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# Information Literacy and Adult Learners: Using Authentic Assessment to Determine Skill Gaps

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Information Literacy and Adult Learners: Using Authentic Assessment to Determine Skill Gaps

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### Abstract

Information literacy (IL) skills are essential for adult learners in higher education, especially those unfamiliar with information systems. Citing a lack of literature assessing such skills in adult learners, this article examines the IL abilities of adult learners in an information literacy course. Using a rubric and annotated bibliographies from study participants, the authors rank the IL abilities of adult students. Similar to studies assessing IL skills in traditional undergraduates, the authors found adult students struggled to articulate their evaluations of sources. The authors make recommendations for improving IL instruction for adults and suggest future research.

*Keywords:* information literacy, annotated bibliographies, rubrics, assessment, higher education

### Information Literacy and Adult Learners: Using Authentic Assessment to Determine Skill Gaps

According to the Association of College and Research Libraries (ACRL), information literacy (IL) includes the ability to find, access, evaluate, and use information ethically and effectively (American Library Association, 2000). We are inundated with information from multiple devices, so developing skills to efficiently find the most appropriate information is more important than ever. For adults in higher education unfamiliar with new information systems, using subscription databases and digital libraries for academic purposes may be difficult.

Therefore, IL skills instruction, while important for all individuals, is of particular importance to the adult learner. As the Middle States Commission on Higher Education (2003) states:

Students today need the skills that will enable them to access and navigate the growing universe of information, to select appropriately the credible and reliable information they need, to read critically and think independently as they produce their own ideas, and then to use that refined information for their academic career. (p. 4)

These complex skills may be new to adult students, or adult learners may only manage information needs in a limited way in their professional and personal lives. Performing academic research presents a new challenge that can only be overcome with enhanced IL skills.

Knowles (1970) described adult learners as individuals who bring experiences to the learning environment that traditional learners may not possess. Furthermore, adult learners approach learning in a different manner. Nontraditional students are generally considered those ages 24 and over, often motivated to attend higher education due to particular life events, rather than traditional students, who attend college after high school (Dill, 2009). Thus, entire programs have been created to meet the needs of nontraditional students, featuring more flexible schedules; career-focused content; and authentic, student-centered, active learning.

Numbers from the National Center for Educational Statistics ([NCES], 2013) reveal enrollment of students 25 years and older in institutions of higher education increased by 41% from 2000 to 2011. The NCES anticipates from 2011 to 2021, the enrollment of adult learners will further increase by 14%. Many of these students require introductory courses to become familiar with required college-level skills (Bamber & Tett, 2000). One such skill set requiring improvement is IL skills. Those who teach adult learners must address their students' need to understand and engage in the academic research process, which will increase academic success and encourage lifelong learning.

While the literature reveals several IL programs for adult learners, the dearth of literature assessing these programs demonstrates the need for evidence of student learning. By assessing the IL skills of adult learners, we may identify gaps and improve teaching strategies. The purpose of this study was to examine the abilities of adult learners in an IL course through an assessment of their final capstone project, an annotated bibliography, and make recommendations to improve IL instruction for adult learners. Two research questions guided the study: (a) What aspects of IL do nontraditional students understand after taking an IL course? and (b) What gaps in IL learning outcomes still exist when nontraditional students complete an IL course? The existing literature on information literacy in adult learners and using rubrics for IL assessment is explored in the next section.

### **Literature Review**

In searching the literature relevant to this study, we looked for trends in adult education pertaining to information literacy (IL). Additionally, we searched for studies using rubrics in IL assessment, since this was central to our study. To locate previous research in these areas, we consulted online subscription databases, specifically Library, Information Science & Technology

Abstracts (LISTA) and ProQuest Education Journals. We also used Google Scholar to access materials housed in research databases less intuitively related to our study. Search terms most beneficial to our research included “‘information literacy’ AND ‘adult learn\*’ OR ‘nontraditional students,’” as well as “‘information literacy’ AND ‘rubrics’.” Additionally, because IL has evolved along with technology, we limited search results to the past decade. In the following subsections, we review the literature concerning adult learning in IL literature and then rubric assessment of IL skills.

