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## Considering Information Literacy Skills and Needs: Designing Library Instruction for the Online Learner

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# CONSIDERING INFORMATION LITERACY SKILLS AND NEEDS

Designing library instruction for the online learner

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## ABSTRACT

This paper reports on a library instruction needs assessment conducted with incoming doctoral students (n=34) in two online programs in education. The differences in the prior skills and experiences of the two groups highlighted the importance of needs assessments and learner analyses as well as course- or program-specific instructional design in information literacy instruction for online students. Based on students' reported skills, education librarians structured both the content and format of instruction to help students succeed in their programs and build lifelong skills.

## INTRODUCTION

The number of students taking online courses at U.S. institutions of higher education has steadily increased in recent years. From the fall semester of 2008 to that of 2009, the number of students who took an online course increased from 4.5 million to 5.6 million (Allen & Seaman, 2009; 2010). Seventy-four percent of public institutions and 51% of private institutions reported that online education is integral to their long-term strategy (Allen & Seaman, 2010). The growth of online programs in the recent past has highlighted the importance of examining the quality of distance education and the support available for online students (Meyer, 2002). Along with technical and administrative support, support for the acquisition and updating of informational literacy skills is also important for online students in post-secondary institutions. Information literacy instruction can help online students appropriately use digital resources to succeed in their academic endeavors. This paper reports on the provision of information literacy support to incoming online students in a doctoral program in education, based on an analysis of their skills and needs.

## LIBRARY SUPPORT FOR ONLINE LEARNERS

The significance of support for online students at the institutional, program, and course level for a quality online learning experience and for fostering connectedness to the institution has been highlighted by the Distance Learning Standards of the Association of College and Research Libraries (ACRL, 2007) and by the Distance Education & Training Council (DETC Accrediting Commission, 2012). Recent

research has focused on support for online students and the implications of online support (or lack thereof) for student satisfaction, retention, completion, and students' perception of connectedness to an institution (Dare, Zapata, & Thomas, 2005; LaPadula, 2003; Levy, 2003; Levy & Beaulieu, 2003). Students' perception of connectedness to an institution can influence student retention, student completion of online courses, and student satisfaction in an online program (Cain & Lockee, 2002; Tait & Mills, 2003).

Online students are often working adults who want to study part-time, live in remote locations, and cannot attend classes at specified times for several reasons. In addition to technical and administrative support, library support is essential to their success in online courses or programs because an inability to access and use library resources can result in frustration and can increase drop-out rates in courses (Lee, 2000). The Association of College and Research Libraries (ACRL) has worked to create standards that ensure that online students, as members of a university community, have the same access to library resources and services as on-campus students. ACRL (2004) recommended the creation of "a program of library user instruction designed to instill independent and effective information literacy skills while specifically meeting the learner-support needs of the distance learning community" (p. 5).

Library instruction for distant learners is not a new phenomenon and has previously involved travel to remote sites by academic librarians and the use of synchronous and asynchronous technologies when such infrastructure was available (Ferguson & Ferguson, 2005; Kontos & Henkel, 2008; Lindsay, Cummings, Johnson, & Scales,

2006; Markgraf, 2007; Ramsay & Kinne, 2006). Library instruction, both on-campus and online, is offered in a myriad of ways - as a 'stand-alone' class about a specific topic or database, a 'one shot' course-integrated session that covers specific content within a course, or by means of an embedded librarian within a course or several courses in a college. While all these methods have contributed to student learning, course integrated instruction where students have opportunities to transfer the content of library instruction to real-world settings or course activities has been found to be most effective (Adams, 1998; Allegri, 1985; Badke, 2009; Beile, 2003; Bordonaro & Richardson, 2004; Hall, 2008; Stein & Lamb, 1998).

Course-integrated instruction is structured with a specific focus on course assignments and the goal of helping students complete those assignments. It usually corresponds to information literacy standards and/or encompasses a basic set of information literacy skills that have been defined by an accreditation association or a librarian. Simultaneously, it is equally important that the library instruction be designed to address specific skills that the learner lacks and needs to learn in order to succeed in that particular course. While librarians have not always used a systematic instructional design approach for designing instruction, the necessity of instructional design to create library instruction is emphasized in the American Library Association's recent guide for library instruction (Booth, 2011). In the online environment, it is essential to analyze learner needs because the librarian is not in a physical classroom with the learners and cannot ask questions or gauge their existing knowledge. Some librarians use pre-tests or other assessments to measure students' knowledge and skills at the beginning of a face-to-face session and

informally adapt their instruction according to the results (Ivanitskaya, DuFord, Craig & Casey, 2008). This approach, while valuable in face-to-face courses, cannot be used for online instruction, which requires prior planning. Library instruction in an online program or course, therefore, should be structured and designed following the identification of learners' existing skills as well as target skills as required in a program or course (Dewald, Scholz-Crane & Booth, 2000; Higgins, 2010; Koneru, 2010; Macklin, 2003; Veldof, 2003).

