

## Assessing and meeting the information literacy needs of incoming transfer students: Implementing ACRL's assessment in action program

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### Abstract:

**Purpose:** The purpose of this paper is to determine the information literacy skills and needs of incoming and current transfer students. **Design/methodology/approach:** Three studies are discussed, two of which were generated from ACRL's Assessment in Action program. In the first, incoming transfer students were asked basic demographic questions and were tested on several basic information literacy skills. A combination of quantitative analysis and rubrics was used to assess results. A pre-test, post-test method was used in a basic introduction to campus life course for transfer students. Finally, the 2014 cohort of transfer student were resurveyed to test research skills and report interactions they had with reference librarians and library instruction during the previous year. **Findings:** Initial observations suggested older transfer students, and students transferring from community colleges were least knowledgeable about basic information literacy concepts, and that students who had attended library instruction sessions were more knowledgeable. In the pre-test, intervention and post-test study, students did not show significant improvements in knowledge, but did show a significantly improved comfort level with library research. In the follow-up survey, second year transfer students who had library instruction during the previous year were significantly more likely to have sought out their subject liaison for consultations. **Originality/value:** Research studies that focus on the information literacy needs and skills of transfer students and adult learners is somewhat scarce, compared to that of incoming freshmen. It is of use to both academic librarians in institutions that accept incoming transfer students, and to community college librarians who may be designing handoff library instruction.

**Keywords:** Academic libraries | Library instruction | Information literacy | Assessment | Adult learners | Transfer students

### Article:

### Introduction

In the Fall of 2014, a team of librarians at University of North Carolina at Greensboro University Libraries (UNCG Libraries) surveyed incoming transfer students to determine their information literacy skills and needs. Basic demographic questions were asked, along with questions to test information literacy skills and to determine perceived library instruction needs. Initial observations suggested that older transfer students and students transferring from community colleges were least knowledgeable about basic information literacy concepts, and that students who had attended library instruction sessions were more knowledgeable. Based on the results of this study, members of the UNCG Libraries Transfer Student Research Project submitted a proposal for further research on incoming transfer students, their information needs and their information literacy skills to the Association of College & Research Libraries (ACRL)'s Assessment in Action (AiA): Academic Libraries and Student Success program. This 14-month long program, funded by a National Leadership Demonstration Grant, supports librarians learning and implementing the research cycle to strengthen the competencies and leadership skills of librarians. The primary investigator was required to assemble a team of key stakeholders both internal to the library and across campus to participate in this research project. Two research studies were implemented to study the research skills and needs of incoming transfer students. The first study was a pre-test, intervention and post-test assessment in Foundations for Learning (FFL) 250, a course taken by incoming adult students. The second study was a survey of second year transfer students that assessed information literacy skills and compared those students who had librarian interventions with those who did not. The study also compares the skills of students from a variety of transfer institutions, different majors, age ranges and time lapsed between their last institution and UNCG. The pre-test and post-test results showed that students' comfort level with basic information literacy tasks was significantly higher after receiving library instruction. The survey showed that students who had been exposed to library instruction in their first year at UNCG were more likely to have scheduled consultations with their liaison librarian.

## **Literature review**

We began our study of transfer students and their information literacy skills and needs in Fall 2014, at a time when nearly 1.5 million college students were “transfer-in” students (IPEDS Trend Generator, 2017a). Though this number was lower than the previous Fall semester and part of an overall downward trend in the number of transfer students, these students still represented 7 per cent of student enrollment at US institutions of higher education that year, with the total enrollment being 20,663,464 (IPEDS Trend Generator, 2017b). Our interest in investigating transfer students was motivated by what we saw as an imbalance in the library literature – many studies have been devoted to the information literacy skills and needs of first-year college students, while very few have focused on transfer students.

In the broader educational literature, however, transfer students – particularly those who transfer from community colleges to four-year institutions – have received significant attention. In 1965, John Hills examined 20 studies with 46 data sets focused on academic performance of community or junior college students who transferred to four-year institutions. He noted a “severe drop in performance upon transfer”, which he called “transfer shock” (Hills, 1965, p. 202). This concept of “transfer shock” has been a consistent theme in the literature on transfer student transition, with many subsequent studies confirming a drop-in grade point average (GPA) in the semesters after transfer. Laanan, among others, argues for a more nuanced view of

transfer student adjustment that goes beyond the “cognitive outcome of transfer students’ academic adjustment at senior institutions as measured by GPA” to acknowledge that “prior experiences at two-year colleges may influence a student’s ultimate progress or performance in terms of both cognitive and affective outcomes at senior institutions” (Laanan, 2004, p. 332).