### **Adult Learning in Information Literacy**

As programs specifically for adults proliferate in higher education, especially online and at for-profit institutions (Ross-Gordon, 2011), libraries have been adapting their services and instruction for adult learners. Cooke (2010) called upon librarians to be andragogical professionals who meet the needs of the adults entering higher education by creating flexible, student-centered educational environments. Many librarians heed this call, but assessment on the information literacy (IL) abilities of adult learners is lacking in the professional literature. While anecdotal evidence can provide some valuable information, authentic assessment reveals the progress made in these programs.

According to a case study by Gold (2005), after unsuccessful sessions, librarians at Eckerd College revised their IL instruction to better reach adult students. They needed to tailor instruction to the adult learners’ needs beyond the classroom and accommodate differing technology abilities. Although the study’s librarians used a grading rubric to assess students’ abilities, no quantitative results were shared in the article. While not empirical, this study provided a description of how librarians can revise standard instructional practices to use an andragogical approach for adult learners.

At Mississippi State University, librarians noticed many adult learners struggled with finding appropriate sources and completing the research process (Cannady, King, & Blendinger, 2012). The librarians collaborated with faculty to provide better assistance, including “flexible scheduling for research consultations with the librarian . . . , faculty providing librarian contact information to students in class . . . , and orientation sessions” (Cannady et al., 2012, p. 164). Although the authors reported these sessions and follow-up consultations improved the research skills of the adult learners, they did not include empirical evidence.

At Washington State University, adult learners take a course titled *Accessing Information for Research*, taught by library faculty and offered online and face to face (Lindsay, 2004). Library faculty found students focused and engaged, but some had trouble with the course management software and were unable to find clearly linked materials (Lindsay, 2004). The author measured student understanding of learning outcomes with a final essay and an annotated bibliography, but did not provide quantitative data on the overall assignment scores.

### **Rubrics as Assessment**

The literature shows many information literacy (IL) programs use rubrics to assess authentic learning of IL outcomes. Usually these outcomes are adapted from the ACRL Information Literacy Standards (finding, evaluating, and citing information sources). Often, the assessment focuses on an undergraduate course that includes IL outcomes, such as composition courses (see Diller & Phelps, 2008; Hoffman & LaBonte, 2012; Knight, 2006). In these cases, a team of librarians and/or faculty members attend a norming session, use a rubric to rate course artifacts, such as a rubric from RAILS (Rubric Assessment of Information Literacy Skills), and then rate the remaining artifacts (Oakleaf, 2012). Aggregated ratings provide an assessment of the program and allow faculty and librarians to see students’ IL strengths and weaknesses.

Using rubrics to evaluate IL outcomes in portfolios, Hoffman and LaBonte (2012) found composition students who received library instruction earned an average score of *proficient* on accessing and evaluating resources outcomes, while students who did not receive instruction earned an average score of *emerging*. When librarians at Washington State University Vancouver helped evaluate ePortfolios from the General Education Program, they found all ePortfolios at the *emerging* level for the communication and IL learning outcome (Diller & Phelps, 2008).

Using ACRL IL standards, similar to those assessed in this study, researchers at the University of the Pacific analyzed over 260 annotated bibliographies from a first-year writing course (Knight, 2006). Students excelled at articulating the value of a source but struggled with evaluation. Specifically, this study found, students mentioned one evaluation criteria—credibility—and excluded currency or objectivity (Knight, 2006).

The literature shows that assessing annotated bibliographies provides instructors and programs with a fuller understanding of the IL skills of their students. However, assessment information regarding the IL skills of adult learners is scarce. Assessing IL skills of adult learners in an IL course, described briefly in the next section, will fill a void in the research.

