

Kansas Library Association College and University Libraries Section Proceedings

Volume 4
Number 1 *Together We Are Stronger*

Article 4

2014

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Recommended Citation

Anderson-Story, Janet; Dow, Mirah; Kane, Cynthia; and Ternes, Carmaine (2014) "Bridges to the Future: Teaching Information Literacy Across Standards, Institutions, and the Workforce," *Kansas Library Association College and University Libraries Section Proceedings*: Vol. 4: No. 1. <https://doi.org/10.4148/2160-942X.1035>

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Bridges to the Future: Teaching Information Literacy Across Standards, Institutions, and the Workforce

Abstract

Teaching information literacy skills to prepare young adults for the demands of a technologically modern workforce requires collaboration between schools and libraries. Identifying opportunities to build bridges that enable smooth transitions for information literacy learning across content areas, standards, and institutions requires collaboration among librarians. Perspectives and discoveries of four librarians (secondary school, two-year technical college, and an undergraduate, graduate, and post-graduate degree granting university) engaged in collaboration are examined. Collaboration resulted in a common framework for teaching information literacy skills designed with the goal of developing academic and workforce competencies including accessing, sorting, evaluating, and incorporating reliable information into daily lives.

Keywords

information literacy, workforce information skills, library collaboration

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KANSAS LIBRARY ASSOCIATION COLLEGE & UNIVERSITY LIBRARIES
SECTION PROCEEDINGS: VOLUME 4, ISSUE 1 (2014)

**Bridges to the Future: Teaching Information Literacy Across Standards,
Institutions, and the Workforce**

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Abstract

Teaching information literacy skills to prepare young adults for the demands of a technologically modern workforce requires collaboration between schools and libraries. Identifying opportunities to build bridges that enable smooth transitions for information literacy learning across content areas, standards, and institutions requires collaboration among librarians. Perspectives and discoveries of four librarians (secondary school, two-year technical college, and an undergraduate, graduate, and post-graduate degree granting university) engaged in collaboration are examined. Collaboration resulted in a common framework for teaching information literacy skills designed with the goal of developing academic and workforce competencies including accessing, sorting, evaluating, and incorporating reliable information into daily lives.

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Bridges to the Future: Teaching Information Literacy Across Standards, Institutions, and the Workforce

The impact of new computer technologies is changing today's workforce. A new advance, update, or product is routinely made available by manufacturers as the best device to speed up communication. According to Head (2012), "traditional research competencies—the use of non-digitized information sources—may be disappearing with each passing year as a new batch of college hires joins the workplace and employers make assumptions about their information competencies" (p. 26). With high speed devices to retrieve information, it appears that minimal time is frequently spent by humans in accessing and evaluating quality of information.

Expectations for high speed communication are fueled by an increasingly mobile society. The Pew Internet and American Life Project's latest report indicates that as of September 2013, 24 percent of Americans aged 16 years and older own an e-reader and 35 percent aged 16 and older own a tablet computer (Brenner, 2013). As of May 2013, 91 percent of American adults own a cell phone and 56 percent own a smartphone (Brenner, 2013). High speed mobile devices and increased digital resources have broad implications for teaching information literacy skills.

Method

COMMUNITY-BASED TEAM

Four librarians in Emporia, Kansas, teamed-up to share new challenges and opportunities in teaching information skills. The team was comprised of an area secondary school librarian, a two-year technical college librarian, a university librarian, and a library school librarian-educator. Team members found much common ground as well as some differences in their observations of students' confidence and competence in locating, applying, synthesizing, and appropriately evaluating information for research papers or projects. Each librarian contributed to identification of specific information literacy standards embedded in instructional goals for each represented institution. Team members discussed employer expectation for new hires. Over the course of an academic year, team members answered two central questions:

1. What skills expectations in utilizing non-digital and digital resources do employers have for new employees?
2. What new connections can librarians from various area institutions create with one another to effectively bridge instruction from one institution to another ensuring that all students graduate high school ready for jobs, college, and/or careers?

