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Ensuring a level playing field: creating an information literacy exam for transfer students

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Abstract

Purpose – The purpose of this paper is to highlight the steps taken by the library, English faculty and administrative stakeholders to create an information literacy exam for transfer students.

Design/methodology/approach – The paper outlines the need for the exam, the student learning outcomes assessed by the exam, the process by which test questions were created and the technology used to create and deliver the exam.

Findings – Experiences and suggestions relevant to developing an information literacy exam and a related website portal and tutorials are provided.

Originality/value – The report will have significant value to anyone considering implementing their own original information literacy exam and those seeking advice on test question creation and development.

Keywords Academic libraries, Librarianship, Higher education, Information literacy, Tests, Ability tests

Paper type Case study

The University of North Carolina Wilmington (UNCW) implemented a new General Education curriculum called “University Studies” in the fall of 2012. At the time, the new University Studies curriculum was divided into six areas: Foundations, Approaches and Perspectives, Thematic Disciplinary Clusters, Building Competencies, Explorations Beyond the Classroom and Capstone Courses. Within the area of “Building Competencies,” students are required to complete courses in the categories of Writing Intensive, Qualitative and Logical Reasoning and Information Literacy (IL). University Studies requires that students complete at least nine competency credit hours of IL-intensive courses. Three hours are completed through the university’s required First Year Seminar (FYS) course, which is an IL course, and an additional three hours must be completed by taking an IL course within the student’s major.

In the spring of 2013, UNCW identified transfer students as a population of students disadvantaged by the required IL competency requirements because of the state’s Comprehensive Articulation Agreement (CAA) and the unique elements of the University Studies curriculum within the context of the statewide university system. The CAA is a statewide agreement governing the transfer of credits between state community colleges and state public universities. It applies to all 58 state community colleges and 16 university campuses in North Carolina. If all requirements are met, then it guarantees admission to 1 of the 16 state institutions as long as students meet specific guidelines. To be considered eligible, students must graduate from a state community college with an Associate in Arts (AA) or an Associate in Science (AS) degree; have an overall grade point average (GPA) of at least 2.0 on a 4.0 scale; and must have a grade of “C” or better in all CAA courses.



However, given that transfer students coming into UNCW do not enroll in the FYS course, these students would not receive the initial three IL competency credit hours associated with that course. To address this gap in credit hours, librarians and other university stakeholders were charged with selecting or creating an IL exam that, when successfully passed, would provide three hours of IL competency credit to transfer students completing the exam.

Transfer students and information literacy: recognizing a gap

According to data from the National Student Clearinghouse Research Center:

Of the 3.6 million students who entered college for the first time in fall 2008, over one third (37.2 per cent) transferred to a different institution at least once within six years. Of these, almost half changed their institution more than once (45 percent). Counting multiple moves, the students made 2.4 million transitions from one institution to another from 2008 to 2014 (Shapiro *et al.*, 2015, p. 3).

Transferring from one institution to another has essentially become the new normal (Marling, 2013).

However, while more and more common, transferring from one institution to another presents a number of challenges for students, including challenges related to IL skill acquisition. It is often assumed that because students transferring from community colleges, or other institutions, have already earned college credit, they already have the necessary research and library skills needed to succeed at their new institution (Still, 1990). However, a review of the literature confirms that a gap in IL instruction and IL skills in transfer students is not unique to UNCW.

Staines (1996) uncovered an “instructional gap” between academic libraries at community colleges and four-year institutions and highlighted the specific differences in both the purpose and the number of opportunities for IL instruction between the two. Her findings showed that native students, those beginning their academic career at a four-year institution, have more timely and appropriate library instruction, while those transferring in are not likely to have the same opportunities (Staines, 1996).

In “A Library Instruction Survey for Transfer Students: Implications for Library Services”, Tag reported on the results of a survey intended to measure the information needs and skills of transfer students entering Western Washington University (2004). She noted that many academic libraries have established IL programming targeted to incoming, first semester, native students. However, she found that transfer students often have to “fend for themselves” with regard to any disparities in IL skills (Tag, 2004, p. 102).

Phillips and Atwood (2010) surveyed academic libraries in Ohio and the results indicated that most libraries that responded to their survey do not provide targeted, specific, IL instruction for transfer students. They urge academic librarians to discuss the specific needs of transfer students and to develop programming and services to develop their IL skills (Phillips and Atwood, 2010).

Creating an IL exam for transfer students has two purposes:

- (1) It provides a tool to assist transfer students in identifying gaps in their IL skills.
- (2) It allows students who have the appropriate level of IL skills to obtain the needed IL competency credit to graduate.

Information literacy exam landscape

In the fall of 2013, a provisional “patch” was put in place to give transfer students three hours of IL competency credit. The patch expired in August 2014. The patch allowed time

for stakeholders at UNCW to identify an IL exam (already in existence) that might fit the university's needs or to develop and create a "homegrown" exam.