To further investigate these additional dimensions of transition and adjustment, Laanan developed the Laanan-Transfer Student Questionnaire (L-TSQ®), a 304-item survey meant to capture:

- “social demographics”;
- “community college experiences”; and
- “university experiences” of transfer students (Laanan, 2004, p. 338).

Laanan, Starobin and Eggleston used a modified version of the L-TSQ® with more than 900 transfer students from two-year colleges to a public land-grant university in the Midwest (Laanan et al., 2010, p. 181). One of the authors’ key findings was the positive influence of learning and study skills acquired at a community college on the students’ academic transfer adjustment. The examples of the learning and study skills identified as significant include “note taking skills”, “problem solving skills” and “time management skills” (Laanan et al., 2010, p. 191).

This and other studies indicate that specific skills developed at the community college level influence student academic performance and transition at the institution to which they transfer. While the library is often left unmentioned in studies of transfer student transition and adjustment, we suggest that prior training could have a similarly positive influence on information literacy skills of incoming transfer students. Therefore, knowing what and how much experience students have with information literacy prior to entry can help predict the needs of transfer students in this area. Capturing the prior experiences of transfer students was a critical element of our studies, which aligns us with the developments that have been made in transfer student research since Hills’ initial introduction of “transfer shock” in 1965. We were specifically interested in the information literacy skills of incoming transfer students, which we measured in a variety of ways. Our initial survey asked students to describe their prior experiences with information literacy training and applications, to complete tasks designed to capture more objective data about information literacy competence and to share perceived needs for training at our institution.

In the library science literature, a few studies of transfer students and their information needs or information literacy skills have been attempted. Tag (2004) surveyed incoming transfer students at Western Washington University about their information needs and skills at a “transitions fair” for new transfer students. The survey results showed that while “74.0 per cent of the respondents [had] prepared bibliographies for research papers and 90.6 per cent [had] received instruction on plagiarism”, 68 per cent still indicated that they wanted additional library/research instruction (Tag, 2004, p. 105). In her article, Tag makes an important observation about transfer students that applies not only to her institution:

***The diversity of the transfer student population can create practical challenges in terms of library resources and services. The group is diverse in age and educational experience, with subgroups of international students, traditional-aged community college students, first-generation, and older adult reentry students (Tag, 2004, p. 103).***

Creating any academic programming for such a diverse group can be a challenge, and library or information literacy programming is no exception. Tag describes several interventions that her library made as a result of survey data, including more integration with other campus offices and programs involved in outreach to transfer students and the creation of a page on the library website specifically for transfer students (Tag, 2004, p. 105). She also indicates that “the library used the survey data results to support the design of a comprehensive, discipline-specific library instruction plan for upper division and graduate students” (Tag, 2004, p. 106).

Tipton and Bender (2006) describe a partnership between a librarian and the director of the Writing Center at Rutgers-Newark. The librarian was invited to collaborate on a section of a composition course called English 122 that was targeted specifically for transfer students. This is certainly a more time-consuming intervention than the creation of general print or Web-based content, but Tipton and Bender did see significant return on their investment: “The pass rate for the departmental exam from this class is consistently more than twice the departmental average for English 122” (Tipton and Bender, 2006, p. 399). Tipton and Bender end their article with a compelling argument for this type of collaborative effort, writing:

***There are two good reasons why small-scale, intensive collaborations continue and ought to continue at the research university at the same time the large-scale efforts are pursued. One reason is special student populations such as our under-prepared transfer students. The one-size-fits-all school of education has already failed some of these students more than once, and alternatives are desirable for retention and graduation of a diverse student population. Students entering the research university environment for the first time are joining a scholarly community, and they need to understand that community’s rules and expectations in order to participate fully. Interaction with the instructors promotes this social learning. Secondly, it is difficult to mount anything meaningful online until it is tested with students first (Dabbagh, 2003). The informal experiments and collaborations in information literacy on every campus serve as laboratories to define the possible and the desirable on a greater scale (Dabbagh, 2006, p. 401).***

Phillips and Atwood (2010) found that most Ohio academic librarians who responded to their survey did not provide information literacy programming specifically for transfer students. In fact, only 13 per cent of respondents indicated that they thought there was a need for transfer-specific instruction at all (Phillips and Atwood, 2010, p. 340). The disconnect between librarian perceptions of transfer students’ needs in Phillips and Atwood and the desire for instruction reported by transfer students in Tag is notable. Phillips and Atwood argue that:

***Ohio academic libraries, as well as other libraries whose institutions are part of a consortium, should begin a dialogue to address the needs of transfer students and recognize that there is a unique opportunity to create library instruction and information literacy programs that are successful in assisting them (Phillips and Atwood, 2010, p. 332).***

A recent conference paper by two librarians at Appalachian State University – another institution in the University of North Carolina system – and a colleague from a nearby community college drives home the usefulness of a dialogue about the information literacy needs of transfer students. Appalachian State University hosted a professional development workshop for librarians from their feeder institutions to facilitate open discussion about information literacy programs at their institutions. This workshop had several positive outcomes, as librarians were able to share “information and concerns about transfer students and their preparation for upper level research” and “partner with other regional institutions, share resources, and discuss opportunities for creating shared information literacy standards” (McCallister et al., 2015, p. 441).

## **Our studies**

For the purpose of clarity, this article will present the methodology, results and discussion of each study separately.

### ***2014 Study – survey of incoming transfer students***

#### ***Methodology.***

Based on gaps in the existing literature about transfer students and their information literacy skills and needs, the research team chose to focus on these students, targeting them just before the beginning of their first semester, Fall of 2014. The registrar’s office provided e-mail addresses of all currently registered incoming transfer students prior to the start of the semester.

The research team reviewed and adapted from other surveys designed to solicit both attitudes and skills of incoming students, most of which had been designed for incoming freshmen. Our survey was intended to gather demographic data, such as incoming grade level, type of transferring institution, previous exposure to scholarly research and library instruction and age range. Additionally, several “test” questions, informed by the now redacted ACRL Information Literacy Standards, were created to assess baseline information literacy skills. These questions measured the ability to identify keywords to use in an article database for a given topic, evaluate websites for credibility and demonstrate knowledge of proper citation techniques. Finally, students were asked about their perceived information literacy needs and where they believed they needed help. The survey was created in Google Forms, and a link was sent to the mailing list. The initial incoming transfer student survey can be found at: <https://goo.gl/forms/sMJmYGs3HR8wShul2>.

The libraries offered two US\$25 gift certificates to randomly selected participants, but allowed students to opt out of providing contact information if they did not want to be considered for a gift certificate. After the two gift certificates were awarded, the e-mail addresses were decoupled from the responses, saved into a spreadsheet and stored in a private protected folder that only the research team could access. The research team created rubrics to evaluate two of the questions, and one question was simply coded as correct or incorrect. A graduate student statistician processed and analyzed these results in the form of a spreadsheet.

## ***Results.***

Of the 1,068 survey solicitation recipients, 155 incoming students responded. One respondent did not check the box asserting that he or she was aged 18 years or over, and so this response was deleted.

### Relevant demographic results.

The survey age ranges were chosen to reflect several stages of life that might reflect basic differences in information literacy skills and needs. Those aged 18-21 years are generally “conventional” college-aged learners. Those aged 22-29 years are adult learners, but less likely to have experienced multiple careers or have been away from college longer than a few years. The 30-59-year-old age range was intended to represent the non-traditional, adult learner and adults who might have had multiple careers and have had a longer gap between institutions. In this study, 35.7 per cent of respondents were in the 18-21 age range, 35.7 per cent were in the 22-29 age range and 27.9 per cent of respondents were in the 30-59 age range.

### Transferring institutions.

The majority of incoming transfer students, 55.2 per cent, were transferring from community colleges. Students who came from other schools within the X state system were 14.3 per cent. Students transferring from universities or colleges outside the X State system were 26.6 percent. Five students declined to answer this question, and one student indicated that they had been taking online courses only.

### Most common majors.

In this initial survey, all available degree programs were listed, and students were asked to select their major. Multiple responses were allowed to reflect those with multiple majors. The majors with the largest number of respondents were Biology; Supply Chain Management; Consumer Apparel and Entrepreneurship; Speech Pathology/Deaf Studies; Family Studies and Family and Human Development; Nursing; Sociology; Social Work; or in Arts and Humanities. In general, Health Sciences and the School of Business were represented heavily. The research team expected a significant number of nursing students, given the fact that X offers an RN to BSN degree program.

### Experience with library instruction and research papers.

Of the 154 respondents, 122 reported having had a library instruction workshop, while 32 had not.