The purpose of this article is to share discoveries during this teamwork approach to exploring information literacy instructions across standards and institutions in one local educational area. The team's exploration began with a review of literature.

Literature Review

Information literacy, which may be defined as the ability to access, evaluate, and use information, has its roots in bibliographic instruction traditionally provided by academic librarians (Zurkowski, 1974). Concepts and practices associated with bibliographic instruction have developed along parallel paths with the evolution of higher education in America. Today information literacy offers librarians opportunities to be involved in instruction and curriculum planning, and suggests new expectations for students as they progress through educational institutions and into the workforce (Dow, 2013). Librarians also have opportunities to shape new understandings of teaching and learning designed to prepare a mobile society, including those mobile workers whose work activities depend on skills for using high speed mobile devices.

Cognitive Perspective

In the education and workforce context, information literacy can be understood from a cognitive perspective and approach. Doyle (1992) used cognitive psychology to describe information literacy as a 10-step progression through an information task. Kuhlthau (1993) used a constructivist lens to assert that information literacy is not a set of skills but a way of learning characterized by a six-stage process: task initiation, topic selection, pre-focus exploration, focus formation, information collection, and search closure. Bruce (1997) used a thinking-reasoning framework to explain a cognitive approach to information literacy. The Handy 5 research model (Grover, Fox, & Lakin, 2001) is a cognitive model for teaching information literacy skills across grade levels. Eisenberg's (2003) cognitive model, the Big6, has been applied to non-digital and digital literacy instruction. Cognitive theories and models such as these provide research-based implications for information literacy instruction in educational settings and have recently appeared in the literature about workplace information literacy.

Information Literacy and the Workplace

Weiner (2011), in a review of reports on information literacy and the workplace, indicates that while information literacy is important to employers, there is much less literature on the implication of information literacy for workplace and job-related lifelong learning than there is on information literacy and K-16 education. Nevertheless, Weiner's review revealed multiple reasons for the importance of information literacy to the workforce. Reasons include employee's abilities to use and distribute images, sound, and digital media as well as employee's thinking skills necessary to create, summarize, and synthesize information; use communication for teamwork and collaboration; and to exercise social skills to listen well and to articulate precise questions. Weiner identified ways information literacy differs in work and educational settings. One important difference according to Weiner is that tasks and problems in the workforce are "complex, messy, and open-ended" (p. 9) unlike teacher's tendency in academic setting to assign papers, projects, and presentations that are to be completed in a specific period of time. Weiner points out that when an organization incorporates information literacy into its culture and practices including employee training, the results are likely to be a more information literate workforce.

A recent example of research-based efforts to improve information literacy instruction at the university level with the ultimate goal of improving the economy of the country is the iKnow (Soma, & Mallett, 2010) project at The Open University, United Kingdom, a joint endeavor between the Centre for Outcomes Based Education and the Library. Objectives of the project included improving learning materials as well as the overall process of embedding employability skills into the curriculum. An early step in the project process was a workshop to explore and determine the information literacy skills concepts and language that can be used by information education and training at both the University and in the workplace. The most popular competencies identified by the workshop participants included: "finding information; using information; and organizing information" (p. 5). Resulting prototype learning activities created as part of the project included: "finding formation; know your sources; evaluating information; information handling; organizing information; and keeping up to date" (p. 6). According to Reedy, Mallett, and Soma (2013), a major finding in the iKnow project was that instruction in universities will likely translate to workforce skills if academic instructional materials are created in small "bite-size" (p. 112) units referred to in the iKnow project as "learning packages" (p. 112).

