expression or text is not required. Individuals work together with the immediate products of each other’s knowing, rather than waiting for that knowledge to be codified into information.

Through this interaction, groups are able to go beyond the information already codified in espoused practice, what Brown and Duguid (1991) labeled canonical practice (p. 41). This canonical practice is not sufficient to solve current problems, and groups interact to create new non-canonical knowledge and information that is more relevant and usable – with a higher perceived knowledge quality (PKQ) (Kyoonyoo, 2014). For instance, Orr (1987) found that Xerox technicians could not rely merely on the canonical practices made explicit in technical manuals, but relied on relationships to create solutions to machine problems not noted in the manual. Technicians created solutions and gained insight that was “socially constructed and distributed” (Brown and Duguid, 1991, p. 46). This socially constructed creation of solutions that go beyond those which already exist is one central component of information literacy revealed by the Knowledge Lens.

Imprecision. Finally, the Knowledge Lens shows that individuals work with imprecise information and knowledge. Individuals do not have access to universal truth, dealing instead with the subjectivity of processed data and the outputs of knowing. Fricke (2008) argued that the DIKW pyramid was founded in positivism and assumes that knowledge is certain as it comes out of factual and true data. Instead, “There is no such thing as certain knowledge. All knowledge is conjectural” (Fricke, 2008, p. 137). Knowledge is not Truth, but “an aspiration for the ‘truth’ ” (Nonaka, 1994, p. 15). Nonaka (1994) worried that conceptualizations of knowledge overemphasize its truthfulness, such that it becomes “absolute, static, and nonhuman” (p. 15).

In place of the search for universal Truth in the Knowledge Lens is the search for that which aids in making sense of complex realities and effective decision-making. This is Weick’s (1995) “plausible” description of events: “Accuracy is nice, but not necessary” (pp. 55-56).

Rather than waiting to act until a perfect solution is discovered, individuals engage in abductive reasoning and experimentation (Nonaka and Takeuchi, 1995) to escape this

paralysis and work ideas out through trial and failure. Here, individuals “accept lack of foresight and control” in an attempt to “make sense of our experience of life” (Stacey, 1996, p. 17). This is similar to satisficing (Simon, 1971), realizing that we work within a bounded rationality. The acceptance of imprecision equips individuals to work with unclear directions. There is value in muddling through: “It will be superior to any other decision-making method available for complex problems in many circumstances, certainly superior to a futile attempt at superhuman comprehensiveness” (Lindblom, 1959, p. 88).

Yet this is not to suggest complete relativism. There are still criteria for good information and knowledge – it matches our lived experience and “relate[s] to our lived experience of and interaction with the world” (O’Hear, 2003, p. 93). This is what Kyoon Yoo (2014) argued in his conceptualization of PKQ. We have a common ground for judging the quality of knowledge by considering:

- Its intrinsic quality. This includes its accuracy and believability.
- Its contextual quality. This includes its relevance to one’s environment and lived experience.
- Its actionable quality. This includes the ability of knowledge to lead to useful and beneficial action (Kyoon Yoo, 2014).

Case study

A year-long case study, in which participants engaged in a CoP, was used to both highlight and inform this refocused information literacy. Case studies have been used extensively in LIS research (Hider and Pymm, 2008), and provide “in-depth analysis of a case” (Creswell, 2014, p. 14). This approach provides a rich set of data to more fully capture the complexities of this refocused instruction in information literacy. Case studies must be analyzed in context, but one can still look at ways in which this case has implications for other cases: “The process [...] is transferable even when the [case] may be different in content and context” (Simons, 2009, p. 166). The research protocol, including all measurement tools, was approved by the university’s institutional review board prior to the start of the research.