In total, 98.7 per cent of respondents indicated that they had previously written a research paper with a bibliography.

### Knowledgeability results.

The team presented three questions to test library related skills. The first asked students to select keywords to search for library resources on a research topic related to smoking. The second asked students to look at two web sites on quitting smoking and select which one was the best source for a paper, and to explain why. The final question asked students which of three statements needed to be cited. The first question yielded the most significant results and, thus, was the question used to determine knowledgeability. The created rubric scores were a three-point scale of “knowledgeable”, “fair” and “poor”.

Knowledgeability by transferring institution.

Results showed that the oldest students surveyed scored the lowest on information literacy knowledgeability, as did the students from community colleges. In general, about 73 per cent of all transfer students who responded scored either fair or poor in terms of knowing appropriate use of search terms, and 21.6 per cent reported never having had library instruction.

Knowledgeability by prior experience with library instruction.

Only 6.1 per cent of those who scored “knowledgeable” had never had library instruction, while 54.5 per cent of those who scored “poor” had never had library instruction. Interestingly, as age increased, the likelihood of having had library instruction decreased, which most likely reflects greater emphasis on instruction and information literacy over time. In total, 48.5 per cent of those 30-59 had never had a library workshop, as compared with 36.4 per cent of those 22-29, and only 15.2 per cent of those 19-21.

Perceived need for library training.

Students were asked what type of research training they needed. Of the choices offered, finding articles and proper citation were the most frequently selected. Other write-in responses included help finding scholarly sources, citing websites, finding online primary sources and finding reliable websites.

Though the survey responses yielded several relevant and interesting findings, there were unexpected challenges in the methodology that suggested further study was needed. The team discovered while creating rubrics that one question’s wording did not provide the exact results intended. The question asking about keywords to use in a search did not explicitly ask for the specific terms one would type into a search box, so the team felt giving extra weight to responses that used Boolean logic might exclude those respondents who are familiar with Boolean logic but did not interpret that the question wanted the actual search strategy.

Given the relevant information gained in this research study, and given the fact that the team still had questions, the team decided to apply for and enter this project into the Association of College and Research Libraries (ACRL) AiA program for the 2015-2016 year cycle.

*Assessment in action.*

In September 2012, ACRL was awarded close to US\$250,000 for the third year of a three-year project called “Assessment in Action: Academic Libraries and Student Success”, a program sponsored by multiple planning grant partners, including the Association for Institutional Research, the Institute of Museum and Library Services and the Association of Public and Land-Grant Universities. The purpose of this program was to build professional competencies of librarians to allow them to communicate the value of academic libraries, to build collaborative relationships across campus and to contribute to higher education assessment work. Each participating institution had to produce letters of support, and teams consisted of a librarian team leader and other team members, some of whom had to be campus partners outside of the library.

The team leader agreed to lead regular team meetings on campus, represent the team at in-person AiA events, engage in online discussion forums, participate with a cohort and provide feedback and to present a poster at the end of the program at the American Library Association conference. AiA used a model of assessment to organize projects, consisting of defining outcomes, setting criteria, performing actions and gathering evidence, analyzing evidence and planning change. Through in-person meetings with other AiA participants and advice from the cohort and from other team members, the AiA team at X decided to use two different assessment instruments.

### ***Assessment in Action Study 1: pre- and post-test, Foundations for Learning 250***

#### ***Methodology.***

Two of the team members were invited to provide library instruction to two sections of FFL 250: Enhancing the Transfer and Adult Experience at UNCG. This is an optional course targeted to transfer students and adult learners and is designed to assist these learners in developing competencies essential for academic success. The instructors used data from the 2014 survey indicating which skills the incoming transfer students reported they lacked to structure the lesson plan. The team designed a pre-test in Google Forms, asking students to demonstrate they could find books in the library, choose which of two articles was scholarly and why and describe their comfort level with various research tasks. The original intention was that students would complete the pre-test outside of class before the library instruction session.

Students would then attend the library instruction session, engage in hands-on exercises in all the areas covered by the pre-test and then take a post-test very similar to the pre-test but with different examples. The team would then import results into Excel and analyze using SPSS, comparing pre-test and post-test responses. FFL 250, pre-class assessment can be found at: <https://goo.gl/forms/bfwgH6xNtKJ5yIux2>. FFL250, post-class assessment can be found at: <https://goo.gl/forms/UVqNlcmqrkki5etq112>.