Mobile Devices, Mobile Workers, and Information Literacy

Availability of high speed mobile devices and increased digital resources has an impact on teaching and learning information literacy skills. Today's learners expect to use technology. Web 2.0 resources are available around-the-clock. Mobile devices including smartphones, iPads, and e-readers with significant battery life and the possibility of cloud computing provide opportunities for learners to interact with each other and to share ideas using e-mail, text, web chat, podcasts, YouTube, and social networks such as Facebook, Twitter, blogs, and wikis. According to Sandars (2012) in his discussion of the availability of mobile devices and the education of health professionals:

an enormous variety and immense number of blogs, videos and podcasts by patients, health professionals and other learners from across the world are freely available. . . A typical feature of Web 2.0 technology is that comments from users can be readily uploaded and ongoing discussions with wide variety of participants, including acknowledged experts from across the world, can be easily developed. (p. 535)

Given the frequent use of mobile devices in health care and other professions, Sandars (2012) makes clear that technology definitely has a place in the delivery of curriculum. As Sandars points out "learners and their tutors will need to develop a new range of information and digital literacy competencies if the potential of technology is to be realised [sic]" (p. 537).

The availability of mobile devices necessitates special consideration by librarians and other educators of the new, mobile worker. As defined by Venezia, Allee, and Schwabe (2008), a mobile worker (aka remote worker, distance worker, virtual worker, etc.) is "an employee who has choices concerning how, when and where they work" (p. 61). Using value network analysis to survey 557 workers, respondents were not only asked "to define their own roles, but also describe the roles with which they interacted and how they believe their values was perceived by others" (p. 65). A key finding in the study revealed that the mobile worker has need for collaborative technology. "In general, being mobile means a heavy reliance on technology for achieving peak performance, for feeling organized, and for meeting personal necessities" (p. 67). Information literacy skills instruction for the 21st-century workforce will need to identify and incorporate outcomes that will lead to teaching skills for functioning in a mobile society including as a mobile worker.

Findings

SEMINAL DOCUMENT REVIEW

Many publications about information literacy and workforce-related information skills were reviewed. A list of all reviewed resources is available on the Kansas Library Conference (2013) website. Four seminal documents discussed in this section are of primary importance to our findings. These documents were reviewed to clarify current academic targets for student learning outcomes *in contrast* to what employers indicate is missing in new hires based on employer expectations and assumption about workplace literacy. Table 1 highlights common features among most-used standards and pinpoints the concerns of employers at various stages of the standards.

The results of the comprehensive document review made clear that information literacy is with some slight exceptions essentially the same set of skills articulated in two different sets of standards for student learning. The review also revealed that if standards-based instruction is coordinated across learning levels and educational institutions, children and youth may have the best learning overall experience. The ideal learning experience would requires a system of instruction that holds constant high literacy expectations as teachers and librarians adapt for individual student's age, ability levels, background, interests and job, college, and/or career goals. A brief discussion of four documents of primary importance follows.

Standards for the 21st-Century Learner (AASL, 2007) and *CCSS Crosswalks* (AASL, 2011). The 2002 Partnership for 21st Century Skill comprised of organizations such as “Apple, Dell, Microsoft Corporation, Intel Corporation, Sesame Workshop, National Education Association, Adobe Systems Incorporated, Education Network of America, and the American Association of School Librarians among others, identified competencies learners need, described outcomes that promote higher level thinking, and core subjects and themes, learning and innovation skills; information, media, and technology skill; and life and career skills,” (AASL, 2009, p. 9) and then wrote standards outlining competencies for learners. These standards, AASL *Standards for 21st-century Learners* (2007), are used by teachers and students in PreK-12 schools. In addition, AASL identified *Common Core Standards Crosswalks* (2011) for teaching information literacy skills/competencies across content areas including history/social studies, science, technical subjects and other content areas.

Information Literacy Competency Standards for Higher Education (ACRL, 2000). Updated extensively in 2000 from the 1989 *Final Report of the ALA Presidential Committee on Information Literacy*, ACRL standards provide a definition of an information-literate college student as one who can determine the extent of information needed; access needed information effectively and efficiently; evaluate information and its sources critically; incorporate selected information into one’s knowledge base; use information effectively to accomplish a specific purpose; understand the economic, legal, and social issues surrounding the use of information; and access and use information ethically and legally.