### **Context**

At Duquesne University, the School for Leadership and Professional Advancement (SLPA) targets nontraditional students and offers several required courses that allow flexibility for working adults and emphasize transitional skills for success in higher education and careers. Duquesne enrolls about 5,800 traditional undergraduate students who are required to take a one-credit IL course. The 230 nontraditional undergraduate adult learners are required to take a separate information literacy course—a three-credit, eight-week course, taught face to face or

online by library faculty and other qualified instructors. Piloted in Spring 2012, the course focuses on using the university's databases and catalog, evaluating information, and issues of plagiarism and copyright infringement, all learning outcomes based on the ACRL Information Literacy Standards from 2012. We considered the adult learner characteristics described by Knowles (1970) when creating and revising the course. While the course has undergone several changes, the overall goals of creating competent, college-level researchers who can navigate systems to find appropriate and reliable information remains. The annotated bibliographies produced in this course highlighted the IL learning outcomes, and thus were used in this assessment.

### **Methodology**

We used an empirical study to quantitatively assess annotated bibliographies from face-to-face and online versions of the information literacy (IL) course for nontraditional students. By applying a numerical rubric, we quantified the students' mastery of assignment goals and identified areas needing improvement. The rubric provides "clear measures of the level of learning attained and explicitly state[s] those measures at the outset," (Knight, 2006, p. 44) in a manner consistent with quantitative research.

Duquesne's Institutional Research Board (IRB) approved this study in 2012, and we collected data between December 2012 and December 2013. Five online sections and two face-to-face sections were offered each year. Eighteen students or fewer enrolled in each online section, and seven or fewer students enrolled in each face-to-face section. Fourteen students participated in the study (13 online students and one face-to-face student). Participants were all nontraditional students enrolled in SLPA; many were entering college for the first time. Student ages ranged from 19 years to middle-aged.

Data collection excluded personal data, per IRB requirements, and included the students' annotated bibliographies. To collect the data, a third party contacted students after they completed the course seeking consent. Following consent, the primary investigator contacted course instructors for students' annotated bibliographies. The primary investigator removed instructor and student identifying information and shared the annotated bibliographies with the researchers in early 2014. The annotated bibliography capstone assignment was similar for all instructors. Students were required to use the research tools introduced in the class (the library catalog, subscription databases, and Google Scholar) to find appropriate resources on a research topic. They were to cite these resources, summarize them, and provide an annotation. The annotation included an evaluation using criteria like currency, authority, accuracy, and purpose. Students were asked to relate the findings of the source with their research questions.

To analyze the data, we, all four instructors of the course, adapted the evaluation rubric from two rubrics posted on the RAILS website (see Appendix). The rubric is analytic rather than holistic, generating higher rater confidence (Oakleaf, 2012), and has six criteria (information need, source choice, summary, evaluation, connection to project, and citations) and four qualitative levels (excellent, proficient, developing, and unsatisfactory). We assigned a quantitative value to determine the average rating for each category, with excellent worth 3 (range: 2.5-3), proficient worth 2 (range: 1.5-2.49), developing worth 1 (range: 0.5-1.49), and unsatisfactory worth 0 (range: 0-.49). Assigning criteria numerical values is standard practice with rubrics and creates quantitative results that can be analyzed to reveal aggregate trends in student achievement (Allen & Tanner, 2006).

Using the adapted rubric, we held a norming session using four randomly selected annotated bibliographies. According to Oakleaf (2012), "if multiple participants plan to use the

same rubric to score artifacts of student learning, norming is critical for establishing shared understanding of the rubric and achieving greater inter-rater reliability” (para. 4). Before the norming session, we individually evaluated the four annotated bibliographies. During the norming session, following the advice of Holmes and Oakleaf (2013), we discussed rating discrepancies and reached consensus. Next, we divided the 10 remaining annotated bibliographies, and pairs of researchers evaluated five assignments reaching rating consensus. We collected and compiled the assessments and counted the ratings for each category, providing an overall view of the annotated bibliographies’ strengths and weaknesses. Overall, we found the rubric and norming session helpful to objectively assessing the annotated bibliographies.