In preparation to select or create an exam, librarians began a review of the IL exam landscape that was already in existence in higher education. National IL tests such as the ETS Information and Communication Technology (ICT) Literacy Assessment, Project SAILS and TRAILS were reviewed. Additionally, IL exams from specific institutions or university systems including the James Madison University Information Literacy Test and the South Dakota Information Literacy Exam were also reviewed.

After thoughtful review and careful consideration of many factors, it was decided that an original, homegrown exam would be created rather than using an exam already in existence. Several factors contributed to the decision to create a homegrown exam. The primary reason was that all of the IL exams that were reviewed assess IL skills obtained at or by the time of graduation rather than assessing only the skills learned during the first year of university coursework. Additionally, the costs associated with administering an exam from an outside source/vendor were unknown as the potential number of exam takers was difficult to pinpoint. The numbers could only be estimated based on university projections of transfer students who might need the IL credit and would prefer to take an exam rather than an IL course. Therefore, specific costs were difficult to determine and budget. The university enrolled approximately 1,734 transfer students in 2012. In 2013, UNCW accepted 1,552 transfer students with 43 per cent from community colleges and 14 per cent from schools within the statewide university system. However, it was impossible to know how many would want or need to take the IL exam.

UNCW's "Information Literacy Exam for Transfer Students" was created by a team that included the University Studies Librarian (who serves on the campus University Studies Advisory Committee); the Associate Director, Research and Instructional Services and Library Assessment (who previously served on the University Studies Advisory Committee and was involved in the development of the IL requirement); two faculty members from the English department (one who was previously chair of the University Studies Advisory Committee and the other who was serving as the English Composition Coordinator); the Director of Assessment, College of Arts and Sciences and General Education; and a Psychology department faculty member who served as the team's psychometrician. The psychometrician was given a stipend paid for by Academic Affairs.

The group reviewed the library instruction/IL student learning outcomes (SLOs) that were part of the curriculum for "native" UNCW students in the FYS course as well as the 100 level English Composition course that focused on IL. The idea being that native students are exposed to a variety of IL skills in both the FYS course and the English Composition course during their first year through IL instruction. This instruction is provided by course instructors and librarians. However, transfer students coming into UNCW will not take the FYS course and will already have the 100 level English Composition course credit from their previous institution. Transfer students coming into the university are required to have all of their English Composition general education credits upon enrollment. Therefore, the exam was and is intended to assess those specific, lower level IL skills which are assumed to be possessed by incoming transfer students. It was and is important that all UNCW graduates, whether they are transfer students or start their academic careers at the university, have the same skills and have the same competencies for any University Studies component, including information literacy. The primary goal of the exam, therefore, was to assess these skills for transfer students to ensure a level "playing field" in terms of IL skills.

The team collaborated to identify and create exam content beginning in the fall of 2013 and in the spring of 2014, test questions were outlined and drafted. Four test bank versions

were created by the team that were subsequently reviewed and assessed by the psychometrician. Questions were then modified based on the psychometrician's analysis and suggestions. An exam pilot followed, focusing on validating the exam by giving it to students from a local community college, an early college cohort and multiple UNCW 100 and 200 level English Composition course sections. An exam shell was created in the campus learning management (LMS) system (Blackboard) and a companion exam website was created as part of the initial development of the exam. In addition to the test question section, an essay prompt was created. More information about both the questions and the essay are provided later.

Identifying exam content: reviewing the curriculum

The initial step in the construction of the Information Literacy Competency Exam for Transfer Students was a curriculum review. The main purpose of the review was to obtain the information needed to develop test content that reflected the current IL curriculum taught within First Year Seminar and within the lower level English Composition course both by librarians and course instructors. The review was intended to gather the primary content and skill areas covered in IL instruction including specific topics taught, the emphasis given to each topic and the specific skills students are expected to acquire from the IL instruction. A first semester student enrolled at UNCW, without any transfer credit, would take First Year Seminar (providing three credit hours of competency credit) plus "College Reading and Writing I" (ENG 100 or 101). However, as previously noted, transfer students do not have to take First Year Seminar and have to have credit for six hours of English Composition (both the 100-level and 200-level courses). So to assess that transfer students have comparative IL skills to those of native students, both the IL skills learned through First Year Seminar and the 100/101 English Composition course had to be considered.

The University Studies IL student learning outcomes, both at the course level and the broad, competency level, are based on the Association of College and Research Libraries (ACRL) "Information Literacy Competency Standards for Higher Education". The university adopted the following student learning outcomes based on those standards:

- *SLO 1*: determine the extent of information needed;
- *SLO 2*: access the needed information effectively and efficiently;
- *SLO 3*: evaluate information and its sources critically;
- *SLO 4*: use information effectively to accomplish a specific purpose; and
- *SLO 5*: use information in an ethical and legal manner.