Project Information Literacy’s Learning Curve: How College Graduates Solve Information Problems Once They Join the Workplace (Head, 2012). This document describes a study wherein employers and employees were interviewed. The study reveals disconnects between employers’ expectations and new hire reports of what recent graduates find between the academic information-seeking skills taught in schools and those needed in the workplace. According to Head (2012), employers’ expectations and assumptions of the new employee’s problem-solving skills reveals that employers desire technological nimbleness mixed with old fashioned face-to-face communication. Employers want employees who can effectively search online and identify solutions; create and utilize information beyond the first page of search engine results; and are aware of information from alternate sources (pp. 18-19). New hires identify skills that carry forward from schools including “ability to 1) systematically evaluate research sources; 2) critically read and analyze research sources; 3) synthesize large volumes of content and extract quality information; and 4) implement an iterative research strategy by framing questions” (p. 20).

Local Approaches to Teaching Information Literacy Review

Team members individually and collectively explored a number of approaches to direct and indirect teaching and supporting information literacy instruction as a continuum in local curricula. In the process, each team member shared her institution’s current and future outcomes for students.

Emporia High School Library. With a theme of creating context and connections, teachers and librarians at Emporia High School (EHS) partner with an aim to facilitate student success. Academic goals include building student knowledge to maximize learning of foundational research skills; helping students see the interconnectivity between research and their final projects; and connecting what students learn in school to be more prepared for real world situations. Some high school students struggle with organizational skills and low reading levels, making the adjustment to high school research challenging. EHS has taken measures to implement programs for assisting students (Emporia Public Schools, 2013). An important point of focus is the KSDE (2013) *16 Career Clusters*.

Advancement Via Individual Determination (AVID), a college readiness program, is designed to increase school-wide learning and performance. Students who may be the first in their family to attend college are recommended for this class. Students in the AVID program use the school library's digital and print resources.

Spartan Success (SS), a freshmen requirement, is a semester-long course that helps students to understand and organize her/his high school career. EHS patterned this curriculum from the Seaman High School Freshman Center (2012) model. Students complete learning styles and interest inventories. They examine their strengths and talents and utilize the Kansas Career Pipeline (2013). Learning about finances and practical life skills are part of this class. Students in the SS program use school library space and resources for research instruction and group tutorials. They learn to access databases and websites while researching a variety of topics.

Students' reading and mathematics skills are measured using the Measures of Academic Progress (MAP) pre- and post-test administered in the school library. These results assist counselors in course placement and teachers and librarians in textbook selection and library collection development. Students are encouraged but not limited to materials in their reading range.

Information about the library space, resources, and services is provided to all EHS students beginning with freshmen welcome, school library orientation, and an electronic video about the library available 24/7. There are research pathfinders and literature guides on the library's website. The school librarian provides professional development training and collaborates with teachers on specific lessons.

Flint Hills Technical College Library. In 2004, the Flint Hills Technical College (FHTC) Assessment Committee identified nine core abilities that all FHTC students should demonstrate upon graduation (FHTC, 2011). These core abilities are not course specific as they are taught across the curriculum in all classes. The core abilities are identified as skills essential to successful employment, regardless of what that occupation may be including skills for "citizenship; professional work ethics; critical thinking; global awareness; information literacy; math logic; respect diversity; technological literacy; and communications" (p.5). A four-point rubric was created for assessment of core abilities by students and faculty. Students self-evaluate their own skill level by identifying perceived degree of proficiency. Faculty members evaluate the student using the same rubric. In addition, a first year experience class includes an introduction to the librarian and library resources. Program/class specific orientations, given later in the semester, provide information about the databases and other targeted library resources.

Emporia State University, William Allen White Library. As a Kansas Board of Regents (KBOR) institution, Emporia State University (ESU) is focused on the KBOR *Foresight 2020* (Thompkins, 2013) strategic agenda for the Kansas public higher education system. Two KBOR aspirations are specific to information literacy for the workplace and beyond including a goal to increase to 60 percent the number of Kansas adults who have a certificate, credential, associate's degree, or bachelor's degree by 2020; and meeting business and industry expectations for core workplace skills in mathematics/analytical reasoning, communication, and problem-solving.

