Information literacy for the workplace: a review of the literature and research proposal

By: Nora J. Bird

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INFORMATION LITERACY FOR THE WORKPLACE: A REVIEW OF THE LITERATURE

AND RESEARCH PROPOSAL

Nora J. Bird, Ph.D.

Associate Professor

The University of North Carolina at Greensboro

Department of Library and Information Studies

njbird@uncg.edu

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Zhenjiang, China

Abstract

Information literacy research and standards were developed primarily for use in the academic disciplines. The concept, however, was born in the world of work, especially in science, technology, and medical fields. Workplaces and workforces are changing to due to the influence of globalization, use of information and communication technologies, and the reliance on teamwork. Information literacy research has examined the workplace and this paper presents the results of that work while posing possible new research avenues that might prosper with Chinese-American cooperation.

Introduction

Information literacy is a phrase that was coined to describe the information skills that workers in the 1970's and beyond would need to have in order to prosper in what was increasingly viewed as "The Information Age." In a paper for a US National Commission on Libraries and Information Science Paul Zurkowski wrote, "People trained in the application of information resources to their work can be called information literates. They have learned techniques and skills for utilizing the wide range of information tools as well as primary sources in molding information solutions to their problems." [1] He did not specify what the information resources were or what the nature of the skills was, and so began the efforts to describe, assess, and package into discrete learning units, the skills that would help people come to be information literate.

This paper will contrast the many forms of literacy that are described in the literature, some of which are directly related to what librarians call information literacy. Then, it will describe work that has been done internationally about how the changing workplace has impacted those sources

and skills that are needed to instruct someone in how to be information literate. Finally, it will discuss the possibilities for Chinese-American cooperation on research projects that would help expand the understanding of workplace information literacy.

Workplace Literacy

In the United States and in many other countries, there has been a long-standing desire, dating back to the Industrial Age, to ensure that workers have the correct skills to perform their jobs adequately. There were standards, and programs based on them, that prescribed what a workplace literate person should be able to do. The proponents of these programs knew that workers should possess basic literacy (the ability to read and write in the language used on the job) and basic numeracy (ability to do simple mathematics). It was assumed that once these skills were possessed by a worker then he or she would be able to move from job to job without interruption.

In an introduction to a special issue of *International Journal of Educational Research,* John Stevenson lays out the problems with this view of workplace literacy.[2] For one thing, occupations are not so easily separated into those that can be done with minimal, basic skills and those that require higher level thinking. He notes four trends that affect the modern workplace:

> 1) Increasingly, college preparation is required for formerly vocational careers such as nursing, policing, and aviation.
>
> 2) There is more participation in post-secondary education.
>
> 3) The nature of work is fundamentally changing into being more and more information based and distributed.

4) Theoretical assumptions about what is general knowledge and how it is transferable to specific situations are difficult to sustain.

For the purposes of this article, it is important to emphasize point number three, where Stevenson has characterized work as changing to be more information based. It could be argued from this that there is an essential requirement for a view of information literacy as a basic workplace literacy, as important as literacy and numeracy. Point number four also calls into question standards and programs that try to guarantee and assess information literacy because of the changing context.

Stevenson goes on to say, and the other articles in the special issue illustrate, that the 21st century workplace is different than that which went before it. He opines, "In a knowledge economy core workers are expected to be active *lifelong learners* [emphasis added] who understand and embrace technological developments and respond creatively to the needs of a rapidly changing economy."[2] It is clear, then, that finding information that will not be confined to one class of workers as Paul Zurkowski had imagined. It is not only scientists, engineers, and medical researchers who need information, but all workers. As Stevenson clearly writes, "It is reasonable to propose that the activities that constitute work in all walks of life involve the kind of mediation found in these studies. That is, it is apparent that it is not just one class of workers (e.g., vocational), as opposed to other classes (e.g., professionals), whose practice is aimed at a collective motive and mediated by artifacts, rules, responsibilities, and a community of practice." All workers in the knowledge economy need access to information and they must be "information literates."

The Other Literacies

When Paul Zurkowski first explained information literacy, the digital world was in its infancy. Databases were confined primarily to what are now called the STEM fields, i.e., science, technology, engineering, and medicine. The information available was text-based and served as a pointer to the full-text articles that were held in print form in libraries. There was little in the way of audiovisual information. What existed was difficult to obtain because it was held in specialized library collections. Being information literate at the time was being able to connect with a highly trained specialist in information retrieval and to choose relevant items from a list. The process was highly mediated.