Any course that is approved as an IL-intensive course, which provides IL competency credit, must address all five of these student learning outcomes. A proposal form is reviewed and scored by members of the University Studies Advisory Committee using a rubric. Proposing academic departments must indicate how the course student learning outcomes "map" to each of the ILSLOs (above); how the students will be instructed on these SLOs; and how the SLOs will be assessed. It should be noted that the SLOs for IL have changed since the creation of the exam; however, the exam still assesses the revised outcomes (<http://uncw.edu/usac/informationliteracy.html>). It should also be noted that the campus has a process in place for assessing all of the University Studies competencies, including IL. IL is one of the components of University Studies, and it is also one of the university's learning goals. The Association of American Colleges & Universities (AACU) VALUE rubric for IL (www.aacu.org/value/rubrics/information-literacy) is a critical component of this assessment. The

rubric aligns with the five IL SLOs and various student work products (e.g. research papers, essays, etc.) are assessed using this rubric. While librarians are involved in this process, it is coordinated by the Director of Assessment, College of Arts and Sciences and General Education and the scoring is done by faculty volunteers from various academic departments across campus. A librarian typically serves as the “information literacy expert” and is available to answer questions during the rubric norming process and scoring process.

While all five SLOs are “covered” within the FYS and 100-level English composition courses, they are addressed at a basic, introductory level with higher-level content introduced in courses that follow. So it was important to the team creating the exam that the content align with the IL skills being learned by native or “home” students at that level.

The student learning outcomes related to IL for First Year Seminar are:

“Develop fundamental Information Literacy skills” which is further delineated with these specific outcomes:

- demonstrate the ability to differentiate popular and scholarly resources;
- demonstrate the ability to evaluate the credibility and appropriate use of various types of resources;
- use library resources to answer a research question; and
- show a general awareness of APA and MLA styles.

For First Year Seminar, the library identified student learning outcomes specific to the suite of instructional services provided to the FYS course (e.g. face-to-face instruction session, online tutorial, etc.). Those SLOs are:

- list the differences between websites/broadcasts, newspapers, magazines, journals and books;
- distinguish between popular and scholarly information resources;
- select the appropriate tool to find a book and an article on a particular topic;
- identify appropriate service points for assistance both in the library and via the library’s website; and
- apply established evaluation criteria to determine if an information source is appropriate.

The English Composition course SLOs for IL were not as explicitly defined. The English faculty on the IL exam creation team provided the following SLOs which then had to be further delineated to identify the IL skills within each outcome:

- students will identify the structural components, including thesis, supporting evidence and various rhetorical strategies, for all essays read and written. Students will articulate in a variety of venues how audience expectation shapes purpose in their own writing and in the essays they read;
- through a variety of writing and speaking opportunities, students will demonstrate how multiple assigned readings are “in conversation” with one another;
- students will conduct research, thereby familiarizing themselves with online databases, web-based materials and print-based sources. Students will summarize an array of viewpoints they have read on a given topic. Students will synthesize these viewpoints as a means of “mapping” a field of perspectives; students will analyze these viewpoints to assess how and where their own views and experiences relate to those they have encountered in their reading;

- students will summarize an array of viewpoints they have read on a given topic. Students will synthesize these viewpoints as a means of “mapping” a field of perspectives. Students will analyze these viewpoints to assess how and where their own views and experiences relate to those they have encountered in their reading; and
- students will demonstrate a familiarity with the stages of the composing process. Students will engage in rubric-guided peer review. Students will demonstrate through proofreading and editing an awareness of the difference between a working draft and a polished version of an essay. Students will enact a revision of their writing, thereby demonstrating an awareness of the ongoing nature of the writing process.

A matrix was created that aligned the following: the broad competency level IL student learning outcomes; the more specific, course IL student learning outcomes; the course associated with the outcome; and the means by which the outcome was taught and who taught the outcome (course instructor or librarian). Once this matrix was agreed upon by the team as accurately reflecting the IL skills a native UNCW student would gain within the first year of coursework, questions were created to assess students’ knowledge and skills for each and every outcome.

For example, the broad IL competency outcome of “Evaluate information and its sources critically” encompasses the more specific FYS course IL outcome of “Apply established evaluation criteria to determine if an information source is appropriate”. This is addressed through the library instruction session SLO of “List the differences between websites/broadcasts, newspapers, magazines, journals, and books”. The team then created a draft list of questions that would assess that final, specific SLO. This process was repeated for all IL SLOs relevant to the FYS course and the lower level English composition course.