Method

The case study helped accomplish the second goal of this research – to operationalize the Knowledge Lens for information literacy in a CoP that provides the guidelines and space for these essential components to occur. A CoP was considered an ideal medium for the Knowledge Lens to be applied in information literacy instruction. Brown and Duguid (1991) identified them as particularly useful for uncovering non-canonical tools. Originating from work by Etienne Wenger, CoPs are “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their understanding and knowledge of this area by interacting on an ongoing basis” (Wenger *et al.*, 2002, p. 4). Although CoPs were originally conceptualized as informal and emergent, in the current research they were intentionally designed. Wenger *et al.* (2002) supported this possibility of a designed CoP, yet cautioned that it be done with “a light hand, with an appreciation that the idea is to create liveliness, not manufacture a predetermined outcome” (p. 64). And this is in line with literature on CoPs: “The extant literature provides evidence which demonstrates that CoPs can be intentionally deployed which is contrary to the common view that CoPs need to emerge naturally” (Agrawal and Joshi, 2011, p. 9). Although the full richness of a CoP is more likely achieved as it naturally emerges, in some areas and contexts they are not emerging. Thus, intervention is necessary and justified, as long as “the original emergent CoP [is used] as an inspirational model” (Dessne and Bystrom, 2015, p. 2283). The CoP in the current research was intentionally designed to allow for informal discussions and self-governance.

CoP elements. Although there have been several divergent extensions to the original structure (Mittendorff *et al.*, 2006), they are generally composed of domain, community, and practice elements. The *domain* defines what the group is about, and comes from the shared interests represented by group members. This was loosely structured by the research as race relations, but the guidebook engaged the group in determining the precise nature of their domain as they shared their own interests and expertise. Practice includes: the activities that members engage in together; the ways in which they engage in these activities; and the products they actually produce from this engagement. Community is the social element that allows for the trust necessary for sharing and productive inquiry.

Data collection and analysis

In addition to participant observation throughout the duration of the year-long research, interviews with the core six members of the group were conducted to provide deeper insight into the Knowledge Lens components. These were 30-minute semi-structured interviews conducted face-to-face at a public location near the participant's home. They included questions about why participants joined the group and what a typical meeting was like for them. They also were asked, as an open-ended question, to describe their experiences both in and out of the group over the past year. The interview included probing questions about levels of trust, how they engaged with information about race, and their satisfaction with the outcome of the meetings.

Transcripts of these interviews were imported into Nvivo and coded for integration, creation in relation, and dealing with imprecision. Coding of the interviews followed Directed Content Analysis "to validate or extend conceptually a theoretical framework or theory" (Hsieh and Shannon, 2005, p. 1281). Yet the data were allowed to open new coding categories: "Data that cannot be coded are identified and analyzed later to determine if they represent a new category or a subcategory of an existing code" (Hsieh and Shannon, 2005, p. 1282). This directed approach does have the potential to bias both the interview answers and the findings. However, the author remained open to new categories, and maintained an extensive audit trail to trace findings back to original transcripts – increasing validity. These categories were then compared to the initial conceptualization of the Knowledge Lens to determine areas of validation and extension. The categories generally confirmed the initial conceptualization, though it enriched the initially broad description.

Operationalization

The conceptual model for the Knowledge Lens was operationalized in a loosely structured guidebook that participants used to initiate their CoP.

Integration. Integration was operationalized in the guidebook's suggestion that the group document and discuss predominant assumptions they and others had about the domain, as well as their thoughts about these assumptions. This primed them to a reflexive stance toward these existing beliefs and assumptions. This was part of their outlining of the Domain of the group. They were also asked to consider potential sources of information on issues within the domain.

Creation in relation. Creation in relation was operationalized in the guidebook's suggestion that the group share and document a profile of each member and their reasons for joining the group. This primed them to focus on the individual tensions that drove them to knowledge creation, as well as the ways in which the unique experiences and expertise could come together to create new solutions. They were also asked to document existing solutions to the issues they brought up, priming them to consider how what they do can be different – as they agreed that existing solutions were inadequate. This also included questions in the Community section of the guidebook focused on the development of their

own governance structure, decisions about how they will deal with controversial comments, and a discussion of membership expectations and the involvement of new members.

Imprecision. Imprecision was operationalized in the guidebook’s focus on questions, rather than answers. The lack of clear instructions forced participants to act in an imprecise context. Initially, members would consistently ask the researcher what to do next, to which the researcher would reply: “What do you *want* to do next?” (Italics added to highlight the intent for the groups to be as self-directed as possible within the confines of the research). This was especially apparent in the Practice section, as there was no clear practice associated with issues of race relations. They were asked to identify the sources of information available to them and to outline a practice related to this information, i.e. “What will the information you gather enable you to do better?” They were advised not to worry about being completely revolutionary in their ideas, but to do what they thought would work.