The world of information has exploded since Zurkowski's 1974 conference talk. There are video, audio, and photographic resources available that may be just as informative as a scientific article. In fact, the availability of scientific datasets means that deeper and more meaningful information is available than was thought possible in the 1970s. Information resources, then, have proliferated and the skills necessary to identify it, retrieve it, and process it is that much more complicated.

In response to these changes, there has been a corresponding proliferation of terms to describe this new information literacy. Appendix A contains a list of these related literacies. It is instructive to look at three of them.

Digital Literacy – Originally used to describe the use of electronic/digital information resources, it is now used widely in education to measure whether students can navigate the internet in order to obtain and then manipulate information resources found there. In many school districts in the United States a requirement for digital literacy has replaced that of information literacy.

Media-Information Literacy (MIL) – UNESCO has combined two distinct sets of competencies that were labeled media literacy and information literacy. The important attribute here is that it emphasizes the critical thinking skills that are necessary to ascertain the authority of a particular communication, no matter how it is presented to the information seeker. An extract from the Alexandria Declaration of 2005, notes that "(MIL) lies at the core of lifelong learning. It empowers people in all walks of life to see, evaluate, use and create information effectively." [3]

Transliteracy(ies) – This concept was touted extensively between about 2009 and 2013. It can be defined as the ability to understand and communicate across all of the possible Information Communication Technologies (ICTs). Although incorporated into new standards from the American Association of School Librarians (AASL) the research stream on this seems to have collapsed into a Twitter hashtag, #translitercy. (It is actually an interesting development, well beyond the limits of this paper, that this research area is now taken up in the non-published world.)

A recent review by Peter Stordy calls for a taxonomy of the literacies and also makes the point that these literacies may not be completely separate. He quotes other researchers, who have noted that researchers like to label their definition of a literacy as new when in reality it is a different label placed on an already known set of skills.[4] That is the main purpose of this short review of the other literacies in the present article, that these literacies are not completely different from information literacy and that the others overlap in complicated ways that seem designed to further an agenda rather than to create clarity about the required skills for lifelong learning.

Workplace Information Literacy

As in the definition of information literacy put forth by Zurkowski, the early information literacy research in the workplace was focused on "white-collar" professionals in law[5], auditing[6] and higher education[7]. Christine Bruce outlines seven different ways that professionals experience information literacy:

1) Using information technology for awareness and communication

2) Finding information from appropriate sources

3) Executing a process

4) Controlling information – keeping, preserving, and re-finding for another use

5) Building up a personal knowledge base in a new area of interest

6) Working with knowledge and personal perspectives adopted in such a way that novel insights are gained

7) Using information for the benefit of others

Bruce's study was conducted in 1999 and one can imagine that changes in the technology landscape may have put these "faces" into new contexts where workers at any level of the organization might engage in them. Simply contemplating Face #1, for instance, would reveal that any worker with a cell phone can now use information technology for awareness and communication. In 1999, these technologies were tethered to desktops and limited to those that needed them, now they are ubiquitous.

More recent studies have tied higher education to demands of the workforce, especially in the business world. Jason Sokoloff surveyed employers about the information literacy skills that they need from graduates[8] while Klusek and Bornstein tied the knowledge, skills, and abilities identified in the US government database O*NET for many business related areas to the Association of College and Research Libraries information literacy standards.[9] (For a quick

introduction to O*NET database, see the article by Nora Bird and Tim Williams.[10] In that article, Bird and Williams also use Klusek and Bornstein's methodology to apply the standards to automotive mechanics and welders.)

In a more recent study, Project Information Literacy (PIL), led by Alison Head, did a study of employers of information workers and the employees themselves, many recent college graduates.[11] The research team asked the question of what information literacy skills employers were looking for and what skills that students had gained in college were being used in the workplace. A commonly viewed gap was found in the new employee's willingness to look beyond the searchable information into what might be found in documents or even the knowledge held by other employees. The employer felt that the new employees did not think to utilize these sources but the employees felt that they were not given time or training in how to dig out these resources.

Another identified gap in the PIL study was that students often chose the first answer found rather than continue to investigate and seek alternate solutions to posed problems. The employees felt that employers did not give them a good indication of the project expectations and the actual time constraints, rather than those perceived by the employee.

The researchers offered several suggestions to college information literacy instructors, that would help them prepare students for the workforce. Paraphrased here they are:

1) Create better assignments that are team-based so that students can practice communication with peers.

