INFORMATION LITERACY: THE DEFINITION, THE NEED FOR IT, AND THE CURRICULUM

by

Kate M. Nichols

An Abstract
of a research paper submitted in partial fulfillment
of the requirements for the degree of
Master of Science in Library Science and Information Services
in the Department of Educational Leadership and Human Development
University of Central Missouri

August, 2014
ABSTRACT

by

Kate M. Nichols

This literature review defines an information literate person as someone who can recognize when they have a problem that requires additional information to solve, find credible information, analyze it, and form their own opinion. An information literate person is committed to lifelong learning. They are constantly seeking new information and applying it for the betterment of their daily lives. This paper addresses the need for information literacy. Students who are taught information literacy skills know how to search the Internet and various other forms of information effectively, they know how to spot misinformation published on a website, and know how to use information ethically. The final part of this literature review gives suggestions on how librarians can incorporate information literacy skills into their curriculum. There are information literacy standards, objectives, and Common Core State Standards. Teaching methods are addressed as well as incorporating critical thinking skills, and teaching with technology.
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CHAPTER 1
INTRODUCTION

To have the ability to recognize a problem that requires information, find credible
information, evaluate it, and form an opinion is the definition of someone who is
information literate. The American Library Association (ALA) created the, “Presidential
Committee on Information: Final Report,” in this report it is stated a person needs to be
information literate to survive in this Information Age. The average person is flooded
with information on the Internet, television, radio, and cellphones. There are over 2.4
billion people using the Internet, with over 100 billion Google searches every month
(Esteves). When a person is information literate, he or she knows how to decipher
information that is factual and has the ability to help in any situation. Information literate
people have the ability to make good informed decisions on a daily basis throughout their
lifetime.

Information literacy skills teach students how to search and find credible
resources. According to a case study by Collard and Whatley, when students were on the
Internet, they were using keywords and questions inaccurately. Then they were
becoming frustrated when they did not find the information they sought after (161). Even
though students were frustrated and lacked searching skills, they still insisted on using the
Internet (Knight 44; Miller and Bartlett 41). The more information literacy skills students
have, the better they are at finding credible information they are looking for. Miller and
Bartlett recommend students are taught how to spot misinformation, understand how
search engines produce results, and have fact-checking strategies when look through
multiple websites (36-40). Information literate students also know how to use
information ethically. They avoid plagiarism by citing sources accurately, they respect intellectual property, and they follow ethical standards. It is recommended that students be taught information literacy skills so acquiring these skills is not left up for chance (Onyebuchi and Ngwuchukwu 113; Thomas et al. xvii).

There are several ways to teach information literacy skills, and this literature review address a few ways through standards, various library programs, highlighting critical thinking skills, and using technology skills. Information Literacy Competency Skills for Higher Education created by the Association of College and Research Libraries are a set of standards many librarians and educators use to teach information literacy skills. CCSS have placed an increased importance for students to learn information literacy skills. American Association of School Librarians (AASL) Standards for the 21st Century Learner call for students to be information literate. Instruction for information literacy can include teaching with games, using the information literacy instruction assessment cycle, and self-regulated learning.

Students who are information literate use critical thinking skills when they are analyzing, evaluating, and sorting through information. Students also use critical thinking skills when detecting various types of bias. Students use both information literacy skills and information technology skills at the same time. They use both when students know how websites work, have the ability to evaluate a website’s credibility, and how to use databases (Associate of College & Research Libraries, “Information Literacy Competency Standards for Higher Education”; Miller and Bartlett 40). The importance of information literacy will only increase in the future as information becomes more readily available.
**Statement of Problem**

Twenty-first century students use information literacy skills every day of their lives. Information literate people have the ability to recognize when they have a problem and can strategize on how to solve it. Information literate people find credible information, evaluate it for bias, and form their own opinion. Information literacy skills cannot be left for students to learn by chance (Onyebuchi and Ngwuchukwu 113; Thomas et al. xvii). Information literacy skills are taught through curriculum standards such as the AASL standards, Common Core State Standards and technology skills. When students are taught information literacy skills, they have the ability to make informed decisions and be better citizens in society (Haras and Brasley 364).

**Purpose of Study**

The purpose of this study is to create a literature review focusing on defining information literacy. An information literate person can identify a problem, create ways to solve it by finding appropriate and credible information, analyze the information, and find a solution. This literature review analyzes what a lifelong learner is. It defines a lifelong learner as someone who, on a daily basis, seeks out information that will better oneself and others. A brief United States history of information literacy is presented. The second part of this study shows the importance of teaching students information literacy skills. This is because students tend to believe and click on the first resource they find on the Internet only to become frustrated when the information is misleading and not what they were looking for (Knight 44; Miller and Bartlett 41). The final part of this literature review presents teaching methods librarians and educators can use when they are creating a curriculum for information literacy skills. Standards, library programs,
critical thinking skills instruction, and teaching information technology skills are presented in detail in part three.