## LIBRARY INSTRUCTION AND LEARNER NEEDS

The planning, design and development of online instruction is grounded in the field of instructional systems design. Three common models, all of which include an analysis of learners and their needs as the first step in the instructional design process, are the Dick and Carey Model (2005), the Morrison, Ross, and Kemp model (2006) and the ASSURE model (Heinich, Molenda, Russell, & Smaldino, 2002). Each of these models includes similar elements that describe key instructional design processes and that are used in both face-to-face and online instruction. The Analysis phase represents a needs analysis of both the learner and content. It is a critical component of ADDIE - Analysis, Design, Development, Implementation, and Evaluation - the elements that are key to many instructional design models (Dick & Carey, 2005; Morrison, Ross & Kemp, 2006). The ASSURE model, often used by teachers and trainers for the effective use of media in instruction identifies six steps - analysis of learners, statement of standards and objectives, selection of strategies, media and materials, utilization of technology, media, and materials, requirement of learner participation and evaluation and revision

(Heinich, Molenda, Russell, & Smaldino, 2002). The first three phases of the Kemp Design Model also stipulate the determination of learner characteristics and content as initial steps following the identification of instructional problems and instructional goals (Morrison, Ross, & Kemp, 2006). The implementation of a needs analysis is therefore a necessary first step to designing online library instruction using any leading model of instructional design.

Several instruments have been used in the past for needs analysis in library instruction – qualitative data have been collected using interviews and focus groups; online surveys have been delivered to identify gaps in student knowledge; and some researchers have used information behavior observations and citation analysis as additional methods to identify students' existing skills and needs (Gonzalez, 2009; Hoffmann, Antwi-Nsiah, Feng, & Stanley, 2008; Patterson, 2009; Silfen & Zgoda, 2008). In a study with graduate students, Hoffman et al. (2008) reported the usefulness of the needs assessment to identify students' content and format preferences across various disciplines before building a non-mandatory library instruction program. A wide variation in incoming graduate students' information literacy skills was also evidenced in Patterson's (2009) research in various disciplines that revealed deficiencies in students' ability to trace current and ongoing research. The diversity in students' information literacy skills evidenced in the research reinforces the need to identify those skills and design program-specific or course-specific instruction that addresses the needs of the group of students in a course or program.

A feeling of self-efficacy, as well as anxieties about accessing and using library

resources are also important psychological constructs affecting information literacy outcomes (Collins & Veal, 2004). In a study conducted in a graduate research methods course Onwuegbuzie (1996) found that library anxiety as measured by the library anxiety scale (LAS) influenced performance and impacted the quality of students' research proposals. Two specific aspects of self-efficacy relate to information literacy and students' information searching abilities: its relationship to context and performance. Self-efficacy is context specific and can vary in specific domains. For example, self-efficacy with searching may vary across resources and across disciplines. Further, self-efficacy is positively linked to performance (Bandura, 1986) and a higher self-efficacy can be linked to increased performance. As both library anxiety and self-efficacy can influence information literacy skill performance, librarians must consider these factors when developing needs analyses prior to conducting library instruction.

## INSTITUTIONAL CONTEXT

### *Online Programs at the College of Education*

The College of Education at University of Florida offers several online graduate programs (Ed.M., Ed.S., & Ed.D.). Because the coursework in these programs includes assignments such as reviewing research or writing annotated bibliographies and book reviews, the ability to conduct successful literature searches is essential. Although many graduate students are technology savvy, they often do not have the experience or the information literacy skills to effectively access or use web-based scholarly databases and critically analyze the results of their searches. Being at a distance also limits the students' ability to

attend library orientations on campus to acquire the information literacy skillsets essential to succeeding in online education programs.