The setting and participants

South Carolina has a long history with racial tensions and struggles, yet more recent events have shed even more light on the struggle. This was no clearer than on June 17, 2015, when a white supremacist shot and killed nine black worshippers during a Wednesday night Bible study. Issues of police brutality have also been present in the state. In April 2015, a white North Charleston police officer shot Walter Scott, a black man, after Scott fled a traffic stop. A grand jury found that the officer shot “without legal justification” (Berman and Lowery, 2016). In October of 2015, a video surfaced of a school resource officer “violently removing a [Black] student from her desk” (Aarthun and Yan, 2015). Recognizing increasing racial tension, several churches in the state came together in 2015 to offer joint viewings of the movie, *Selma*, followed by discussions of race. Churches geographically collocated, representing both predominately white and black congregations, held joint Thanksgiving services. Out of these events came a desire to do something more.

The researcher spoke at two of these events, inviting congregants to join a Community of Hope – a CoP designed to encourage honest discussion, and provide innovative solutions, around the topic of race relations. A sign-up sheet was sent around at these two events, and 41 individuals indicated interest. Of these, 19 showed up to at least one meeting. The largest group meeting included 12. Participants were given freedom to come to meetings when they could, however, so a core group of six developed who attended nearly every meeting. Table II summarizes the characteristics of these members, gathered from informal questions at the beginning of the study. The group met twice a month for one year, from February 2016 to February 2017. The format of meetings varied from traditional meetings, watching movies together, attending public lectures, and going out to dinner. Over time, the group developed their own format, which included:

- deciding on a subtopic of race relations to focus on for one month;
- spending time between meetings looking for external information related to this topic, and sharing it in a Facebook group they created;

Table II.
Summary of
participant
demographic
information

Participant	Gender	Race	Approximate Age	Description of Home Church
1	Female	Black	Mid-40s	Predominately black
2	Female	White	Mid-60s	Predominately white
3	Male	White	Mid-60s	Predominately white
4	Male	Black	Mid-50s	Predominately black
5	Female	Black	Mid-20s	Predominately black
6	Female	White	Mid-50s	Predominately white

-
- writing in a diary about personal experiences and thoughts related to the topic – items not considered safe for public posting; and
 - meeting to discuss: subtleties of the external information; insights from each participant's diaries; and how all of this could inform a specific practice the group could do together.

Results

This section outlines the final goal of this research – to determine the outcomes of this new view of information literacy through a case study of a designed CoP focused on race relations in South Carolina.

Integration

Central to integration is an awareness of one's assumptions and mental models. It was clear that participants were purposefully reflecting on existing biases: "I grew up in Philly and South Carolina. I definitely came with some different stereotypes myself. I've been proven wrong." One white participant noted, "What I knew of the Black community, I thought it was all loud and boisterous, but these people showed me a different side of the community that helped me get a better picture." Participants also uncovered gaps in their existing knowledge, as one white participant noted that black participants "knew a lot more Black history than I was aware of, so it pointed out a need of my own." It not only allowed them to see themselves more clearly, but to see others more clearly: "Speaking with people from a different generation than me that aren't my race, it has really enlightened me on why certain people feel the way they do." Much of this uncovering of assumptions and gaps was attributed to an increased passion in the issue: "Well I definitely have more of a passion, more than I did initially, for solving the issue of race relations. I'm ready to do something. It just has motivated me."

Yet participants wanted this to move beyond just the group itself, bringing others into these efforts: "I would love to see things outside of just our group." Participants often noted a desire for the four churches represented in the group to be active in race relations. One participant noted "I've been bugging my pastor [...] we've gotta do something now." It was important to the participants that their home churches were part of this effort, as one participant noted with pride that "my church has done several things for our community in terms of bringing race relations together."