Creating this matrix was time-intensive and required extensive review and editing by the entire team in close consultation with the psychometrician. The psychometrician provided advice about the number of exam questions needed to address each SLO and the best format (multiple choice, True/False, fill in the blank, matching, etc.) to assess the SLO. Creating appropriate questions at the right level of rigor was one of the most difficult processes in the creation of the exam. Fortunately, the exam team had the expertise to do this. In addition to the expertise of the psychometrician, the Associate Director, Research and Instructional Services and Library Assessment has a master’s degree in instructional technology and the Director of Assessment, College of Arts and Sciences and General Education has decades of experience in education and assessment. It is highly recommended that anyone considering creating an IL exam be sure to have a team with this rich, relevant experience and expertise. Even with these skills, creating the exam was challenging. Eventually, the matrix was finalized and 80 exam questions were created. Each question had an alternate version that was either reworded but provided the same answer choices or was the same question but with different answer options. Based on the advice of the psychometrician and exam creation research, it was decided that the exam should contain 60 questions composed of multiple choice and True/False questions. Fill in the blank questions were eliminated because of problems with automated scoring for these items or were changed to multiple choice questions when possible. Any multiple choice questions that contained three answer choices had an additional fourth answer choice added to increase difficulty and lower the chances of random guessing. “All of the above” was eliminated as an answer choice, as typically exam takers select this choice regardless of whether or not it is the correct answer. Additionally, multiple choice question prompts were made more challenging by expanding

single sentence questions to paragraphs that exam takers would need to read and critically reflect upon. In some cases, these were changed to be represented by an image from which an exam taker would need to critically review the image to make the correct choice (i.e. screenshot of a record from a library database).

In addition to the edits to these fixed choice, objective test items, the point values of each question had to be considered in relation to the value of the essay question. Both parts of the exam are important and the team had to consider the possibility that an exam taker could “ace” the objective test item section but fail the exam portion or vice versa. It was ultimately decided that each of the 60 objective questions would be worth 1 point and the essay question would be worth 40 points. It was decided that a passing score for the exam would be 65.

Two example questions and their alternate versions are below:

- (1) Question: The best way to begin to focus your topic is to put your topic in the form of a question or research statement. (True/False).
Question alternate: Putting your topic into the form of a question or a research statement will help you focus your research. (True/False).
- (2) Question: Given the research question below and the list of library (subscription) databases, which database would most likely be the best database to find relevant, scholarly articles based on its title?

How did the Civil War impact agriculture in the South? Choose ONE answer:

- Historical Abstracts;
- Business Source Complete;
- Health Source Complete; and
- Art Abstracts.

Question alternate: Given the research question below and the list of library (subscription) databases, which database would most likely be the best database to find relevant, scholarly articles based on its title?

How did the Civil War impact agriculture in the South? Choose ONE answer:

- Business Source Complete;
- Health Source Complete;
- Historical Abstracts; and
- Points of View Reference Center.

Validating the exam

Validating the exam was the next step. It took the team four versions of the exam before the test was deemed to be both valid and reliable. This was obviously a time-intensive process that involved delivering the exam, scoring it and then making necessary tweaks.

In April 2014, the test was offered to various student groups for validation. The team completed the university’s Internal Review Board approval paperwork before the pilot. The exam validation process included administering the exam to a group of local early college high school students, a comparable transfer credit hour load community college course and groups of “home” students to verify the effectiveness of the exam. The early college students were selected and scheduled to take the exam at a time before any exposure they would have had to IL instruction. The community college cohort represented typical transfer students

coming into the university. The “home” students were selected because of their credit hour standing and enrollment in an English 200/201 course. The “home” students represented the level of students who should pass the exam. The aim in selecting these three groups was twofold:

- to validate the exam questions; and
- to determine how these three groups that fall under the credit hour scope of the exam would perform in relation to one another.

The assumption was that the “home” students, who had previously completed First Year Seminar and the 100 level of English composition, would perform better than the other two student cohorts (community college and early college high school).

Administering the exam to the early college students involved asking for volunteer early college high school instructors who were willing to provide class time to take the exam. Classes were identified that would represent a high school student beginning their matriculation into the university. In addition, these early college high school students already had access to the university’s Blackboard learning management system which was the mechanism by which the exam was to be delivered. Each student’s parent was given a copy of a purpose statement. The purpose statement outlined the intended purpose and outcome of the exam and the long-term purpose of the exam. A consent form containing the same IRB information that all test takers received was given to students and had to be signed before taking the exam. Because of time constraints, the essay portion of the exam was not administered to this group of students.