### **Results**

For the 14 annotated bibliographies, Table 1 summarizes the four quality level ratings for the six criteria. First, students scored highest in the area of source choice. The mean score for this area was 2.57, which is in the excellent range. With only one annotated bibliography rated as 1 (developing) and all others rated higher, it appears 93% of the students were effective at finding appropriate sources. Second, aside from source choice, the annotated bibliographies were rated highest in expressing the information need, with five rated excellent, eight rated proficient, one assignment rated as developing and none rated as unsatisfactory; thus, 93% (n=13) of the annotated bibliographies described a research need appropriate for academic research; the information need was considered excellent if it was neither too narrow nor too broad, and if it was appropriate for academic research. The mean score for expressing information need was 2.29 (proficient). Third, 10 annotated bibliographies (71%) had acceptable citations, and the mean score for this category was 1.86 (proficient). Fourth, nine annotated bibliographies (64%) described the connections of the resources to the project sufficiently; the category mean score

was 1.86 (proficient). Fifth, eight annotated bibliographies (57%) had adequate summaries; this category had a mean score of 1.71 (proficient).

Finally, while students were able to find reliable sources, they did a poor job evaluating them, with only three (21%) annotated bibliographies rated as a 3 (excellent) or a 2 (proficient). Students' weakest criteria was evaluation, with eight annotated bibliographies rated 1 (developing) and three rated as 0 (unsatisfactory), meaning evaluations were missing entirely from these assignments. In all, 11 of the 14 annotated bibliographies (79%) failed to appropriately evaluate sources. The mean score for evaluation was 1.07, which is in the developing range.

Table 1

*Quality Level Ratings for the Annotated Bibliographies*

Rating	Score	Source Choice	Information Need	Citations	Connections	Summary	Evaluation
Excellent	3	9	5	3	4	3	1
Proficient	2	4	8	7	5	5	2
Developing	1	1	1	3	4	5	8
Unsatisfactory	0	0	0	1	1	1	3
<b>Mean Score</b>		<b>2.57</b>	<b>2.29</b>	<b>1.86</b>	<b>1.86</b>	<b>1.71</b>	<b>1.07</b>

### Discussion and Recommendations

This study's results indicate students struggle most with evaluation, consistent with other research (Knight, 2006). While in Knight's findings, the bibliographies tended to focus on credibility and little else, we found that our students did not adequately support their analysis and/or had a variety of evaluation criteria missing. The proficient scores in other categories reveal adult students could improve other information literacy (IL) skills. Therefore, in programs

with no IL course, instructors of adult learners need to integrate IL skills as often as possible in their courses. Instructors should not assume nontraditional students have IL skills.

Adult learners face additional challenges when they complete their degrees. With limited or discontinued access to university-supported databases, students will encounter resources requiring thorough evaluation. Graduates must learn their options for accessing quality information using available resources. We must ask if we are preparing these lifelong learners with tools for everyday life. According to a survey of recent college graduates, evaluating sources was the number one information competency learned in college with application in the workplace (Head, 2012). Furthermore, most graduates agreed their careers required finding, evaluating, and using information as a primary task.

Clearly, students in our course needed more practice with evaluating sources. In a more recent online course version, the instructor experimented with a new technique of modeling appropriate evaluations of sources and providing timely feedback to students in the online discussion board. She used the CRAAP (Currency, Relevance, Authority, Accuracy, Purpose) Test as the evaluation model (Blakeslee, 2004). Instead of a formal annotated bibliography, she required students to cite five sources and evaluate them according to each CRAAP Test criteria in an alternative capstone assignment. She scaffolded the capstone project by posting example sources with correct citations and detailed evaluations before requiring students to post their own portions of the assignment. Students could view each other's assignments and the instructor's constructive feedback. Additionally, the instructor provided individual feedback, and students had the opportunity to revise their final capstone projects. In this online course version, many students scored higher both in the evaluation section and their overall capstone projects. In

giving students additional opportunities to practice evaluation, we hope this task will become an automatic cognitive activity whenever students encounter a source.

We recommend instructors, regardless of discipline, model and scaffold appropriate IL learning outcomes, especially evaluating information. Instructors should not assume nontraditional students are fluent in research skills; instead, they can address IL skills in their courses with practice and feedback opportunities. This will allow students to understand the depth of critical thinking required to understand and analyze a source. Students will create higher quality assignments once they have these skills (Middle States, 2003). While our program has a course dedicated to IL, others may find integrating IL skills throughout the curriculum in partnership with librarians more effective. Adult learners have indicated direct practice in courses is most beneficial to their learning, rather than taking courses focused on transition skills (O'Donnell & Tobbell, 2007). Integrating IL learning outcomes throughout the curriculum for nontraditional students will help develop these skills in the context of their disciplines, majors, or areas of study.