Participants also noted finding more information in random places about race: "I would see magazine articles and maybe something online that I might not have looked at before. And because of the group I would tend to bite into it and see what it really had to say." The relationships they developed made them more likely to notice information about the issue of race: "It's just something that was in the forefront of my mind because of the group, so you're more sensitive to issues you hear about or see." One participant noted "I watch the news now, and it's different now. I'm not just looking at 2 sides; I'm looking at every side." Another participant noted, "I think it made me search things out [about race] or pay more attention." This increased attention to random information was attributed to relationships: "[When watching the news], I have more to draw on because of our experiences in the group, and it means more to me. It's more personal because of the group."

Creation in relation

A central component of creation is the recognition of tensions that spark knowledge creation. Participants noted that their initial decision to participate in the CoP came out of a dissatisfaction with the way things were currently going. One participant noted, "I joined because of all of the strife in our country over racial relations. Something needs to be done."

This dissatisfaction was echoed by another participant who, citing her reasons for joining, noted “I really get disturbed or bothered that people don’t consider certain races, genders, or backgrounds as equal.” Thus, they wanted to do something about it: “I joined to see what else I could do, what actually I could do to improve the race relations in my town and my community.” One participant noted that recent demonstrations “brought it to the forefront more than 5 or 10 years ago.”

Yet, participants noted that they could not resolve these tensions by themselves. When asked how they would do this individually, one participant exclaimed, “Oh my gosh! I’d be stuck with my perspective, which is narrow. And I couldn’t benefit from other people’s experiences and how other people felt.” Another participant noted, “I would have been so biased. I would have had my own personal views.” The social nature of the group allowed them to refine their ideas: “The group centers you, it definitely allows more thinking time, more analysis.” This worked because “we all had a common goal.” The input of others was important: “You learn a lot from other people.” Although they would bring in information from the outside, “the majority of our sessions were based off of our personal experiences.”

Participants relied on relationships to contribute new ideas. Much of this was attributed to the need to develop trust before anything could actually be accomplished. The CoP provided the room for trust to develop, as one participant noted that working together in the group “has definitely gotten easier, because we’ve built a relationship with each other just like a relationship with your friends.” Another participant noted that, over the year, “There’s a level of trust there that’s developed [...] the different things we’ve done have shown different aspects of each individual.” Participants became “much more relaxed.”

Imprecision

The group was charged with the vague construct of race relations to gauge how participants dealt with imprecision. Participants struggled with this at first, noting that “it was like chasing a butterfly here and there.” They agreed that “it was hard to deal with such broad of a subject.” Some attributed this to culture: “We’re such a generation that wants instant action, and [this imprecision] is hard to grasp.” Yet, participants also appreciated the value in starting here: “We *had* to cover some of that to get grounded.” Although the vagueness was at times frustrating, “I grew a lot from it. I don’t know how we could have done it differently” (Italics added to highlight the emphasis the participant placed on this word).

This vagueness allowed the participants to determine for themselves the nature of what they did. For instance, one participant summarized how the group defined race relations: “I think initially we thought of it all as being separate, and now we’ve come to the understanding that we are one.” This quickly bypassed discussions of the unique histories of black and white individuals in America – something the researcher might not have done. Yet, this was much more valuable to the group. It brought in a religious component they all shared: “The fact that it is based out of the church adds more to the brother and sister relationship and reminds us again of the human race rather than the separation.” Thus, what they did became a reflection of who they were and the experiences and ideas they brought with them.

A central component of imprecision is lack of knowledge certainty. Participants were asked if they felt the need to provide a right answer. One participant noted that, initially, she did: “Initially I was a little quiet. It was a, I guess, a fear of I don’t want to say anything wrong.” However, over the year with the group, this changed, and the same participant noted: “I don’t believe that it’s just one answer.” Participants agreed that answers came out of connection with others: “I don’t believe that there’s an actual true answer without coming together and thinking things out.” Instead of a correct answer, participants aimed for a plausible answer that worked: “One person isn’t going to have *the* answer, I don’t think, but people learning from each other and discussing together might be able to come up with some things that work” (Italics added to highlight the emphasis the participant placed on this word).