Several challenges faced by online students when accessing library resources came to light in evaluation data collected in a new online doctoral program in curriculum and instruction at the College of Education. Incoming students had access to librarians in an orientation course and also attended two synchronous online sessions where librarians delivered instruction during the first semester of their online program. In response to a survey at the end of the first year, 62% of online students (n=16) strongly agreed that they were satisfied with the library instruction provided. However, 33% of students wrote in their open-ended comments that they had not known how to access the library from off-campus during their initial courses in the program, and some students added that they were still not confident searching library databases or using library resources to complete their assignments. Fifty percent suggested that library orientations, services, or instruction be provided to future students at the beginning of the online program. The results uncovered a possible disconnect between the library instruction provided and incoming students' needs or existing skills when they began the online program. The education librarian and the program coordinator thus decided to conduct a needs assessment for the next group of students.

### *Library Instruction for Online students at the College of Education*

The Education Library in the college has consistently worked to provide easy access for new users and recently redesigned its website to improve access for online students. In order to serve the growing number of online students who rely on using

online resources, the website describes services for remote users and provides tutorials, e.g. about accessing the library from off-campus. Carefully constructed subject oriented and program related guides are also provided for new students to navigate information resources if they cannot speak with a librarian directly. Librarians have worked with the college's Distance Learning Office to include tutorials within the course management system used (Moodle). Opportunities for synchronous and asynchronous communication with librarians (e.g. an online helpdesk, a chat feature) are available.

In addition to the website overhaul, academic librarians attempted to provide course-specific instruction in an online graduate course in 2009. Following discussions with the instructor about course assignments, embedded librarians designed instruction in the form of online modules and optional asynchronous interactions with students in the online graduate course. Pre- and post-assessment questionnaires and an instructor interview indicated that the project was successful in increasing online students' comfort level and confidence with library resources. Furthermore, an analysis of students' access of resources, use of resources and participation in discussions from the Learning Management System (Moodle) used for the online course indicated that students were more likely to access and use library resources that assisted them with specific course assignments. The success of this project reinforced the importance of course-specific or assignment-specific instruction and informed the strategy used to design this project.

## METHODOLOGY

In the absence of face-to-face interaction or

contact with incoming online doctoral students, a survey was chosen as the best method to assess their prior experience and confidence with information literacy skills. To identify the questions in the survey, the education librarian and the program coordinator for one doctoral program collaboratively reviewed a) the information literacy skills needed to successfully complete coursework in the first year of the online program and to succeed in the doctoral program from coursework to dissertation proposal writing, and b) the search and assessment skills as well as knowledge of databases identified by the education librarian as essential for doctoral students in education. The resulting 22-question survey was designed to measure incoming online students' perceived ability to access information using different databases, search and retrieve articles, manage and use library resources in their writing, and cite appropriately. It contained questions in three areas: Students' prior experience with library instruction and with online courses at the college (Likert scale); Students' prior experience retrieving research using various databases (Yes/No options); and students' confidence, anxiety and perceived expertise with searching, evaluating and using online resources, and with appropriate citation of research (Likert scale). The survey concluded with an item about students' preferences for different formats used in library instruction.

The survey was piloted in an online doctoral program that enrolled two new cohorts with two different specializations in summer 2010. Group A was in the new online doctoral program in teacher education and Group B comprised entering doctoral students in educational technology. The online survey was hosted in Survey Monkey software, contained no student identifiers, and was distributed to each group separately

before students began program activities or attended orientation sessions. Sixty-eight percent of all students beginning the online doctoral programs (n=49) responded to the survey, namely, 50% of students (n=26) in Group A and 91% of students (n=23) in Group B. Data from each group were first analyzed separately using descriptive statistics in order to determine whether and how instruction should be designed differently for each group, followed by an analysis of the combined data set.

## FINDINGS

The survey findings are presented here according to constructs in the survey: Prior experience with library instruction; Prior experience using library resources; and Perceived ability and confidence accessing and using library resources.

### *Prior experience with library instruction*

All 34 participants were employed full-time in educational institutions and did not study on campus. Several were returning to graduate school after a gap of over 5 years. Forty-four percent of participants had previously taken courses at the university and 73% of those who had previously attended the university had taken online courses. In response to a question about whom they have consulted on research in the past, 72% of students reported consulting their peers. Compared to 52.9% of Group B participants, only 8.3% of Group A participants reported consulting a librarian, and a total of 64.7% agreed they would consult a librarian if they could not find enough information on their topic. In the past, students had received library instruction in the form of tutorials (41.2%), course instruction (26.5%), or library orientations (26.5%), and 44.1% of

participants had received no formalized guidance. Among the two groups, 76.9% of Group A had not received formalized instruction previously compared to 23.8% of Group B.