Administering the exam to the community college students proved to be challenging. Finding community college instructors who were willing to give up class time to take the exam and identifying classes that would represent a “typical” transfer student into UNCW was difficult. Additionally, because the online version of the exam was created in Blackboard and because students need UNCW credentials to log into Blackboard, the exam could not be administered online to the community college students. Therefore, this group took the exam on paper. To attempt to validate the entire question bank, this paper test had all 80 questions. This was certainly not ideal; however, the team felt this was the best option. Another challenge was the time constraint. The team was working with specific courses that met during specific class times of 75 minutes. Students had a limited amount of time to take the test. A final challenge was that team members (in this case, the two librarian team members) had to travel to the community college to administer the test. Each student was given a copy of the IRB permission form as well as a demographic information sheet specifically created for the community college students ([Appendix 1](#)). Information was collected about the exam takers’ credit hours (including Advanced Placement course hours), whether or not exam takers had previously had any IL instruction since graduating high school, and whether or not exam takers had completed some type of First Year Seminar course. Because of time constraints, the essay portion of the exam was not administered to this group of students.

Administering the exam to the UNCW English Composition students was straightforward. The online version of the exam (60 randomized questions and the essay prompt) was given to multiple sections of the 200 level English composition course in a computer lab in the library. But again, students were confined to take the exam within their allotted class time of 75 minutes. However, given that this group should have had the necessary IL skills and familiarity with Blackboard to complete and pass the exam, the team felt this time constraint was reasonable.

The total numbers of students who completed the exam are as follows:

- 58 from the early college high school cohort;
- 49 from the community college cohort; and
- 100 from the 200 level of English Composition at University (Figure 1).

After the tests were completed, the test data needed to be analyzed. The data for three exams that were not finished were removed. Several multiple choice questions were found to be valid. The item analysis information (Table I) highlighted which portion of the exam needed more items, which items needed to be changed from True/False to multiple choice and which questions were low variance questions. Low variance questions are used in exams to, in essence, ensure that exam takers are actually reading the questions (Table II).

An unknown and unpredicted factor was the role the Blackboard LMS would play in displaying questions that used screen capture images. The images were more legible in the paper exams given to community college students and those students performed better on those questions in comparison to the 200 level English Composition students. The test bank questions were grouped together by SLO (e.g. Questions 1a1 to 1a9 for one SLO) and a variable was created to count the correct or incorrect answers given by the community college students versus the “home” students for each group of questions. This data gave each subject a value ranging from 0 (no answers correct of those completed) to a 1.0 (all answers correct of those answered). When the two groups were compared, “home” students significantly outperformed the community college students in 7 of 16 item groupings. For one item (“onecfn”), the community college takers scored higher. This was attributed to the format/media issue for users in Blackboard versus the paper copy of the exam being offered to the community college test takers.

A sample of the essays were reviewed and scored. A rubric previously created was used to score the essay. Before using the rubric, a norming session was completed. One of the essays was used for the norming session and then five essays were randomly selected and scored blindly by the two librarians. The information from the essay scoring and the lack of variance in scores allowed for the essay’s required word count to be shortened to 250 (down from 400 words).

Exam proctoring and test taking environment

After analysis and after the exam was finalized based on that analysis, the exam was ready for deployment. However, other factors, including the exam proctoring and test taking environment, had to be considered. University Testing Services (UTS) proctors exams such as the GRE, PRAXIS I&II, TOEFEL for ETS, the MAT and CLEP exams on campus. The IL exam needed to have the same level of security and support that UTS provides. This department also supports disability services on campus for students needing additional exam assistance, such as text readers, sign language interpreters or additional time on exams. After a discussion between the exam team and UTS, it was decided that rather than adding an additional exam to the schedule for UTS, the librarians would proctor the exam and would deliver it in one of the library’s instruction/computer rooms. UTS staff assisted in preparing the librarians for proctoring by offering instruction on best practices and tips to ensure a secure and consistent test experience for all users. The specific room in the library was chosen in consultation with UTS staff based on factors such as noise, lighting, seating comfort, temperature, visual, aural distractions, olfactory distractions, etc. Protocols had to be established and documented to ensure the consistency of experience. For example, no cellphones, bags or other personal items were allowed near the test taker. Exceptions are only given for medical reasons (e.g. diabetic student who may need to keep insulin nearby). Each student is asked to show their university ID, sign a demographic form using their