### **Conclusion**

This study is one of few assessing information literacy (IL) learning outcomes for adult learners; however, it has limitations. The biggest limitation is the small sample size. We collected assignments from several course sections taught by different instructors, but only 14 students consented to this study. Future research should include larger sample sizes. This study included a convenience sample from one institution and evaluated one final assignment. Research could compare adult learning acquisition in IL across time and universities. Additionally, future research could explore how adult learners perform when taking classes alongside traditional students. Future studies could include pre- and post-test results providing a

stronger indication of learning during the course. However, we believe an annotated bibliography provides clearer evidence of IL skills than a test.

This study's analysis of annotated bibliographies revealed most students, despite taking an information literacy course, remained weak in evaluation. Students should understand not only how to find appropriate resources, but also how to analyze and evaluate resources to identify what makes them acceptable. Without this skill, students may not find the best resources when they only have access to free online materials, not university library databases. As adults turn to the Internet for information about important life decisions, finding the most reliable information, not just the most accessible, will allow them to make well-informed choices.

In order to meet this goal, faculty, librarians, and administrators must advocate for targeted IL classes and integration of IL throughout the curriculum. In addition, instructors must stress the value and real-life application of students' skills developed through achieving IL, which will make the learning more meaningful for students (Huang, 2002). For students, especially adult learners, the surest way to motivate knowledge acquisition is to demonstrate the practical use of such knowledge. By integrating IL in the classroom, modeling appropriate IL outcomes through coursework, and tying IL to the students' information needs, instructors can profoundly influence the information-seeking behaviors of adult learners.

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Appendix

Information Literacy Rubric for Annotated Bibliographies

Criteria	Excellent	Proficient	Developing	Unsatisfactory
Information need	Provides sophisticated research questions /topic appropriate for academic research.	Provides the research questions / topic, but the scope is too broad or too narrow for academic research.	Provides a topic, but does not provide clear research questions.	Does not provide a topic or research questions.
Source choice	Uses subject-relevant information sources appropriate to the research need.	Uses subject-relevant information sources, but the sources are not appropriate to the research need / assignment.	Uses information sources that do not meet the criteria of the research need.	Does not use information sources.
Summary	Distinguishes between own words and the original source. If summaries, paraphrases, or quotes are used, these are used correctly. Represents the source accurately and thoroughly.	Represents the source accurately, but may not provide all relevant information about the source. May have minor errors in paraphrasing, summarizing, or quoting.	May rely too heavily on the original source. Misses some of the main points of the source.	Source not represented thoroughly and/or accurately.
Evaluation	Provides a detailed analysis of each source with direct evidence from the source. Uses a comprehensive list of standard evaluation criteria (credibility, accuracy, objectivity, etc.).	Provides an analysis of each source using standard evaluation criteria, but the analysis does not include direct evidence.	Provides an analysis of each source. Some of the standard evaluation criteria are missing.	Does not provide an evaluation of each source.
Connection to project	Provides a reasoned rationale for using each source for given research questions. Links information directly from the source to the project.	Provides a reasoned rationale for using each source for the given research question, but does not directly link information from each source to the project.	Provides a rationale for using each source, but the rationale provides only a basic justification (i.e., the source was on my topic).	Does not include a rationale for using the source.
Citations	In-text citations and works-cited page are accurate.	Minor errors in the in-text citations and works-cited page.	Some significant errors in the in-text citations and the works-cited page.	Major errors and/or missing citations

Adapted from AAC&U VALUE Information Literacy Rubric Revision - Candice Benjes-Small (Benjes-Small, n.d); AAC&U VALUE Information Literacy Rubric Revision - Assessment Immersion 2011 "Final" Draft (Rubric assessment of information literacy skills, 2011).