### *Prior experience using library resources*

In order to determine students' prior experience using various library resources and online databases, students were asked to rate their experience and their current use of databases. Of the 17.6% of students that rated themselves as very experienced, no students belonged to Group A. Likewise, 46.2% of students in Group A rated themselves as not experienced in using library resources (Table 1). This trend was also reflected in a more specific question about library catalogs (Table 2) where 0% of students in Group A rated themselves as very experienced and 50% stated that they were not experienced. Overall, only 41% of participants rated themselves as very experienced or experienced in using library resources (Table 1).

Questions in the survey addressed students' awareness and use of databases that were identified by the education librarian as useful to graduate students in education. The new doctoral students were most aware

of ERIC (88.2%), the search engine Google (88.2%), Education Full Text (61.8%), and Google Scholar (58.9%) in that order (Table 3).

Students most frequently used ERIC (59.4%), Education Full Text (53.1%) and Google (39.4%) in their library searches (Table 4). None of the students were aware of Education Index Retro, Social Science Citation Index, Web of Science, or Dissertations and Theses. Group A was more familiar with and used the Educational Full Text and JSTOR databases more than Group B, while Group B was more familiar with and used the library catalog, Academic Search Premier, and WorldCat databases more than Group A.

### *Perceived ability and confidence using library resources*

In addition to assessing incoming students' knowledge and use of databases in the field of Education, it was considered important to assess their affective perceptions (e.g. confidence, anxiety) that influence their success in finding resources in an online course (Colin & Veal, 2004). Responding to questions in this section, about 50% of students agreed that they were very confident or confident using the library catalog and article databases (Table 5).

TABLE 1— PRIOR EXPERIENCE USING LIBRARY RESOURCES

Your prior experience using library resources:	Group A %	Group A Count (n=13)	Group B %	Group B Count (n=21)	Total %	Total Count (n=34)
Very experienced	0.0%	0	28.6%	6	17.6%	6
Experienced	15.4%	2	28.6%	6	23.5%	8
Somewhat Experienced	38.5%	5	33.3%	7	35.3%	12
Not Experienced	46.2%	6	9.5%	2	23.5%	8



TABLE 2 — PRIOR EXPERIENCE USING THE LIBRARY CATALOG AND DATABASES

<b>Your prior experience using the library catalog and article databases:</b>	<b>Group A %</b>	<b>Group A (n=12)</b>	<b>Group B %</b>	<b>Group B Count (n=21)</b>	<b>Total %</b>	<b>Total Count (n=33)</b>
Very experienced	0.0%	0	28.6%	6	18.2%	6
Experienced	25.0%	3	33.3%	7	30.3%	10
Somewhat Experienced	25.0%	3	28.6%	6	27.3%	9
Not Experienced	50.0%	6	9.5%	2	24.2%	8

TABLE 3 — AWARENESS OF DATABASES

<b>Are you aware of the following databases?</b>	<b>Group A % (Yes)</b>	<b>Group A Count (n=13)</b>	<b>Group B % (Yes)</b>	<b>Group B Count (n=21)</b>	<b>Total % (Yes)</b>	<b>Total Count (n=34)</b>
ERIC	92.3%	12	85.7%	18	88.2%	30
Education Full Text	84.6%	11	47.6%	10	61.8%	21
Education Index Retro	0.0%	0	0.0%	0	0%	0
Library Catalog	30.8%	4	71.4%	15	55.9%	19
Social Science Citation Index	0.0%	0	28.6%	6	17.6%	6
Academic Search Premier	15.4%	2	38.1%	8	29.4%	10
Dissertations and Theses	0.0%	0	28.6%	6	17.6%	6
JSTOR	46.2%	6	28.6%	6	35.3%	12
PsycInfo	7.7%	1	19.0%	4	14.7%	5
Web of Science	0.0%	0	4.8%	1	2.9%	1
WorldCat	7.7%	1	38.1%	8	26.5%	9
Google	84.6%	11	90.5%	19	88.2%	30
GoogleScholar	53.8%	7	61.9%	13	58.8%	20
Other (please specify)	0.0%	0	4.8%	1	2.9%	1

Group A reported less confidence than Group B, with 7.7% students stating they were very confident and 46.2% stating they were not confident. Forty-seven percent of students rated their anxiety regarding the literature search process as high or moderate with Group A reporting higher anxiety than Group B (Table 6).