Figure 1.
Introduction screen
for exam in
blackboard

Table I.
Sample of exam
question analysis
data

Independent samples	Levene's test for equality of variances			<i>t</i> -test for equality of means				95% confidence interval of the difference	
	<i>F</i>	Significance	<i>t</i>	df	Significance (two-tailed)	Mean difference	Standard error difference	Lower	Upper
<i>Test 1A-2D</i>									
oneafn									
Equal variances assumed	0.365	0.546	4.229	210	0.000	0.16287	0.03852	0.08695	0.23880
Equal variances not assumed			4.509	87.817	0.000	0.16287	0.03612	0.09108	0.23466
onebfn									
Equal variances assumed	0.888	0.347	1.278	210	0.203	0.05152	0.04033	-0.02798	0.13102
Equal variances not assumed			1.298	81.071	0.198	0.05152	0.03968	-0.02744	0.13048
onecfn									
Equal variances assumed	0.629	0.429	-4.167	210	0.000	-0.19741	0.04738	-0.29082	-0.10401
Equal variances not assumed			-4.552	91.762	0.000	-0.19741	0.04337	-0.28355	-0.11127
onedfn									
Equal variances assumed	0.975	0.325	4.292	210	0.000	0.15090	0.03516	0.08159	0.22022
Equal variances not assumed			4.371	81.351	0.000	0.15090	0.03453	0.08221	0.21959
twoafn									
Equal variances assumed	3.197	0.075	-1.175	210	0.241	-0.04570	0.03890	-0.12239	0.03099
Equal variances not assumed			-1.123	74.142	0.265	-0.04570	0.04068	-0.12675	0.03535
twobfn									
Equal variances assumed	1.125	0.290	2.432	210	0.016	0.08141	0.03347	0.01542	0.14739
Equal variances not assumed			2.262	71.467	0.027	0.08141	0.03599	0.00066	0.15315
twocfn									
Equal variances assumed	1.529	0.218	2.808	210	0.005	0.12750	0.04540	0.03800	0.21700
Equal variances not assumed			2.997	87.968	0.004	0.12750	0.04254	0.04296	0.21204
twodfn									
Equal variances assumed	0.080	0.777	0.841	210	0.401	0.03420	0.04068	-0.04600	0.11440
Equal variances not assumed			0.837	78.559	0.405	0.03420	0.04086	-0.04714	0.11554

(continued)

Independent samples	Levene's test for equality of variances		<i>t</i> -test for equality of means					95% confidence interval of the difference	
	<i>F</i>	Significance	<i>t</i>	df	Significance (two-tailed)	Mean difference	Standard error difference	Lower	Upper
<i>T_{test} 2E-5C</i>									
twoefn									
Equal variances assumed	7.405	0.007	1.570	210	0.118	0.04482	0.02856	-0.01148	0.10112
Equal variances not assumed			1.500	74.105	0.138	0.04482	0.02987	-0.01470	0.10435
twofin									
Equal variances assumed	3.116	0.079	1.068	210	0.287	0.06054	0.05670	-0.05123	0.17230
Equal variances not assumed			0.974	69.728	0.333	0.06054	0.06216	-0.06345	0.18452
twogfn									
Equal variances assumed	2.245	0.136	2.366	210	0.019	0.09962	0.04210	0.01663	0.18261
Equal variances not assumed			2.140	69.023	0.036	0.09962	0.04654	0.00677	0.19247
threalfn									
Equal variances assumed	1.084	0.299	0.538	210	0.591	0.03631	0.06743	-0.09661	0.16923
Equal variances not assumed			0.520	75.192	0.604	0.03631	0.06980	-0.10273	0.17535
threb5fn									
Equal variances assumed	4.837	0.029	0.089	210	0.929	0.00304	0.03424	-0.06447	0.07054
Equal variances not assumed			0.079	67.603	0.937	0.00304	0.03853	-0.07386	0.07993
fiveafn									
Equal variances assumed	3.427	0.066	2.229	210	0.027	0.08314	0.03730	0.00960	0.15667
Equal variances not assumed			2.166	75.835	0.033	0.08314	0.03838	0.00669	0.15958
fivebfn									
Equal variances assumed	0.002	0.968	2.902	210	0.004	0.11193	0.03857	0.03589	0.18797
Equal variances not assumed			2.934	80.438	0.004	0.11193	0.03815	0.03602	0.18784
fivecfn									
Equal variances assumed	3.606	0.059	-0.268	210	0.789	-0.01153	0.04298	-0.9626	0.07320
Equal variances not assumed			-0.321	110.866	0.749	-0.01153	0.03588	-0.08262	0.05956

Table I.

Transfer IL exam analysis study #1

Independent sample test

Questions deemed valid: 1A, 1E, 2B, 2C, 2G*, 5A, 5B

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Question group	# of questions in set	Question type	Known issues	Edits to be completed	What was edited
1B	6	MC	Needs more items		None at this time
1C	5	T/F	Blackboard display issue		Changed to M/C
2A	2	T/F	Blackboard display issue		Changed to M/C
2D	4		Low variance	May use to discriminate (are your breathing?)	Changed to M/C
2E	2	T/F, MC	More questions needed and change T/F to MC		Changed to M/C
2F	2	MC	More questions needed		None at this time
3A	1	MC	More questions needed (?)		None at this time
3B	5	T/F, Y/N, MC	Change question formats from TF, YN to MC		Changed to M/C
5C	5	MC	Citation specific questions. Not much difference in student groups		None at this time

Table II.
Additional sample of exam question analysis data

Notes: UNCW website and portal questions. UNCW students did significantly better; * refers to an increase in question answer options from 3 to 4 for item 2G after the initial test analysis

personal university ID number and indicate that they accept the requirement to adhere to the university honor code.