Summary of outcomes

Table III summarizes several changes that were noted in participants through the course of the year. Although direct causation cannot be shown, noted relationships between the guidebook and interview results provide a solid basis to suggest that the operationalization of the Knowledge Lens in a CoP contributed to these changes. Future research is needed in a controlled study to isolate these effects.

In addition to these individual changes, the following is a list of non-canonical practices – the things the group did together and the solutions participants came up with – that went beyond what they had done before. These primarily center around the desire to move beyond simply talking about race, which was a noted aspect of previous attempts at addressing this issue:

- attended one another's churches;
- watched the movie, *13th*, together;
- attended a race exhibit at local museum together;
- went out to dinner together;
- attended a lecture from noted civil rights activist together;
- developed a Facebook library of information resources for future reference; and
- initiated a blog to share group insights with others in the community.

Discussion

The conceptualization of the Knowledge Lens, operationalized in a designed CoP, was able to guide a group of people to a questioning of assumptions and beliefs in order to integrate new information from new sources, utilize the uniqueness of group members to create something new, and act on these ideas with the freedom that comes from not needing to be perfect. It shows that information literacy instruction – when grounded in a firm conceptualization of information, knowledge, and knowing – can help individuals move

Change	Example/Evidence
Increased passion	"I definitely have more of a passion"
Increased perspective	"It has really enlightened me"
Increased acceptance of ambiguity	"I think the answer is all of our answers"
Increased ability to adapt to others	"We have adapted to different personalities"
Increased recognition of assumptions	"[The group] has allowed me to remove some ignorance as well"
Increased motivation to act	"I hold back initially, and I'm ready to do something. [The group] just has motivated me"
Increased listening	"It took a lot to break that down and then finally get what I was saying."
Increased sharing	"I'm kind of a quiet person so I hold back a lot [...] [but] I am much more relaxed because I know these people and I'm not afraid to express an opinion"
Re-centering	"The group centers you, it definitely allows more thinking time, more analysis"
Increased humility	"I came with some different stereotypes myself [...] I've been proven wrong"
Increased information encountering	"I would see magazine articles and maybe something online that I might not have looked at before"
Increased openness to new ideas	"People are going to have different ideas on how to accomplish [this], and I think we need to listen to everybody's ideas"

Table III.
Summary of change
in participants

from the tension of wanting to do something to actually doing something. This section will highlight each component of the Knowledge Lens, along with a discussion of what the results suggest. Although a clear cause and effect relationship cannot be determined from the results, several patterns were discovered that suggest important relationships.

Integration

Integration was conceptualized as the resurfacing of existing assumptions and beliefs to allow new information to enter one's existing knowledge structure. It was operationalized in the documentation and discussion in the CoP guidebook of predominant assumptions in the domain, and seen in interviews as participants discussed new information. Results show a relationship between participants' willingness to question assumptions and an increased openness to new information. And this was attributed to the development of relationships and passion. By increasing their passion and motivation for the issue in relationship with others, they not only increased their perceived cost of being irrational (Caplan, 2001), but also their ability to integrate this with their existing knowledge. This moves the operationalization of information literacy away from a "goal-driven, product driven activity" (Elmborg, 2006, p. 87) and into a passionate, value-driven activity.

There was also evidence in the group of Lewin's (1947) unfreezing, as participants noted epiphanies and monumental changes in their own ideas about race. Yet there was an urgency that such efforts not be limited to this group alone, but be mirrored by others in each participant's social groups. This suggests the importance of Lewin's (1947) refreezing, and the recognition that "new behavior must be, to some degree, congruent with the rest of the behavior and personality of the learner or it will simply set off new rounds of disconfirmation" (Schein, 1996, p. 63). This suggests that conceptualizations of information literacy are more powerful when focused on broader societal change. This will help ensure that positive changes resulting from information literacy instruction stick.

Results also suggest that individuals increased the number of information sources available for this integration. One surprising result of this study was the role of information encountering, or bumping into information (Erdelez, 1999). Participants found useful information unexpectedly more often than they had prior to participation in the group, primarily through news sources. This shows that this phenomenon can be developed, such that individuals not only have – but can expand – "channels for information perception that are more sensitive" (Erdelez, 1999, p. 26). This occurs as one engages in relationships with others, and these relationships increase information sensitivity. And given that most information is acquired "through simply being aware" (Bates, 2002) – and that individuals generally consider the encountering process as leading to excitement and increased self-assurance (Erdelez, 1999, p. 26) – it is suggested that information literacy instruction consider the role of information encountering.