**Research Questions**

The following research questions will be addressed in this literature review:

1. What is information literacy?
2. Why is there an increased need for information literacy skills?
3. How can a librarian teach information literacy skills in their curriculum?

**Limitations of the Study**

This study was limited by a time frame of eight months; because of this limitation, there was less time to find more quality and appropriate resources. There was limited access to articles available through the James C. Kirkpatrick Library (JCKL) databases. Topics that could have been expanded upon in this literacy review include metaliteracies, biases, ethics, digital citizenship, Common Core State Standards, and the United States history of information literacy. These topics were simply addressed, but there is abundant information available on each. This study did not mention the international history of information literacy or how to assess information literacy skills.

**Definition of Terms**

Bias: having favor for or against something; different forms of bias: omission, selection of sources, story selection, placement, labeling, spin

Credible source: a trustworthy source with factual information

Information literacy: a set of skills needed to find, organize, analyze, and evaluate information
Lifelong learner: Someone who is persistent, curious, has a desire to learn, and is motivated to seek out information, daily (Brendle-Moczuk 499-500)

Metaliteracy: literacy online, comes in many forms, such as: digital literacy, visual literacy, and cyber literacy

Plagiarism: to not give credit to information found and used

Self-regulated learning: students create their own goals and strategies, and are motivated to reach their goals

Research Design

This research study is a review of published peer reviewed journal articles and a websites. I searched databases from the James C. Kirkpatrick Library (JCKL).

Databases I used include Academic Search Complete, eBook Collection (EBSCO Host), Education Research Complete, ERIC, Information Science & Technology Abstracts with Full Text, Library Literature & Information Science Full Text (H.W. Wilson), and ProQuest Central Library.

Articles were retrieved from the following journals: College & Research Libraries; Communications in Information Literacy; Florida Media Quarterly; Information Literacy Beyond Library 2.0; Journal of Documentation African Journal of Library, Archives & Information Science; Journal of Information Literacy; Journal of Information Systems Education; Journalism and Mass Communication Quarterly; Library, Information Science & Technology Abstracts with Full Text; Library Media Connection; Library Tends; Libraries Unlimited; Libri: International Journal of Libraries & Information Services; Primary Health Care; School Library Media Research; Teacher Librarian; and Reference Services Review. The ACRL Association of
College & Research Libraries website was extremely useful as well. Additional searches were conducted using the bibliographies from articles found.

My research began by typing in keywords “Information Literacy” and “Information Literacy Case Study”. Then I searched with the following keywords “Information Literacy Definition”, “Lifelong Learning”, “Information Literacy Student”, “Information Literacy Curriculum”, “Information Literacy Technology”, “Information Literacy Critical Thinking”, “Ethics AND Information Literacy”, “Information Literacy Standards”, and “Information Literacy History”.

Conclusion

This study contains three chapters on information literacy. It describes an information literate person as someone who can recognize when they have a problem requiring information, have the ability to find information, analyze it, and create a well informed decision. The first chapter is the introduction. The second chapter is the literature review addressing information literacy, the need to teach information literacy skills, and curriculum ideas to teach information literacy. The third chapter is the conclusion where the three research questions posed in chapter 1 are answered. It also contains a summary of the literature review.
Information literacy is the topic of this literature review. It first goes into depth about the definition of information literacy, what an information literate person is, the goal of lifelong learning, and a brief history of information literacy in the United States. Second, this paper addresses the need for more information literacy instruction by examining students’ search behavior. The importance of information literacy is illustrated when students use information ethically. Finally, curriculum for information literacy is presented. This discussion starts with standards, objectives, and CCSS. Then the use of games as part of the library’s instructional program is introduced. The next part of this curriculum section describes how critical thinking skills are related to information literacy. The last part of the section explains how information literacy skills can be taught with technology. In the digital age, it is recommended students know how to recognize the need for more information, retrieve the information, and form their own opinions.

**Definition of Information Literacy**

In order to explore the definition of information literacy, this section begins with a description of what it means to be an information literate person is described. Next characteristics of a lifelong learner are presented. Third a short history of information literacy in the United States will conclude part one.

**Information Literate Person**

According to in the “Presidential Committee on Information: Final Report” produced by the American Library Association (ALA), a person needs to be information
literate to survive in this Information Age. Information literate people are able to recognize and find information effectively, and have the ability to benefit society. An information literate person can recognize a problem and devise ways to solve it, specifically, deciding what information is needed for the solution. Formation of questions, deciding if the information located is appropriate for the situation, evaluating sources, and ethical application of the information are all the hallmarks of an information literate person (ACRL Board; Wolf). Since the average person is bombarded with information everywhere, such as TV, the Internet, and cellphones, there is a need to find, analyze, and use information effectively to solve problems and make well informed decisions (American Library Association). “On a daily basis, problems are more difficult to solve when people lack access to meaningful information vital to good decision making” (American Library Association).