A specific process for alerting the campus to upcoming exam dates as well as a process for students to sign up for the exam was instituted. A website, discussed in more detail later, was created to inform students and their advisors of exam dates. It also provides detailed information about the exam as well as an online form to register to take the test. The completed online registration form is sent automatically to the University Studies Librarian and the Director of University Studies. The Director verifies that the student meets the university's requirement of having 45 incoming credit hours and notifies the University Studies Librarian if this requirement is met. The University Studies Librarian then sends a confirmation message with instructions to the student. Included in the confirmation message is information about how to prepare for the exam as well as what to bring, the exam location, etc. Students are then added to the Blackboard course in which the exam is housed. This course is hidden until right before the test is administered on exam day.

There are two dates in the fall and two dates in the spring that the exam is offered. The dates are typically at the head of the final six weeks of classes. Depending on the number of students who sign up for the exam, one to two librarians proctor the exam. If there are more than five students, then two librarians will proctor. Having two librarians allows for faster validation of IDs, quicker administration of the form given to students prior to taking the test, ensuring students log into the exam correctly, monitoring test takers to ensure adherence to the Honor Code, etc. Students have three hours to complete the exam. The multiple choice portion of the exam is scored automatically in Blackboard and the essay is scored during the week that follows. The essay is scored separately by one librarian and one English faculty member (paired together). Each semester, before scoring, there is a norming session for scorers to ensure inter-rater reliability among scorers. To defray the cost of the

time commitment devoted to essay scoring, students are charged a fee of \$85 to complete the exam. That fee is split between the essay scorers. The university does not profit from the exam fee.

In the event that the exam cannot be administered on a designated exam date because of adverse weather or other unforeseen circumstances, an alternate date is arranged before the exam dates. Typically, exam dates are on two consecutive Fridays in early November with an optional makeup (alternate) day for the Saturday following the second test date.

The essay portion of the exam demonstrates the student's ability to effectively research, identify appropriate sources of information, evaluate those sources and organize and effectively synthesize and communicate that research in writing. The student is given a randomly selected research question from a list of 15 questions. Examples of questions include:

- How does divorce affect children?
- How do eating disorders affect teens?
- How does drug abuse affect teens?
- How does depression affect children?

Through a series of four prompts, students are then asked to describe their search strategy, describe the search tools they used, describe the criteria they used to select the information and write a 250-word essay that addresses the research question. Additionally, they are asked to cite a minimum of three sources in Modern Language Association (MLA) format. Students may use any and all online resources. However, students who have appropriate IL skills should know that simply relying on Google is not going to provide the best sources of information to address the research question.

To date, the exam has been given seven times with a total 18 students have taken it and 17 earning the IL credit.

The companion exam website

To provide test takers with timely information about the exam (dates, content assessed, what to expect, how to register, etc.), a website was created: http://library.uncw.edu/info_lit/information-literacy-exam-transfer-students. The librarians identified tutorials, either provided by the library or provided by other institutions that provided preparation material for students taking the exam. The tutorials were placed on a Drupal-based website developed by the library's information technology department. Drupal is the content management system the library uses for its website. The tutorials are organized and arranged by their relation to each information literacy student learning outcome. The librarians worked with the library's tutorial committee to vet tutorials created by other institutions in accordance with a checklist with specific qualities: consistent voice, look, feel, availability of closed captioning, etc. Student groups were asked to review the tutorials and then take the exam and provide feedback to aid in the identification of areas of improvement and to assist the library in the identification of needed homegrown tutorials that were needed to adequately prepare for the exam (Figures 2 and 3).

Alternatives to taking the exam

There are alternatives to taking the exam if a transfer student is in need of the initial three IL competency credits.

UNCW's University Studies Advisory Committee created a database of IL courses from "feeder" community colleges that, based on a thorough review of the course curriculum by

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committee members, contains a list of courses designated as meeting the same student learning outcomes as University IL courses. So there is the possibility that a transfer student might come into the university with six hours of IL competency credit and only needs to complete the IL course in their major and, therefore, does not have to complete the exam. Also, UNCW offers a course which provides three credit hours of IL competency credit called, "Transfer Seminar" (UNI 201) and the library offers a credit course, "Introduction to Library Research and Technology" (LIB 103), both of which satisfy three hours of IL competency credit.