2) Improve reference service using a more consultative model so that the librarian becomes an available expert.

3) Develop a way to introduce people as sources of information.

4) Introduce social media and collaborative tools into information literacy instruction.

5) Look beyond the course to the future to show that these skills are part of the workplace and are essential for lifelong learning.

Similar ideas can be found in an article from the City University of New York (CUNY) librarians who worked together to create a powerful critical thinking initiative across all levels of two-year to four-year.[12] The initiative emphasized that workers at all levels are using information.

Vocational information practices were first studied by Annemaree Lloyd who looked at the workplaces of firefighters and ambulance drivers.[13] Since then, a number of studies have revealed the different contexts that vocational workers inhabit. Much of this research was compiled and categorized in a recent article by Sayyad Abdi and Christine Bruce.[14]

Another recent review by Lloyd provides the basis for several lessons that she says come out of this body of research.[15] These lessons are paraphrased here in a simpler language than that used in the article: Workplace information literacy is dependent on situation and context. Workers are trying to produce a product or a service and they are bound by the situation that they are in at the moment.

1) The need for information in the workplace is measured against the rules, hierarchies, and social dimensions found there. For instance, a nurse's use of information might be impeded by the presence of a doctor or other more qualified practitioner.

2) Work is a collective endeavor where intellectual property is shared.

3) Information landscapes and literacy within them are important for workplace learning. Without information, workers cannot learn their jobs.

Lloyd goes on to build a case for looking beyond a static literacy for information skills and toward a repertoire of information practices that creates resilient workers. For instance, she writes that there is potential research in understanding how librarians can teach future workers to "deal with rapidly changing information environments, with information overload and with high levels of information complexity while at the same time being resilient enough to cope with the continual demands…"[15]

It is much in this spirit that a call for not ignoring the information demands of vocational students was made in 2013 by Nora Bird and others.[16] Community and technical colleges that were surveyed overwhelmingly worked with students who would transfer to university rather than with students in aviation, welding, and other vocational endeavors.

New Directions

The context of work is changing to be more team-based and global with more than one dominant language in use. It is also more dependent on ICTs and in the United States work is increasingly part-time or gig-based (especially in some professions, it is a short-term contract for a single project). These changes highlight the need for the resilient workers that Annemaree Lloyd calls for and the information professions must rise to the challenge. One clue in how to do that is to have workers look beyond their physical workplace and be connected to a broader view of work as a profession through social media and other connections, as Sayyand Abdi and Christine Bruce found in their recent study. [14]

One step in the right direction is the re-casting of the Association of College and Research Libraries information literacy standards into a new framework.[17] The framework is built from six structural elements that can be applied to the workplace context during information literacy instruction.

1) Authority is Constructed and Contextual – as Lloyd noted, the workplace context has rules and hierarchies. These must be acknowledged within the context in which a worker operates. This is especially important in cross-cultural and cross-language teams that are now standard in many modern businesses.

2) Information Creation as a Process – The employees that Head interviewed failed to realize that their assignments were intended to create new knowledge and this may take time. Simple answers were not expected or required.

3) Information has Value – There is a cost to finding, using, and creating new knowledge. That must be calculated into every project.

4) Research as Inquiry – Although framed in a very academic sense, the concept of research can be stretched to most work situations by using the phrase, "finding out."

5) Scholarship as Conversation – Again, very academic language in this piece of the framework, but even vocations have standard practices that are agreed upon through inquiry and conversation.

6) Searching as Strategic Exploration – There is a strategy for searching through information and choosing the best resources.

The framework has been recently adopted (2015) in the United States and it is still controversial. It remains to be seen how it will be implemented in colleges and universities in the United States.

Potential Research Questions

The idea that new workplaces may require a new level of information literacy suggests some possible Chinese-American research. One such project could involve a multinational manufacturer, such as Lenovo with interviews that probe the meaning of information literacy in the two countries, the way that information is shared across language barriers, and how information is managed and preserved for the future. It would be especially interesting to study teams that might include professionals with more vocational workers.

The same might be done for students in both countries focusing on a discipline that was once considered more vocational but is now highly dependent on information resources and lifelong learning, such as nursing. Are the same changes in how these professions use information found in both China and in the United States? What are the implications of similarities? What are the implications of differences? What is being done by librarians in the two countries to help students become resilient workers?

There are, of course, other potential avenues for research that might be explored. It is a rich area that might be mined in many directions.