The ability to find, use and evaluate relevant literature in writing assignments in graduate online courses is an important skill in a doctoral program and was reflected in the next three items in the survey. Overall, only a small percentage of students rated themselves as very successful at finding

relevant literature (15.2%) and as excellent at evaluating the quality of resources they found (11.8%) (Table 7 & 8). Students rated their ability to cite online resources appropriately as quite high – 24.2% as excellent and 51.5% as good (Table 9).

With respect to students' preferred formats for library instruction, online tutorials (62%), online access to a librarian during specified office hours (60%), and course integrated sessions (47%) were most preferred by the students in this study.

TABLE 4 — DATABASES USED FREQUENTLY

Which of these databases do you use most frequently?	Response %	Group A Count (n=12)	Group B %	Group B Count (n=20)	Total %	Total Count (n=32)
ERIC	58.3%	7	60.0%	12	59.4%	19
Education Full Text	75.0%	9	40.0%	8	53.1%	17
Education Index Retro	0.0%	0	0.0%	0	0%	0
Library Catalog	8.3%	1	25.0%	5	18.8%	6
Social Science Citation Index	0.0%	0	10.0%	2	6.3%	2
Academic Search Premier	16.7%	2	40.0%	8	31.3%	10
Dissertations and Theses	0.0%	0	0.0%	0	0%	0
JSTOR	33.3%	4	10.0%	2	18.8%	6
PsycInfo	8.3%	1	10.0%	2	9.4%	3
Web of Science	0.0%	0	0.0%	0	0%	0
WorldCat	0.0%	0	10.0%	2	6.1%	2
Google	33.3%	4	45.0%	9	39.4%	13
GoogleScholar	25.0%	3	30.0%	6	27.3%	9
Other (please specify)	0.0%	0	10.0%	2	6.1%	2

TABLE 5 — CONFIDENCE USING LIBRARY CATALOGS AND DATABASES

Rate your confidence with using the library catalog and article databases:	Response %	Group A Count (n=12)	Group B %	Group B Count (n=21)	Total %	Total Count (n=34)
Very confident	7.7%	1	33.3%	7	23.5%	8
Confident	7.7%	1	38.1%	8	26.5%	9
Somewhat confident	38.5%	5	23.8%	5	29.4%	10
Not confident	46.2%	6	4.8%	1	20.6%	7

TABLE 6 — ANXIETY REGARDING LITERATURE SEARCHES

Rate your anxiety regarding the literature search process	Response %	Group A Count (n=13)	Group B %	Group B Count (n=21)	Total %	Total Count (n=34)
High	30.8%	4	0%	0	11.8%	4
Moderate	53.8%	7	23.8%	5	35.3%	12
Low	15.4%	2	66.7%	14	47.1%	16
None	0.0%	0	9.5%	2	5.9%	2

TABLE 7 — SUCCESS FINDING RELEVANT LITERATURE

Rate your success with finding literature that is relevant	Group A %	Group A Count (n=12)	Group B %	Group B Count (n=21)	Total %	Total Count (n=33)
Very Successful	8.3%	1	19.0%	4	15.2%	5
Successful	16.7%	2	66.7%	14	48.5%	16
Somewhat Successful	58.3%	7	14.3%	3	30.3%	10
Not Successful	16.7%	2	0.0%	0	6.1%	2

TABLE 8 — ABILITY TO EVALUATE QUALITY OF RESOURCES

Rate your ability to evaluate the quality of resources discovered	Group A %	Group A Count (n=13)	Group B %	Group B Count (n=21)	Total %	Total Count (n=34)
Excellent	7.7%	1	14.3%	3	11.8%	4
Good	23.1%	3	81.0%	17	58.8%	20
Fair	69.2%	9	4.8%	1	29.4%	10
Poor	0.0%	0	0.0%	0	0%	0

## DISCUSSION

This study is based on self-reports of information literacy experiences and skills by online education doctoral students, not on their actual performance. The literature describes a disconnect between students' perceived self-efficacy with information literacy concepts and library skills and their actual performance (Kurbanoglu, 2003; Neely, 2002). While it is important to acknowledge a possible disconnect, participants in this research were doctoral students who are full-time professionals aiming to become leaders in their field, and who are more likely to be realistic in their estimation of their own information literacy skills (Gross, 2004). They did not report very high skills, corresponding to Ehrlinger and Dunning's assertion (2003) that the reporting of abilities by students in the lower ranges could correlate to fairly accurate perceptions of skills.