Next steps

The Information Literacy Competency Exam for Transfer Students is presently still in use and the first graduating students of University Studies are seniors and should have graduated in December of 2016 or May of 2017 (if they are on track). The number of students registering to complete the exam is steadily increasing.

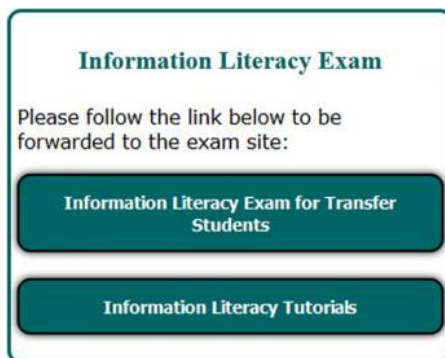


Figure 2.
Screen shot of
navigation screen for
exam website

Information Literacy Standard 1

Be able to determine the nature and extent of information needed to solve a problem.



Figure 3.
Screen shot of
tutorials that assist
students to prepare
for IL Standard 1

Exam Study Resources

Please review the suggested tutorials below as you prepare for the exam.

- [Developing a topic](#)
- [How to read effectively](#)
- [Generating search terms](#)
- [Incorporating Sources into Your Paper](#)
- [Why you need to cite sources](#)
- [Univ. of Texas at Austin Plagiarism Module](#)
- [Brigham Young University Copyright Tutorial](#)
- [Rutgers Information Online Tutorial](#)

There are challenges that have not yet been addressed in offering the exam to students who are studying at a distance. Currently, they are required to come to campus to take the exam. But alternatives are being explored with the possibility of students being able to take the exam online at other institutions with “guest” proctors.

University Studies has recently undergone a review. A “recertification” of courses included in the IL competency category along with other courses in all competency components is underway. The effect of curriculum changes, if any, on the exam from this review will be better understood in the academic years to come. The exam needs to be continuously vetted and the possibility of using traditional high school students and other community college students within the state to assess the exam further and to assist the university in identifying student information literacy strengths and weaknesses is being considered. Developing the exam for licensing for institutions wanting to measure lower level IL skills is under discussion as well. While creating the IL exam has proven to be very beneficial both for transfer students in need of IL competency credit and for the university that needed to address the needs of transfer students, it was an extremely time-intensive project. Creating any type of exam, but especially one that impacts students’ graduation and therefore absolutely has to be reliable and valid, is complicated to say the least. Identifying the exam content, creating the most appropriate questions, validating the exam, creating a rubric and process for norming it for the essay question and establishing practices and processes for registration, administration and scoring were all time consuming and challenging. As previously mentioned, institutions looking to create a homegrown IL test need considerable resources to undertake these processes: time, technology and expertise. Important stakeholders and team members with extensive knowledge in information literacy and test creation are imperative.

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Appendix 1. Demographic information for community college students

Please answer the questions below. Once you have completed these questions, you will be able to begin the test.

1. Please list your first and last name:

First: _____ Last: _____

2. How many college credit hours have you completed? Include all credit from AP courses, transfer credit, etc.
Number of credit hours: _____

3. Are you planning to transfer to another institution? Circle: Yes / No

If so, what institution? _____

4. Have you ever had a library instruction session where a librarian speaks to your class about the library and/or research tools? Circle: Yes / No

If so, please list or briefly describe the session(s) you had and whether or not this was at UNCW or another institution.

5. Have you completed a semester-long, graded freshman course such as First Year Seminar? Circle: Yes / No

6. If yes, at what institution? _____

Do you recall your letter grade in this course (e.g. B+)? If yes, please list: _____

7. Have you completed any English Composition courses at CFCC? Circle: Yes / No

If yes, which one(s)? _____

8. Do you feel your previous scholarly experience with research has prepared you to competently accomplish your academic goals? Circle: Yes / No

9. Do you communicate better in another language besides English? Circle: Yes / No

On a scale of 0 to 10, with 0 = "very poor" to 10 = "very high," please rate the following:

10. How would you rate your ability to search the Internet to find information? _____

11. How would you rate your ability to search library databases to find information? _____

Appendix 2. Demographic information for university students

University ID #

Credit hours taken at previous institution:

What is the name of the institution you are transferring from?

Did you have a library instruction session at your previous institution?

If you are a current UNCW student, did you complete Freshman Seminar/ First Year Seminar (UNi)?

If you answered yes to the question above, what was your grade in the course?

If you participated in a semester long graded freshman course, what was your grade?

On a scale of 0-10; scale of 0 (meaning not at all) to 10 (meaning completely) please answer each of the following questions:

1. How do you rate your ability to search library databases to find information
2. How would you rate your ability to search the internet to find information?
3. Do you feel your previous scholarly experience with research has prepared you to competently accomplish your academic goals?

Do you communicate better (or as well) in English than any other language?

- A. Yes
- B. No

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