#### ***Challenges and limitations.***

Though some interesting results emerged, this study also had limitations and challenges. The pre-test links were not delivered to students prior to the class, as intended. Thus, the instruction librarians had to re-allocate time to allow for both the pre-test and the post-test within the 50-minute session. This not only rushed students through the session but also could be said to only

measure how well students remember what they were just told. To reallocate time to add the pre-test, the topic of proper citation was truncated.

Another challenge is that one of the two sections contained students who appeared to be facing learning or technology challenges. These students, some who had helpers, were largely unable to complete the pre- or the post-test. Therefore, the team discarded results from this section and relied on the results from the second section only. The sample size for this study was, thus, only 19. The student statisticians advised that, if we repeated this study, a larger bank of questions and a larger sample size would increase the likelihood of significant results. One avenue the team might pursue is to contact coordinators of transfer student activities and orientations and offer this instruction and assessment to a larger group.

### ***Results and discussion.***

Librarians on the team created a rubric to evaluate answers to the three questions, and each tested the rubric and revised. A pair of student statisticians were assigned to the two projects. For this assessment, there were paired sample tests on all data and *t*-tests on selected data. Attitudinal questions were graded on a three point Likert scale of not comfortable, somewhat comfortable and very comfortable. Due to the loss of one section of the class, there were questions where some correlation was observed, but the small sample size meant that these results could not be deemed statistically significant.

First, the results indicated that there was some improvement in performance in pre- and post-tests, but the improvement did not score as statistically significant, due to the sample size. What was found to be statistically significant, however, was the increase in comfort with common research tasks. Students indicated a 25 per cent increase in comfort with finding journal articles, and a 26 per cent increase in comfort with finding books. Also, while several students indicated they were not comfortable with finding books and journals in the pre-test, zero indicated the same in the post-test (Figures 1 and 2).

The pre- and post-tests also yielded information about what skills students found the most challenging. Proper citation was identified as the most challenging skill in both the pre-test and the post-test. The second most challenging skill was figuring out where to go to get needed information, and the third listed was finding journal articles on topics. The form allowed for write-in responses, and several students indicated that an in-person library tour would be helpful (Figure 3).

As earlier stated, the topic of citation was greatly truncated from the instruction session. The team noted that the topics fully covered showed a drop-in perception of most challenging, while the topic of citation showed an increase of most challenging, again, suggesting an increase in comfort after library instruction.

The team, along with the statisticians, believed that it would be useful to try a similar study, but with a larger group of incoming transfer students. One of the team members was also the director of the New Student Transitions and First Year Experience office, so the team is working to identify better opportunities to use these measures on a larger group.

## ***Assessment in Action Study 2: re-surveying previous year's incoming transfer students one year later***

Team members designed the second study to follow-up with the cohort of 2014-2015 incoming transfer students one year later. Some of the same demographic questions were asked, with a few additional ones to address gaps identified previously. However, because the intent was to test identical responses one year later and compare, the team did not make significant changes. Again, these students were asked to complete a few questions to determine their information literacy skills and then asked what types of interactions they had experienced with librarians, including visiting the reference desk, using chat, having a librarian provide instruction in one of their classes and having a consultation with their subject librarian. The question asking respondents to indicate their search strategy was rewritten to more precisely ask students what exact words they might type in the search box, to give extra credit to attempts to use connectors such as “and” or “or”. The citation question was rewritten to indicate that students should only select statements that required citations.

Follow-up survey for the second-year transfer students can be found at: <https://goo.gl/forms/EvoVhaNBwqCZO49k2>.

### ***Challenges and limitations.***

One unexpected result of note came when almost half of the e-mails sent out bounced back because the e-mail account no longer existed. Because it is not very often that a transfer student enters and graduates within a year, it is assumed that most of these e-mails bounced because the student had dropped out or transferred again somewhere else. The team could not determine why so many students had left UNCG, but this could speak to issues with retention of transfers. Because of these e-mail bounces, it was no surprise that the number of respondents had dropped, this time only 58. The smaller sample size made it more challenging to find differences between demographic groups.

As there were slight differences in question wording and data analysis techniques, the results from the initial study cannot be readily compared to the more recent study; however, the study was more oriented towards comparing respondents to one another, rather than to previous respondents, and to find any possible connections between library interaction and knowledgeability. Additionally, the group thought it more important to tweak and improve the questions from the first study than it was to aim for absolute consistency.