Making good, informed decisions is essential to living a well-balanced life. Haras and Brasley discuss how societies are better when every citizen has information literacy skills (364). Citizens can make informed decisions because they know where to find and evaluate quality information. An information literate person can also detect lies and disinformation (American Library Association). To be literate in information is to be educated. It also means personal empowerment, where one can evaluate opinions, and become a truth seeker (American Library Association). Information literate people can use and create knowledge with information actively, instead of just passively receiving it (Onyebuchi and Ngwuchukwu 114). Being information literate is more than good information seeking behavior (ACRL Board), it is being able to apply information to
solve problems, make informed decisions on a daily bases, and use these skills to benefit others.

**Lifelong Learning**

Lifelong learning is the cycle of incorporating new information a person learns into daily life. Learning how to learn is a synonym for lifelong learning. Some components of this type of learning include persistence, curiosity, desire to learn, and motivation to seek out information (Brendle-Moczuk 499-500). There are different facets to lifelong learning. There is the educational learning one might acquire in a formal, institutional setting. Next, there is experiential learning that takes place through life events such as consequences, experiences, and interpersonal encounters. The final two aspects are learning by professional development and learning that takes place with hobbies and interests (Brendle-Moczuk 499-500, Wilicox 43). With all of these parts, motivation is involved; a lifelong learner is interested in learning. When people are motivated, they are willing to continue to learn throughout their lifetime.

According to Brendle-Moczuk, lifelong learning includes self-initiated activities, information seeking skills, sustained motivation, and leaners’ ability to recognize their own learning needs (499-500). Learning and motivation are espoused avocations on which information literacy is built. Information literate people know how to learn because they know how information is organized, where to find it, and how to use it best. (American Library Association). When people know how to find information, they can use it to further their own knowledge. Lifelong learners extend their searches, become more self-directed, and have control over their own learning (Association of College & Research Libraries, “Information Literacy Competency Standards for Higher
To know how to find and learn from information that can have a lifelong impact, learners are taught these skills from childhood, through school age, into the university level (Parker and Godwin 257). Many national libraries, library associations, and institutes of higher education are committed to educating students to be lifelong learners through teaching information literacy skills (Association of College & Research Libraries, “Information Literacy Competency Standards for Higher Education”, Brendle-Moczuk 498, Crow 1). Many librarians and teachers are focusing on educating students to become lifelong learners. Learning does not stop when someone graduates from school, rather it continues throughout a lifetime.

**History of Information Literacy in the United States**

The information literacy initiative started in the United States in 1974, spurred on by several professional organizations, a United States Presidential Proclamation, and an Executive Order in California. In 1974, Paul Zurkowski introduced the concept of information literacy to the National Commission Libraries and Information Science. He wanted there to be a national program for universal information literacy within the next ten years (LearnHigher). In 1989, the American Library Association (ALA) created the National Forum for Information Literacy which is still active today (National Forum on Information Literacy). Other professional organizations that created standards and definitions to better develop information literacy include the Association of College and Research Libraries; the Society of College, National, and University Libraries; and the Middle States Commission on Higher Education (Mackey and Jacobson 63).

In 2009, Proclamation No. 8429 was given by President Obama declaring October to be National Information Literacy Awareness Month. In the proclamation, the
President wrote we live in a 24-hour news cycle with thousands of television and radio networks and colossal amounts of online resources. He does not want citizens to just be passive in receiving information; but rather, have the skills to gather, organize, and evaluate information for any situation. He wants Americans to be able to effectively communicate with and through the computers and mobile devices they interact with on a daily basis. The National Information Literacy Awareness Month was created to help U.S. citizens have the necessary skills to survive and thrive in the Information Age (Haras and Brasley 362-363).

Also in 2009, Governor Arnold Schwarzegger of California issued an Executive Order S-06-09, which created the ICT Digital Literacy Leadership Council and Advisory Committee in that state. This council and committee created a policy and action plan for information communication technology which calls for skills that require information literacy (qtd. in Haras and Brasley 363). Information literacy has only been discussed in the United States in the last 40 years; however, there have been a wide variety of partners involved in promoting information literacy as well as political Proclamations and Executive Orders.

**The Need for Information Literacy**

To establish the connection between information literacy and lifelong learning this literature review explores the need for information literacy starting with student Internet search behaviors. Students tend to believe and click on the first resource they find. Information literate students are taught some information on the Internet is misleading. Part two concludes with more reasons why having information literacy skills are significant, such as using information ethically.
**Student Internet Search Behavior**

With information literacy skills, students learn how to search and find credible resources. There has been an increased interest in how students search and use the Internet for research. In 2011, Johnson et. al discovered interest is growing on student search behavior because there are more articles appearing in academic journals than there was in the past (601). Collard and Whatley performed a case study in which they discovered students were inaccurately using keywords and questions and were therefore not finding the desired information and becoming frustrated (161). Irrespective of poor searching skills, students are insisting on using the Internet as their preference for researching (Knight 44; Miller and Bartlett 41). As Miller and Bartlett point out, the Internet is full of quality journalism, experts and accurate information; but it is also full of “lazy mistakes, selective half-truths, deliberate propaganda, misinformation, disinformation and general nonsense” (36). Students with information literacy skills are able to think sensibility about their information sources.