To fulfill the dual goals of KBOR and ESU's general education requirements as well as the ESU *Library Mission* (2001), a two-credit hour course, Information Technology, is taught by William Allen

White Library faculty. Learning outcomes include preparing students to: define, narrow, and focus a topic for research; use skills to access effectively and efficiently access information from a variety of sources regardless of the format; critically evaluate information; access and use information ethically and legally; and cite sources in a format recognized by professional colleagues in scholarly communications. Assignments culminate in the creation of an electronic portfolio. Students document their search processes, consider sources most and least appropriate for their topics, and construct an electronic portfolio that is easy to navigate and demonstrates in-depth analysis of relevant sources for identified information needs.

ESU's university libraries and archives establish connections to community through opportunities for individuals of all school ages to learn about the University library, its resources and services. In addition to university students, elementary school students come to the library to view and learn from archival collections and to enjoy the children's book collection. High school students and community college students attend library instruction sessions.

Emporia State University, School of Library and Information Management. To meet the evolving needs of information users faced with scholarly, professional, and/or workplace related literacy skills, the current Master of Library Science (MLS) curriculum (ESU, SLIM, 2013) has a renewed focus on information-seeking behavior and user-centered instructional services. MLS students learn about the librarian's roles in instruction includes relating components of information literacy to instructional methods, application of individualized instructional strategies for user-centered services, and creation and delivery of reference and information services for a mobile community.

MLS students in preparation for professional librarianship learn to evaluate quantitative, qualitative, and mixed methods research and stages of the research process as they develop abilities to use evidence-based research to state a claim and propose actions, practices, and solutions. It is particularly important for librarians to use research in the practice of library and information science and to teach others to use research in the process of information access, evaluation, and use.

Discussion and Recommendations

Based on observations, team members acknowledged that use of mobile computer devices is of paramount importance to students. The team expressed concerns that students often do not ask librarians for help, and consequently, are failing to use available, high quality non-digital reference sources. Team members expressed the view that information literacy skills instruction is best accomplished when teachers and libraries partner to share responsibilities and facilitate skills-based instruction in the context of content specific assignments. They also discussed the high value to students of library collections including curriculum-specific sources and how these sources may often be overlooked.

While there are strong indications that educational policy makers and researchers are aware of the need for an information literate workforce, there continues to be some hesitation on the part of students and some faculty to fully accept systematic teaching of specialized information literacy skills, and to recognize the benefits of fully utilizing library collections as well as expertise of the librarian. Team members admitted that when students have and use mobile devices, it is easy to develop a false sense that ownership of devices equates with skills for effective, efficient, ethical, and/or legal use of information. On the basis of these discoveries, the team developed a new appreciation for collaboration that includes instructional librarians from multiple institutions committed to development of workforce information skills in all students. The team plans to

continue scheduled collaboration. The team's discussions further captured the following shared conclusions in response to initial questions.

Question 1. What skills expectations in utilizing digital resources do employers have for new employees?

The reviewed focus group research revealed that employers want new hires who: 1) know reliable reference sources; 2) do not rely on simply search engine inquiry that stops at the first page of a website; 3) are able to use published evidence to make and support claims, and 4) make a solid case for actions. When it comes to use of information, employers want employees who are confident, cautious, careful, accurate, and highly reliable communicators using multimedia. These are the same expectations that school and academic librarians have for student learning.

Question 2. What connections can librarians in various institutions create with one another to ensure that all students have skills in utilizing digital resources relevant in today's workforce?

Librarians should create local networks and routine opportunities to communicate with each other about strategies for teaching information literacy skills. Teaching information literacy skills is likely to be somewhat less effective for each librarian to go it alone. Once upper elementary students learn a model for guided inquiry, the model can be used throughout school and into the work force. Teachers and librarians should build bridges: 1) between units of study and across the curriculum; 2) between standards that will provide students with a smooth transition across learning levels and content areas; and 3) from one institution to another so that students realize that what is taught and learned in one location is relevant, useful, and necessary in the next.