### ***Results and discussion.***

The statistician for this survey used a four-point scale with averages, differing from the scale used by the statistician in the previous study, who used “knowledgeable”, “fair” and “poor”, and the questions were slightly different. While direct comparisons between the 2014 study and the 2015 study are not meaningful, it is interesting to note that, in the initial study, about 73 per cent of respondents scored as either fair or poor in keyword searching skills, leaving only 27 per cent as knowledgeable. Our second study used a four-point scale, rather than a three-point, as we

were able in the 2015 study to give extra credit to respondents who demonstrated knowledge of Boolean search strategies. Students were given a 3 if all concepts were represented with appropriate keywords, with a 4 being given to those who used Boolean operators. For the keyword searching question, the average score was 2.39 of 4. A score of 1 was given to students who did not answer the question, 2 would roughly correspond to poor, 3 might be compared to “fair” and 4 would be similar to “knowledgeable”. If we combine the results for those who scored 1 and 2, we could say that roughly 57.7 per cent scored “fair” or “poor”, a 15.3 per cent improvement over the 2014 survey results.

One question asked in the more recent study was how long the respondent’s education gap had been. In the initial study, results showed that older students scored more poorly than younger students, but, as no question asked how many years it had been since the respondent had attended another institution, it was unclear whether the correlation was between age and knowledgeability, or length of gap and knowledgeability. As expected, older students were more likely to have a significant gap in their education than younger students, thus suggesting perhaps the gap was responsible for the lack of information literacy skills, rather than the age itself.

In the initial 2014 study, significant differences were found in knowledgeability based on age, transferring institution type and previous exposure to library instruction. In the 2015 study, there were no significant differences found by any demographic factors. There are several factors that might explain the lack of significant differences. First, the sample size was much smaller, which makes it more difficult to tease out correlations and significant differences. Second, the percentage of students who scored poorly in basic information literacy skills was higher in the first study, and it is possible that some of lowest scorers are no longer attending classes at UNCG, or that a year of study at UNCG improved scores overall.

One year later, 59.3 per cent of respondents reported that a librarian delivered an instruction session in one of their classes over the previous year. The most significant finding was that students who had received library instruction had sought and received consultations from subject librarians more often than what would be expected if there were no relationship. From the bar plot, we can see that of those that did receive instruction, a greater proportion received help from a subject librarian (as compared to those who did not receive library instruction). There is a statistically significant correlation at the level  $\alpha = 0.5$  that indicates the data point of 19 per cent for “yes & yes” is higher than expected.

Therefore, this is evidence of a relationship between a student attending a class at UNCG in which library instruction was provided and receiving help from a subject librarian (Figure 4).

Both AiA studies pointed to improvements in confidence and in comfort seeking help from a reference librarian after receiving library instruction. Though the differences in performance were not statistically significant, increased comfort with library research tasks and seeking help from subject librarians would likely lead to increased skills over time. Psychologist Albert Bandura has written extensively about his theory of self-efficacy and posits that greater levels of confidence lead to increased self-efficacy, which eventually leads to higher cognitive function: “People with high efficacy approach difficult tasks as challenges to be mastered rather than as

threats to be avoided. Such an efficacious outlook fosters interest and deep engrossment in activities” (Bandura, 1993, p. 144).

The AiA program benefitted the research team in several ways. First, the program structure forces librarian researchers to look outside the library to find natural partners in the larger organization. Second, the program provided a cohesive model of the Cycle of Assessment, which allowed for participants to think carefully about outcomes, methods and measures in a structured manner. Third, the program provided an opportunity for participants to work closely with a cohort that could provide feedback and direction.

Follow-up survey for the second-year transfer students can be found at: <https://goo.gl/forms/EvoVhaNBwqCZO49k2>.