Many students rely almost exclusively on Google and often go with the first result (Miller and Bartlett 40; Thomas et al. 139). Forty-four percent of 12-15 year olds make some type of critical judgment about search engine results, and fifteen percent take information off a site because they like the look of the website without properly analyzing the source (Miller and Bartlett 40). Because students are relying so heavily on the Internet, studies have shown there is a decline in the quality of student research (Knight 44). Information literate students have skills to know when they come across misinformation and when they have found a quality source.
Miller and Bartlett recommend students know how to spot misinformation, and be wary of search engine results, that they are be able to spot fakes, and know how to tell if the information is truthful (36-37). When students use subscription databases of published periodical articles, they can be sure the information is credible. However, it is much harder to tell if information on the Internet is credible (Mackey and Jacobson 72). Miller and Bartlett recommend students check to see if the information is accurate by using fact-checking strategies (40). Sourcing multiple websites for the same information can help build credibility. Information literate students are aware of how search engines produce results. Search engines prioritize the information based on what people view and on the inclusion of paid advertisements (40). Students who are able to identify false information found on the Web, have strategies to check to see if the information is correct, and know search engines are not always in the users’ best interest are becoming information literate.

Crow conducted a case study researching how fifth grade students looked for information. There were three types of data used for the study: a questionnaire, an interview, and a drawing activity. Examples of the questions students were asked in the questionnaire were, “When I look for information about a new topic it is usually…” and “Why do I look for information on the Internet (6)?” Students were then interviewed with questions ranging from broad, such as “What makes a good day for you?” -to questions that are more specific asking what motivated them to seek information (6). In the last part students were asked to physically draw on two topics, “what makes a good day for me,” and “a time when I sought information (7).” The results found six different information seeking styles: readers, computer users, TV watchers, observers, people
askers, and magazine readers. Most students used computers to find new information (14). All of the students were able to remember a particular event where they looked up information because they were interested (27). The students also stated they enjoyed when they could choose their own topic to search and not have all of the project planned for them (28-29). The takeaway from this case study is for librarians and teachers to give students as much choice and control in their information seeking projects as possible. Crow recommends students be able to select their topic based on what interests them (30). Students are going to use technology to find information. It will behoove educators to allow students to have some control and flexibility in their topic while educators can give guidance on helping students know if the information they are finding is credible.

**How Ethics Influence Information Literacy**

The application of ethics will keep information literacy development legitimate. Students who are taught information literacy skills are given opportunities to create and refine these skills through everyday application. Information literacy skills cannot be left to chance for students (Onyebuchi and Ngwuchukwu 113; Thomas et al. xvii). Being able to recognize when information is needed, find relevant information, and analyze sources are skills that are to be specifically taught. Students with these skills are productive in this information literate society (Onyebuchi and Ngwuchukwu 114). If students do not practice searching, finding, and analyzing information, they can waste a lot of time looking through wrong sources (Baro, Seimode, and Godfrey 282). Possessing these skills help students find information in different places (Onyebuchi and Ngwuchukwu 114) such as books, journal articles, databases, and high quality Internet searches. Onyebuchi and Ngwuchukwu also recommend learners be able to
communicate and share information in effective ways (114). Information literacy skills can be integrated into every curriculum discipline (Adams 232). With more opportunities to practice, students fine tune their information literacy skills making them part of their everyday lives.

Because information literacy skills will help students in daily life, using information ethically is to their benefit. Since the Internet is a popular medium to find information, there is an increased risk of plagiarism. There may be more plagiarism in student’s research papers because the author may be hard to find on a webpage (Knight 44; Mackey and Jacobson 75). This can be especially true if there is a corporate author or the author’s name is not located in a prominent spot. Information literacy education includes ethical decision making and skills to cite sources (Woodward, Davis, and Hodis 193). Other ethical considerations are academic integrity, respect for intellectual property, respecting people’s rights to privacy and confidentiality, and informed consent (Resnik). Digital citizenship is a form of information literacy education. Digital citizenship relates to how to use technology appropriately (Ribble).

Today’s students are tomorrow’s leaders so they are to know about ethical standards (Harris et al. 185). If these skills are not taught, then students will not be prepared for the workplace (185). In order for students to become information literate citizens, they are taught how to treat information they find ethically.