The iKnow project provides an excellent research-based example of academic collaboration to create new materials and instructional practices for teaching information skills that will translate to the 21st-century workforce. Finding from the iKnow project can serve as a starting point for development of a collection of bite-size learning materials with outcomes for teaching digital and information literacy skills for study, work, and lifelong learning. Librarians must continually remind students that mastered and applied information literacy skill will make a positive difference when moving forward into jobs, college, and/or careers. Employers prefer employees who know how to learn and who can perform cost-effective information searching and use.

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Table 1

Framework for Teaching Information Literacy Skills Across Standards and Institutions

<p>AASL Standards for the 21st-Century Learner (2007): http://www.ala.org/aasl/standards-guidelines/learning-standards</p>	<p>ACRL Information Literacy Competency Standards for Higher Education (2000): http://www.ala.org/acrl/standards/informationliteracycompetency</p>	<p>AASL and Common Core Standards Crosswalk Writing Standards for Literacy in History/Social Studies, Science & Technical Subjects (2011): http://www.ala.org/aasl/guidelinesandstandards/commoncorecrosswalk/write-history-scitech</p>	<p>Project Information Literacy (2012): <i>Baseline Information Competencies Needed at the Recruiting Stage (What Do Employers Expect from College Hires?)</i> http://projectinfolit.org/pdfs/PIL_fall2012_workplaceStudy_FullReport_Revised.pdf</p>
<p><i>Learners use skills, resources, and tools to:</i></p>	<p><i>An information literate individual is able to:</i></p>	<p><i>Learners use skills, resources, and tools to:</i></p>	
<p>Inquire, think critically, and gain knowledge</p>	<p>Determine the extent of information needed</p>	<p>1.1.4 Find, evaluate, and select appropriate sources to answer questions.</p>	<p>To know how and where to find information online and elsewhere, without much guidance</p>
	<p>Access the needed information effectively and efficiently</p>	<p>1.4.3 Monitor gathered information and assess for gaps or weaknesses.</p>	<p>To use a search strategy that goes beyond Google and finding an answer on the first page of results, and to use multiple types of resources including people, annual reports, in-house databases, etc.</p>
	<p>Evaluate information and its sources critically</p>	<p>1.1.5 Evaluate information found in selected sources on the basis of accuracy, validity, and appropriateness to needs, importance, and social and cultural context. 1.1.6 Read, view, and listen for information presented in any format (e.g., textual, visual, media, digital) in order to make inferences and gather meaning. 1.1.7 Make sense of information gathered from diverse sources by identifying misconceptions, main and supporting ideas, conflicting information, and point of view or bias.</p>	<p>Need to approach information problems with patience and persistence. Speed of retrieval was not as important as depth and completeness of research. Need to see the patterns and connections that emerge from their research.</p>
	<p>Incorporate selected information into one's</p>	<p>1.1.7 Make sense of information gathered from</p>	<p>Use a wide variety of information sources and various</p>

	knowledge base	diverse sources by identifying misconceptions, main and supporting ideas, conflicting information, and point of view or bias.	formats – company reports, manuals, books, phone directories, photographs, institutional knowledge and other employees
Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge	Use information effectively to accomplish a specific purpose	2.1.3 Use strategies to draw conclusions from information and apply knowledge to curricular areas, real world situations, and further investigations. 2.3.4 Create products that apply to authentic, real-world contexts.	To articulate a “best solution” and conclusion from all that was found
Share knowledge and participate ethically and productively as members of our democratic society	Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally	2.3.3 Use valid information and reasoned conclusions to make ethical decisions.	[The report did not address how the information was to be presented once the research was complete.]
Pursue personal and aesthetic growth			

Note: Standards are presented as a set relevant to students as they learn in various content areas and move through various educational institutions. This set responds to employers’ concerns that new hires are not adequately prepared with information literacy skills relevant and necessary in the workforce. It highlights points for instructional attention and improvement.