Conclusion

The workplace is changing rapidly, but the view of information literacy is just beginning to follow. The results from studying information practices in different work situations are promising and the change to the new ACRL framework for information literacy is a step in the

right direction. But the emphasis of information literacy has been and still is on the disciplines that are taught in four-year colleges. As Stevenson reminds us vocations are much more dependent on information than ever before. We must re-think our research questions so that we are looking for how to help students be the lifelong learners that they will need to be in this dynamic environment.

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APPENDIX 1. THE OTHER LITERACIES

[This list is adapted from the book, M. Crumpton and N.J. Bird, *Handbook for Community College Librarians*, Libraries Unlimited, 2013.]

Literacy

Reading and writing are the base abilities upon which other literacies are built. Since community college students are adults and there are usually no admission requirements, basic literacy may be a problem. Literacy is not simply being able to read any language. In this country it is defined as the ability to read English. Literacy is measured by a nationally devised test called the National Assessment of Adult Literacy. The test reports on three different aspects of literacy:

> *Prose literacy*—The ability to search, comprehend and use *continuous* texts such as editorials and news articles.
>
> *Document literacy*—The ability to search, comprehend, and use *noncontinuous* texts that might be presented in various formats. Examples include job applications, payroll forms, transportation schedules, maps, tables, and drug or food labels.
>
> *Quantitative literacy*—The ability to complete quantitative tasks, (i.e., to identify and perform computations, either alone or sequentially, using numbers embedded in printed materials). Examples include balancing a checkbook, figuring out a tip, completing an order form, or determining the amount.

Computer Literacy (Technical Literacy)

Computer literacy is the ability to use a computer in a way that recognizes its distinct hardware and software components and its role in performing a task. Some definitions of computer literacy include a laundry list of particular software programs that must be manipulated, but some argue that applications should be considered under digital literacy.

Content Literacy

Content literacy uses both digital literacy and information literacy to focus on a particular topic such as finance, health, or a specific job.

Digital Literacy

What distinguishes digital literacy from information literacy is that it focuses only on information that is presented in digital formats. The most comprehensive definition is the skill to find, read, and interpret digital media and the ability to critically assess, manipulate, and apply information from a wide range of digital sources.

ICT (Information Communication Technology) Literacy

Used more internationally and in studies done by communications scholars, this term includes the ability to communicate well using computer-mediated technologies including phone, e-mail, Twitter, Facebook, and Skype.

Information Competency

Although still incorporated into documents promulgated by the California Community College Board of Governors (CCCBOG), this phrase does not appear in many other contexts. The National Forum on Information Competency, a group cited by a 1998 report done for the CCCBOG no longer exists.

Information Fluency

Touted by some websites and embraced by the Council of Independent Colleges at a 2012 workshop, information fluency seems to be a combination of technology literacy, information literacy, and digital literacy. The definition on the 21st Century Information Fluency website appears to add nothing to the concept of information literacy, as it denotes sectors of a circle with various questions including: what information is sought, where it will be found, what route will be taken to get that information, how the quality of it can be determined, and how it can be used ethically.

Information Literacy

In 1974, information was considered primarily textual. When Zurkowski wrote about a person being information literate, it was understood to mean the world of published materials such as books, journals, and reference materials. Now the definition has expanded to include data, information, visual material, and digital representations of three-dimensional objects.

Media Literacy

Discussed in a pioneering 1974 article from the journal *Media and Values,* media was considered to be television, radio, and film. UNESCO has a long-standing interest in enhancing media literacy, founding the Grünwald Declaration of 1982, which recognized the need for political and educational systems to promote citizens' critical understanding of communication through the media.

Media-Information Literacy

UNESCO expanded its view of media literacy in 2011 by holding an international forum to examine media and information literacy as a combined set of competencies

(knowledge, skills, and attitudes). The importance of media, Internet, and other information providers and their impact on the public's opinions, learning, and culture were debated at that forum.

Network Literacy

Social networks are the important parameter here. Network-literate individuals possess knowledge and skills using Facebook, LinkedIn, Twitter, and other social media.

Technical Literacy—see Computer Literacy, Digital Literacy

Transition Literacy

Centered on the transition between high school and college, work in this area has touted the importance of cooperation between local high schools and colleges.

Transliteracy

Rooted in a cross-disciplinary attempt to understand the new world of reading information in digital forms, this concept has taken hold in the library world because it reaches outside the library walls and incorporates all of the other literacy concepts described here. It remains to be seen how libraries will implement strategies that incorporate these multiple literacies, but beginning with information literacy is still a valid strategy.