The need for information literacy can best be demonstrated by trends in student Internet search behavior and the application of ethics. Currently, ease of access to information can overwhelm the learner and lead to lazy habits. Search engines, legitimate looking sources, and outright misinformation on the Internet is misleading
students. Incorporating critical thinking skills into research pursuits helps develop decision making skills. Ethics play a large part in researching as the amount of available information grows. Plagiarism, not respecting intellectual property, and not respecting people’s rights to privacy can be easy habits to fall into when the student thinks they can get away with it. Constantly adapting today’s Internet and education models will help tomorrow’s leaders.

**Information Literacy in the Curriculum**

Part two established the need for information literacy instruction because of students’ searching ability and the need to use the information ethically. There is no “right way” of teaching information literacy skills (Johnson et al. 602); rather librarians can follow the Information Literacy Competency Standards for Higher Education. They can also look into CCSS and various library programs. Librarians can also teach critical thinking skills, skills in detecting biases, and technology skills.

**Information Literacy Standards and Objectives**

The Association of College and Research Libraries (ACRL), a division of the ALA, has created standards and objectives to help librarians and educators teach information literacy skills. There are twelve sets of standards ranging from psychology information literacy to visual literacy competency for higher education to standards for faculty statues for academic librarians to name a few (Association of College & Research Libraries; “Guidelines & Standards”). The set of standards many librarians and educators use to teach information literacy skills are the Information Literacy Competency Standards for Higher Education. The goal is to properly gauge if a student is information literate (Association of College & Research Libraries; “Information Literacy Competency
Information Literacy Standards for Higher Education”). Even though these standards are made for higher education, K-12 schools are able to use and implement them as well (Association of College & Research Libraries; “Information Literacy Competency Standards for Higher Education”). The five standards are to know, access, evaluate, use information, and to be ethical and legal with its use.

The ACRL also updated the Instruction Section (IS) Objectives. These objectives break down the Competency Standards into measureable outcomes (ACRL Board). According to the ACRL Board, these objectives can be used individually or grouped together. The standards were created to help librarians teach individual lessons. When a librarian collaborates with another educator, they can use the Competency Standards to incorporate information literacy skills into content area instruction (ACRL Board). Librarians and educators are encouraged to use these standards and objectives when creating information literacy enriched lessons.

**Common Core State Standards with Information Literacy**

Common Core State Standards (CCSS) have increased awareness for information literacy skills and the need for librarians to collaborate with classroom teachers. In Common Core’s English Language Art’s standards, students are to critically think, problem solve, and use analytical skills by reading informational non-fiction and by being challenged to go back to the reading passage to find information (National Governors Association Center for Best Practices, and Council of Chief State School Officers). “Because students must learn to read, write, speak, listen and use language effectively in a variety of content areas, the standards promote literacy skills and concepts required for college and career readiness in multiple disciplines (National Governors
With these challenging standards, students are going to be challenged to master information literacy skills. L. Miller points out that the introduction to the CCSS requires students to habitually, critically read, and pick through the enormous amount of information available in both print and digital form (7). L. Miller also mentions CCSS and the AASL Standards for the 21st Century Learner work together. Both standards want students to analyze and evaluate content, gather relevant information from multiple sources, and integrate information while avoiding plagiarism (7). Johns argues CCSS are the “old library skills” librarians have been teaching in isolation for years. Now teachers are more willing to collaborate with librarians because they are also expected to teach students information literacy skills. With CCSS now focusing on information literacy, librarians are well suited to lead the effort in implementing them because of their expertise in teaching and assessing information literacy skills (Bartow 10). Bartow also argues classroom teachers can create units of lessons with a specific focus on writing, speaking, listening, and mathematics, while the librarians add the information literacy skills (10). Common Core State Standards have heightened awareness of the need for information literacy skills.

**Library Programs**

After librarians have studied and selected information literacy standards and objectives, next, they consider what they will do during their instructional time. This section will focus on goals of library program instruction, teaching information literacy skills through gaming, the information literacy instruction assessment cycle, and self-regulated learning. The goal of a library program is create comfortable lifelong learners
able to productively use the Internet, databases, and the physical library (Baro, Seimode, and Godfrey 283; Onyebuchi and Ngwuchukwu 114). Students need repeated opportunities to practice finding, analyzing, and organizing information found from multiple sources (Association of College & Research Libraries; “Information Literacy Competency Standards for Higher Education”). Onyebuchi and Ngwuchukwu suggest librarians use their library period to increase information literacy skills through story time, direct instruction, and student projects (120).

One way a librarian can improve a library program is to incorporate information literacy games. Students are often disengaged and have low boredom thresholds (Parker and Godwin 92). Games help students become more engaged, use their creativity, and retain more knowledge (92-93). Parker and Godwin described a case study created by Susan Boyle. Her case study was created to help nursing students work on their searching techniques by creating a game called matching pairs (95). Boyle explained the concept and showed the students how this game related to their learning. Students were given two sets of cards; the object was to match the search tool with the search function (96). Boyle found after this game students had a deeper understanding of the content, remembered more than they would have with a lecture, and were more engaged in the discussion on what made a matching pair correct (96-97).