Furthermore, this study was conducted with a small sample (n=34) of online doctoral students who were professionals with several years of work experience. They might not be representative of the larger population of online graduate or undergraduate students at post-secondary

institutions in the United States. The specific context of the study – professional students in online graduate education programs - influences reliability and generalizability such that the results cannot be generalized to all online students in various disciplines in higher education. Nevertheless, the findings reinforce the importance of needs analysis procedures and their value for the design of online library instruction.

In this study, online doctoral students in Group A (n=13) and Group B (n=21) provided information about their prior experiences, current skills and their perceived confidence and anxiety accessing, using, and evaluating library resources. Although the sizes of the groups differed, the marked differences between the two groups' prior experience, anxiety, and confidence with information literacy skills underline the need for cohort-specific or group-specific library instruction. In general, Group A was less confident, more anxious, and less experienced in accessing, using, and evaluating library resources than Group B. While some of the results could be attributed to the fact that Group B comprised students of educational technology who were more used to

TABLE 9 — ABILITY TO CITE RESOURCES APPROPRIATELY

Rate your ability to cite your resources appropriately	Group A %	Group A Count (n=12)	Group B %	Group B Count (n=21)	Total %	Total Count (n=33)
Excellent	8.3%	1	33.3%	7	24.2%	8
Good	41.7%	5	57.1%	12	51.5%	17
Fair	33.3%	4	9.5%	2	18.2%	6
Poor	16.7%	2	0.0%	0	6.1%	2

accessing online resources, it became clear that information literacy instruction would have to be designed differently for each group, keeping in mind their incoming skill levels and preferred instructional formats.

Group A was more conversant with the Education Full Text & JSTOR databases than Group B while Group B was more familiar with the library catalog and WorldCat databases than Group A. Accordingly, librarians focused on specific databases with which each group had less experience, and also explained the usefulness of certain databases over others for different purposes. Likewise, they emphasized the importance of using Google Scholar over Google as a search engine, because over 85% of students used Google and only 50% of students used Google Scholar to find research. Access to dissertations is particularly important to doctoral students embarking on research in their area of specialization, but none of the 34 incoming online doctoral students in this study knew how to access such theses and dissertations. An online module on this topic was created by the education librarian and provided to students.

Not only the content of library instruction but also the format of library instruction was informed by the results of the needs assessment conducted with incoming online students. Online tutorials and online access to a librarian were the most preferred formats for library instruction among the respondents. The resources available on the Education Library website were reviewed and tutorials in the form of screen-casts, videos recordings, and detailed step-by-step Adobe Acrobat files were created specifically to address the needs of these incoming doctoral students. Synchronous online sessions with the librarian were scheduled in the first semester of the

doctoral program on topics identified from the survey. About half of the students in each group expressed a preference for course-integrated library instruction; therefore, library instruction was also planned in collaboration with course instructors in the first semester of the online programs, taking into account skills and knowledge needed by students to successfully complete assignments in the first year of each program.

Following the implementation of information literacy instruction, a survey was conducted with this group of online students (n=19) that highlighted their increased awareness and familiarity with educational databases and their increased perceived ability to find relevant literature. Students' continued learning needs were also explored using open-ended questions. Students' responses reflected a need for instruction in the management and citation of bibliographical resources, which was subsequently designed and taught by the education librarian the following semester. For future cohorts entering the doctoral program, the needs assessment survey will be reused and the existing instruction will be reused, tailored or redesigned based on the needs of future students.

## IMPLICATIONS

Our research indicates that in the online environment, a needs analysis before students start a course or program is extremely important because a) online instruction needs advance planning and development and b) information literacy support in the online environment has to be structured for students who are located in other towns, states, or even countries and whom the librarian cannot see. As evidenced by the two groups in this study, online students' information literacy needs

can vary greatly depending on their familiarity with the institution, their previous experiences with digital resources, and their comfort in the online environment. Gleaning information on prior experience with library instruction; prior experience using library resources; and perceived ability and confidence accessing and using library resources allows the librarian to design and implement instruction specific to the needs of the majority of students in a course or program. This instruction can then be delivered in a format preferred by the students and in collaboration with a faculty member for the course or program. Instruction that is designed to improve students' existing gaps in information literacy skills not only helps students to be successful in an online course or program, but also raises their skill level and use of digital resources in any environment. Students will be more aware and appreciative of library resources, thus increasing their retention in online programs and their overall satisfaction with online learning. Most importantly, they will acquire skills in accessing, using and evaluating quality digital resources, which will help them succeed in their academic endeavors and in other professional contexts.

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