Creation in relation

Creation in relation was conceptualized as the sensing of individual tensions that is taken to the group for the refinement of new knowledge. Together, system rules are created that allow it to adapt and change, introducing non-canonical ideas. It was operationalized in the documentation of member profiles as they focused on these tensions and how they could work together in purposeful ways to address them in a collaborative way. It was also operationalized in the documentation of existing solutions. Results suggest that individuals do react to tensions in a social way when given the opportunity. Participants showed palpable frustrations with the current status of race relations in their community. Yet, they had not been involved in previous efforts to improve race relations – most likely due to a lack of opportunity. Echoing the work of McElroy (2000), there is an innate desire to innovate when one experiences dissatisfaction between what is and what they know should be.

In addition, participants easily recognized the need and value of working these tensions out in groups – to refine their knowledge claims (McElroy, 2000).

Results also show that participants were able to introduce new ideas and do new things, suggesting that the documentation of existing solutions may have helped them think differently. These were not revolutionary, but this was not the goal. Participants were very excited about what some might consider small steps. This suggests that knowledge creation be viewed as more subtle and incremental. The lack of pressure to completely change things provides freedom to incrementally change things; and over time, this can lead to revolutionary changes.

Imprecision

Imprecision was conceptualized as the awareness that there are several answers to problems, and that a search for what is plausible or good enough is sufficient. Perfect answers do not exist. Engagement in abductive reasoning and experimentation is what leads to a refinement of the quality of knowledge ideas in terms of their intrinsic, contextual, and actionable quality (Kyooyoung Yoo, 2014). It was operationalized in the guidebook's focus on questions, rather than answers. The lack of clear instructions forced participants to act in an imprecise context. Results suggest that the guidebook was successful in initiating this struggle with ambiguity – a struggle that participants eventually embraced. There was a relationship between this ambiguity and participants' adding of their own experiences and voices to define topics and practices around which they could coalesce. This suggests that information literacy instruction be explicit in its description of the contextual authority of information in a world that lacks universal answers.

Results also suggest a relationship between participation in the CoP and a decreased feeling over time that one must be certain his or her ideas are correct before sharing them. Participants were able to provide thoughts not entirely formulated, and ideas that might not work. This shows an emphasis on the sharing of each other's knowing – the processing and manipulation of knowledge – rather than the sharing of information. The former retains more of its richness and meaning, escaping the need for codification. This continues the call for information literacy instruction to encourage experimentation and brainstorming in looking for answers beyond merely that which is already codified.

Conclusions

The stated goals of the current research were to conceptualize a Knowledge Lens for information literacy, operationalize it in a CoP, and determine the outcomes of this approach. The conceptualization included an awareness of barriers to integration, an ability to create in relationship with others, and an understanding of the imprecise and contextual nature of problem solving. This was operationalized in a guidebook for a designed CoP. Participants met for one year, and the results of post interviews revealed important insights about the value of both the Knowledge Lens and its operationalization in a CoP. Outcomes suggest that the Knowledge Lens for information literacy, operationalized in a CoP, can help groups uncover barriers to information, engage in collaborative knowledge creation, and work with – rather than against – imprecision.

The Knowledge Lens for information literacy continues the movement in information literacy research toward shifting contextual approaches (Elmborg, 2006; Lloyd, 2010; Gullbekk, 2016). By focusing on a mindset appropriate to a complex world beyond the classroom, it adds to a view of information literacy as lifelong learning (Kurbanoglu, 2003; Bruce and Hughes, 2010; Weiner, 2011). By focusing on knowledge creation, it continues the view that information literacy see individuals as both producers as well as consumers of information (Kutner and Armstrong, 2012; Forster, 2015). Finally, it highlights the need for the information literate to acknowledge their existing assumptions and beliefs in order for information to have any real impact on their thoughts and behaviors.

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