Librarians can create games to support their information literacy instruction by first starting with a specific learning objective, evaluating how best to incorporate technology, and collaborate with others, in person or on the Internet, to design and share effective information literacy games (100). Games are effective in keeping students engaged when learning and practicing information literacy skills.
Incorporating the information literacy instruction assessment cycle (ILIAC) is another way for librarians to improve information literacy instruction. ILIAC was first described by Megan Oakleaf in the Journal of Documentation in 2009. The ILIAC is based on the ‘assessment for learning theory’ where assessing and learning happen simultaneously. Using ILIAC, librarians collect data on students understanding and improve the librarian’s instruction and students’ information literacy skills (Oakleaf 539-540). The ILIAC includes a seven stage cycle. The first stage is reviewing learning goals and standards. Stage two is to identify learning outcomes. The third stage is to create learning activities with stage four enacting the learning activities. Stages five and six are to gather and interpret data on student learning. Stage seven is where librarians make decisions on what needs to change to make the lesson better and how to gather data better or help students better reach the learning outcomes. Then the cycle starts over.

Oakleaf used the ILIAC in a case study at North Carolina State University. All students had to go through English 101 and one of the course’s learning outcomes were to improve students’ information literacy skills. The students did this by completing an online information literacy tutorial called Library Online Basic Orientation or LOBO (546). The librarians and course instructors went through the information literacy instruction assessment cycle twice. In the first round, they collected the standards, identified the learning outcomes, and created the learning activities by writing the content that would go into LOBO. In stage four, they developed LOBO and had the students take the tutorial. Stage five had the librarians and instructors gather data by collecting students’ responses to questions in LOBO. In stage six, they graded students responses based on a rubric; and in stage seven the librarians and instructors made two decisions, to
improve library instruction and increase student learning. They did this by improving the tutorial’s content and offered the students more assistance with an accompanying website.

In round two of the cycle, the librarians found evidence the students were able to decide if a website was credible or not but were unable to find websites for their research papers. So the team developed new standards that focused on this topic. After going through the complete cycle again, the second stage resulted in an increase in the students’ ability to find websites, but they needed help determining if a website was appropriate for academic purposes. Oakleaf’s conclusion to doing two cycles of ILIAC is that the better the librarians knew the learning outcomes, the more students learned. Oakleaf also concluded the librarians were able to analyze the data in a meaningful way (546-557).

The information literacy instruction assessment cycle gives librarians and teachers a step by step format on ways to improve their instruction and student learning.

A third way to improve library instruction is by including self-regulated learning. Self-regulated learning is student focused. With self-regulated learning, students learn with their own motivation. Students also work on information literacy skills within the self-regulated learning model. Self-regulated learning will increase learning because students create their own learning goals (Wolf). Once self-regulated students have created their goals, they have strategies and are motivated to reach them (Brendle-Moczuk 500; Wolf). To do this requires information literacy skills. Self-regulated students are able to find a wide range of information in order to grow their knowledge, ask questions, and find resources (Association of College & Research Libraries; “Information Literacy Competency Standards for Higher Education”). As research
presented here demonstrates, library programs can be successful in building information literacy skills if they are standards driven, incorporate games, use the information literacy instruction assessment cycle, and encourage self-regulated learning.

**Critical Thinking Skills**

Critical thinking skills are vital to a student’s ability to be information literate. This subsection will discuss what critical thinking skills are, how they are part of information literacy, and how they are part of the school’s curriculum. It also discusses how critical thinkers know the different types of media bias and are able to detect it. A case study is also presented. Critical thinking skills are the, “ability to set goals, to adjust strategies, to carry out tasks, to distinguish fact from opinion, to establish the authority of sources, to assess the accuracy and relevance of information, and to detect bias and underlying assumption in data found in information sources and online” (Thomas et al. 168). All of these skills can also be found in information literacy: the thought process students go through to recognize they have a problem, the steps in retrieving information, deciding if the information is relevant to their problem, and if the source is credible.

“Information literacy provides opportunities that will help [students] to become critical thinkers, users of information as well as lifelong learners (Onyebuchi and Ngwuchukwu 113).” Having information literacy skills and critical thinking skills give students techniques and strategies to learn new content and explore more problems to solve (Miller and Bartlett 51). Critical “thinkers improve the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them” (Scriven and Paul). Students who are information literate naturally use their critical thinking skills. Information literate students are able to evaluate
information critically and effectively (Taylor and Patterson 11). Through projects, students have opportunities to work on their critical thinking skills because they are problem solving and exploring, retrieving, and analyzing information (Onyebuchi and Nguwuchukwu 115). Critical thinking skills help students go through the information literacy process of finding information, evaluating it, and using it within a new context. Students think critically in order to work creatively on projects and solve problems.