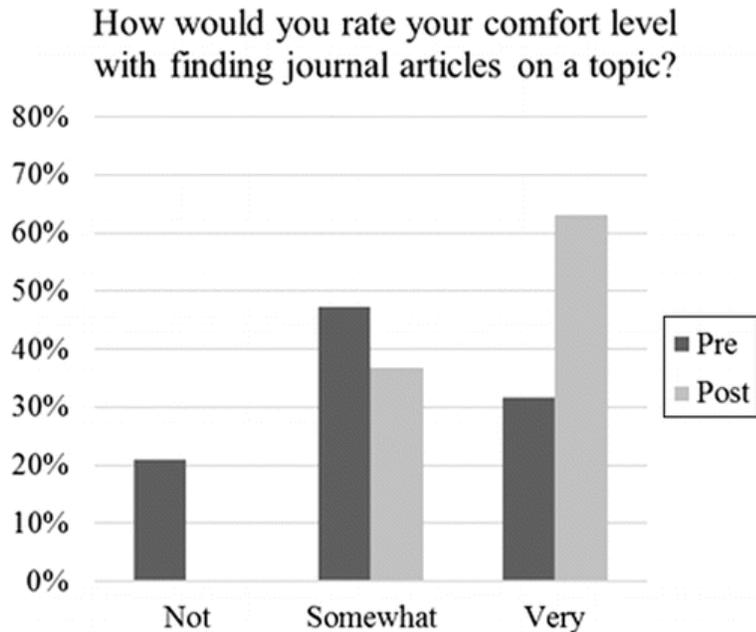
## **Conclusion**

Though the AiA Program was invaluable in terms of teaching librarians a structured system for assessment, and in encouraging participants to collaborate across campus, the small sample size for the two AiA studies yielded less data on knowledgeability than the initial cohort. However, results did show a significant gain in comfort with library research skills and in seeking out library liaisons for one-on-one consultations. The team suspects that the significant differences found between demographic populations in the 2014 study might reflect that lower scorers were among the many who appear to have left the institution, and that one full year of instruction in a four-year college helped to improve skills overall, thus showing less variation.

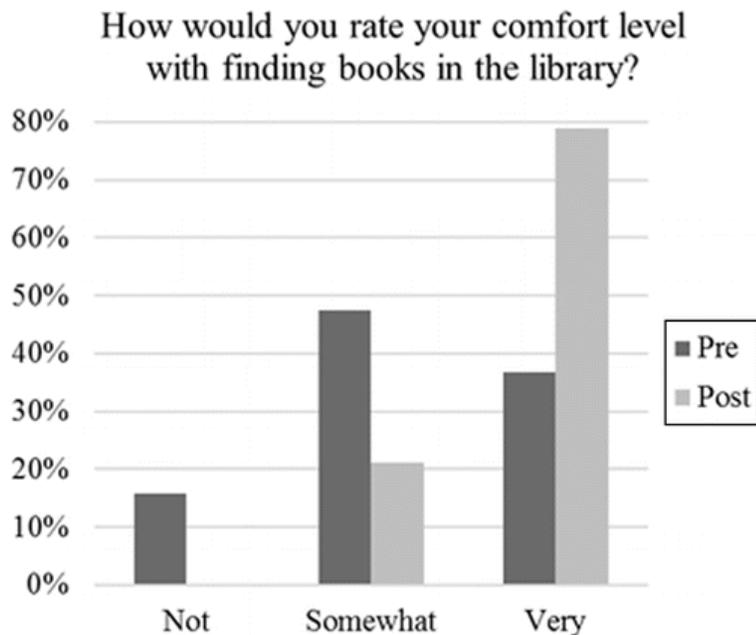
The team is planning to try a similar survey study with incoming and returning transfer students, using pre-existing data from the registrar and our instruction statistics, as more extensive demographic data are available and because survey fatigue can decrease response rates. Additionally, librarians are seeking an entrance to transfer student orientations, to issue in-person surveys. The research team learned important lessons from the initial study, such as using more questions, working with data that is already available and using methods of gathering data that will ensure larger sample sizes. The team would like to also use the pre-test, intervention and post-test method again with FFL 250, but with the pre-test and post-test issued outside the classroom as required assignments, and with a larger question base. The library has now used a part-time statistician, who was one of the two students who analyzed the data from the AiA studies, and the team now has the advantage of working closely with someone who can better advise the group on best practices in both quantitative and qualitative future studies.

The team is also investigating using other assessment measures. This year, several UNCG librarians will bring in transfer students to participate in focus groups, which might allow for greater insights on the research needs and background of incoming and current transfer students. Additionally, the team is contacting librarians from feeder area community colleges to discuss collaboration on handoff instruction and outreach, and we hope to experience similar success to that reported by our colleagues at Appalachian State and Caldwell Community College and Technical Institute.