Another aspect to critical thinking is for students to detect bias by being aware of different types of media bias, and knowing what to look for when searching for biased information. According to Student Daily News, there are different types of media bias: omission, selection of sources, story selection, placement, labeling, and spin. Omission bias is where someone leaves out information from the other viewpoint, and selected sources will have only one viewpoint. Story selection is where the author will put more emphasis on articles with one viewpoint and ignore articles that support another side. Placement is where an editor places a story, its headline, and how it is labeled in such ways as to give an opinion. Spin is about the author’s tone and how it conveys an opinion with only one side of the story. Critical thinkers are aware editors can be “gatekeepers” of information keeping and promoting different stories or sides of a story (South 175). Information literate students are able to critically think and detect different type of bias when they are searching, and analyzing information. In South’s article, he recommend learners use the SMELL Test: examine the source, the author’s motivation, evidence, if the evidence presented is logically supported, if facts are relevant and if any context has been left out (175). Critical thinkers are able to identify and detect different types of media bias.
An example of students practicing their critical thinking skills was presented in a case study written by Cook and Walsh. They conducted a case study of a political science professor and reference librarian working together with students on a problem-based learning project. The students took on the role of a media consultant for a political candidate. During the six to eight week project, the students had two sessions with the librarian. One session was on searching for appropriate sources and the second session was focused on evaluating sources for credibility and bias. The students took a pre-test and post-test to measure results. For credibility, there were five categories of strategies (Cook and Walsh 63-64). They are accuracy, authority, objectivity, currency, and coverage. In the pre-test only 6% of students used these skills and by the post-test 70% of students used at least two or more of these strategies (65). For detecting bias, the three categories were language, message discrepancy, and quality of information. In the pre-test, only 32% of the students could identify with two or more of these strategies and by the post-test 69% of the students could identify with them (67). In the pre-test students overwhelmingly identified with quality of information when detecting a bias. However by the post-test, when students were detecting bias looking for “language used/what is left out”, types of words used and “for words that give away the stance of the author” (67). Students also reported looking at an author’s sources in their research (68). From this problem-based learning case study students became more information literate and better critical thinkers by searching for sources’ credibility and detecting biases in sources. Information literate students are able to identify sources as credible and detect bias when they are analyzing and evaluating information.
Teaching Information Literacy with Technology

As technology becomes more user-friendly and knowledge is more readily available, it is more essential learners know how to use information literacy skills with technology and know about different types of metaliteracies. For a student to be successful with information technology skills, they need information literacy skills. Information technology skills are connected with and support information literacy (Association of College & Research Libraries, “Information Literacy Competency Standards for Higher Education”). Information technology skills come into play when students use computers, know how websites work, evaluate a website’s source for credibility, know how to give proper citations, and how to use databases for research and personal fact finding (Association of College & Research Libraries, “Information Literacy Competency Standards for Higher Education”; Miller and Bartlett 40).

Literacy online, known as metaliteracy, comes in different forms such as digital literacy, visual literacy, and cyber literacy (Onyebuchi and Nwuchukwu 115; Miller and Bartlett 38). Metaliteracy is the next step in helping students produce and share content on social media and online communities (Mackey and Jacobson 76). Teaching metaliteracy helps students create and participate online. Digital literacy teaches students how to access computer resources (64-65). Teaching visual literacy helps students learn through symbols, and cyber literacy helps students voice their opinions online (65-66). Teaching information technology literacy is closely linked to information literacy because it requires students to not just look at information, but to also analyze and evaluate information (66). When students are taught how to use their information literacy
skills with technology, the goal can be achieved of developing the various forms of metaliteracy.

**Conclusion**

An information literate person is one who can create a question, knows where to find appropriate information, detect lies in information, evaluates others’ opinions, makes informed decisions, and knows how to differentiate credible sources. This literacy is essential to minimize search times and optimize the quality of resources found. It is the cornerstone to effective, lifelong learning. Lifelong learning is crucial to keeping the learner current and literate. Information literacy has a shelf life without proper, constant utilization. One’s motivation is the deciding factor to continue learning or not.

The overwhelming amount of information available to learners can muddy the search for credible information and lead to bad habits. Information literate students are taught how search engines can lead them to either popular or promoted sources rather than factual ones. Learning strategies can reinforce this through practice. That large amount of information available can tempt lazy learners to breach ethics and commit plagiarism in the hopes they can cover their tracks with information volume. Information literacy starts in the classroom and library through managed practice and multiple opportunities to practice.

The Association of College and Research Libraries has developed standards and objectives to help educators teach information literacy. CCSS have also placed an emphasis on students’ learning information literacy skills. Library programs can also benefit by teaching Information Literacy Competency Standards for Higher Education. They can do this by incorporate gaming, the information literacy instruction assessment
cycle, and self-regulated learning into library programs. These programs also develop the student’s critical thinking skills. Information literacy will fail to take hold if one’s critical thinking skills are not adequate. Technology also has an impact because users practice information literacy skills with the metaliteracies that accompany it.
CHAPTER 3
CONCLUSIONS

Introduction

An information literate person is someone who can identify when they have a problem, have the ability to locate appropriate information, evaluate it, analyze it, and form their own solution or opinion. People today are inundated with information from multiple sources, everywhere. Information literate people are able to pick through the information and find what is best for them. This paper has covered lifelong learning, students’ lack of judgment when searching for credible sources as well as citing them, and various aspects of adding information literacy skills into the curriculum. The three research questions answered in this research paper are: what is information literacy? Why is there an increased need for information literacy skills? How can a librarian teach information literacy skills in their curriculum?

An Information Literate Person

When someone is information literate, he or she has the ability to identify when there is a problem, are able to seek appropriate resources of information, analyze it, and create a solution. Information literate people are able to make good decisions based on information they find. According to the American Library Association, an information literate person is able to detect lies and disinformation. A person who is information literate is able to make informed decisions on a daily basis.

An information literate person has a goal to be a lifelong learner. That person strives to learn something new, every day. A lifelong learner can learn from an educational setting, through life lessons, professional development in careers, and
through hobbies. Lifelong learners are motivated to seek out more information. They know how to find information effectively and can apply it into their lives, daily.

Information literacy started in the United States in 1974 when Paul Zurkowski introduced the concept to the National Commission Libraries and Information Science. In 1989, the ALA created the National Forum for Information Literacy (National Forum on Information Literacy). In 2009, President Barack Obama declared October to be National Information Literacy Awareness Month through a Presidential Proclamation.

**Information Literacy Skills are Needed**

When students are equipped with information literacy skills, they know how to search and find credible sources. Currently, students are using search engines to conduct research. The Internet is full of truthful and untruthful information. Students however use the first website found and often do not evaluate the source (Miller and Bartlett 40; Thomas et al. 139). Students who are information literate are able to question the source and detect misinformation. Information literate students are also able to ask the right research questions and conduct effective searches on the Internet.

Information literacy skills teach students how to use information ethically. Information literacy skills should not be left for students to learn on their own (Onyebuchi and Ngwuchukwu 113; Thomas et al. xvii). Students will waste a lot of their time working with wrong sources if they are not given the opportunity to practice their information literacy skills (Baro, Seimode, and Godfrey 282). When students are given the opportunity to practice searching for appropriate sources and evaluating them, they become more effective users of information. Students, who are information literate, know how to find credible sources and use information ethically.
Information Literacy Skills Taught in Library Curriculum

When a librarian is establishing his or her curriculum, there are standards available to guide the teaching of information literacy skills. Information Literacy Competency Standards for Higher Education, and Instruction Section Objectives created by the Association of College and Research Libraries are available. School librarians are also encouraged to analyze CCSS and AASL Standards for the 21st Century Learner. These standards encourage librarian and teacher collaboration so information literacy skills can be taught and integrated in content areas.

Library programs can create games to help students retain information better and practice their information literacy skills. They can also utilize the information literacy instruction assessment cycle (ILIAC) to measure the effectiveness of that instruction. This cycle was created from assessment for learning theory. A third way to work information literacy skills into library programs is by encouraging self-regulated learning. In this education model, students create their own learning goals, have strategies, and are motivated to reach their goals (Brendle-Moczuk 500; Wolf).

When school librarians are creating their curriculum, they plan to have students gain and utilize critical thinking skills. Students with critical thinking skills have the ability to set goals, differentiate between fact and opinion, analyze the accuracy in information, and detect bias (Thomas et al. 168). Students are given the opportunity to practice these skills when they have project based learning. They detect bias whether it is through omission, selection of sources, story selection, placement, labeling, or spin. Students who are information literate are able to evaluate information critically and effectively (Taylor and Patterson 11).
Another part of school library curriculum is to teach students information literacy skills using technology. Many times when students are asked to do a project that involves research, they go onto the Internet. Students with a solid foundation in information technology skills are able to locate information from reliable websites, have the ability to evaluate its credibility, and know how to give proper citations (Association of College & Research Libraries, “Information Literacy Competency Standards for Higher Education”; Miller and Bartlett 40). With technology, school librarians can teach a variety of metaliteracies. Where digital literacy helps students use resources on the computer, metaliteracy teaches them to participate in online communities. Visual literacy helps students learn through symbols. Cyber literacy is where students have opinions voiced online. When students are taught information technology skills, they are more proficient at being information literate.

Information literacy may prove to be a critical life skill for today’s learner and tomorrow’s citizens and leaders. As technology continues to progress, information literate students commit themselves to lifelong learning and educators use the best standards available to create fun and effective learning. Information literacy programs are both grounded in fact as well as predictive of tomorrow’s demands.
WORKS CITED