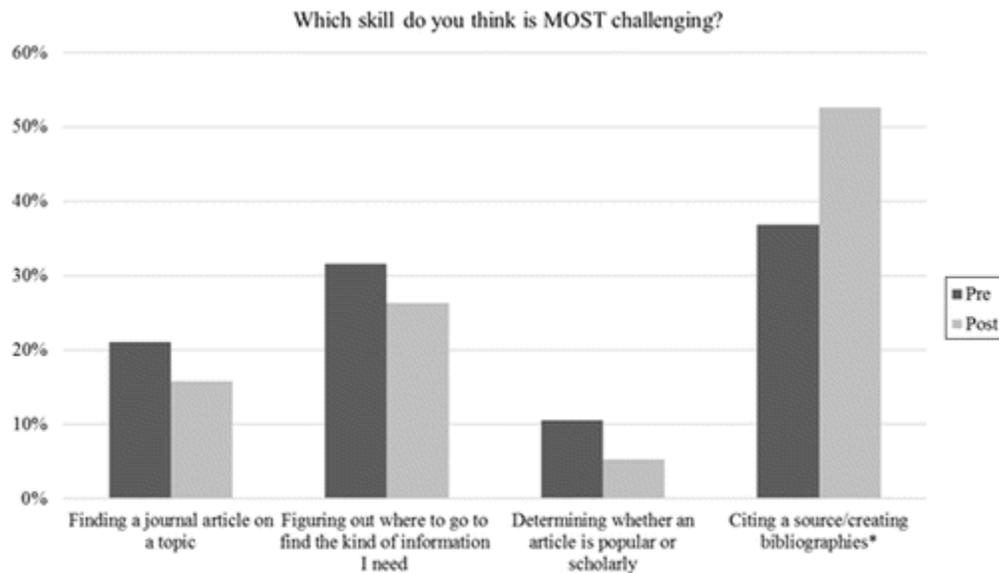
Finally, the team leader, along with the Libraries' Diversity Coordinator was asked to participate on a Howard Hughes Medical Institute (HHMI) grant proposal to develop services, instruction and outreach to aid in student retention and success for transfer students in STEM majors, particularly with underrepresented minorities, and librarian embeddedness is included in the grant plan. This participation will allow the libraries a strategic partnership across campus in outreach to our transfer student population and marketing our services and resources to a population that is challenging to target.



**Figure 1.** Comfort level finding journals in the library, pre- and post-tests

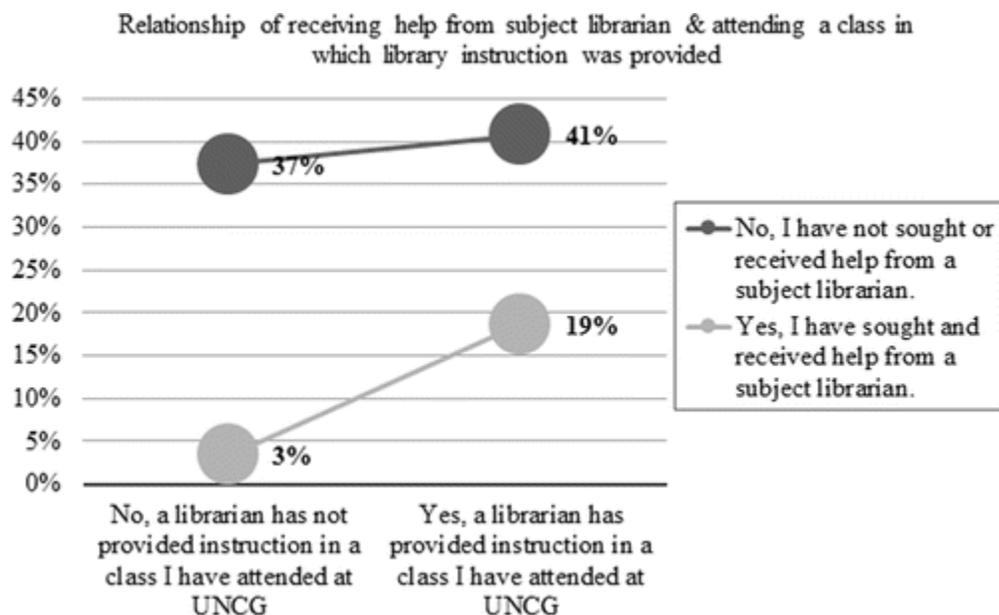


**Figure 2.** Comfort level finding books in the library, pre- and post-tests



**Notes:** \* The question on citing sources and creating bibliographies was inadvertently worded slightly differently in the post-test than it was in the pre-test, which can be seen in the links below; however, both questions showed citation as the perceived most challenging skill

**Figure 3.** Skills students identified as most challenging, pre-test and post-test



**Figure 4.** Correlation between students who have had library instruction and have sought help from a subject librarian

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