
UNDERGRADUATE STUDENTS' COMPETENCE IN INFORMATION LITERACY ASSESSMENT AND INSTRUCTION

March 2024

The University of Virginia promotes undergraduate competency in information literacy. Information literacy is a high priority and a critical milestone in students' learning roadmap. Students in the 21st century must successfully engage in an increasingly complex world of written and digital information, requiring them to be adept in knowledge creation, evaluation, and information ethics. Students encounter instruction in information literacy throughout their undergraduate program of study. Each of the nine schools serving undergraduate students defines general education requirements, which include courses in humanities, social sciences, and sciences. Through both in-course curricula and extra-curricular engagements, the University provides students with the education and tools needed to be information literate.

Faculty infuse guidance and instruction throughout the undergraduate experience at appropriate moments of intervention. Some programs choose to integrate information literacy instruction directly into their courses. The University Library is often a vital part of those courses, weaving essential information literacy concepts into instruction and providing guided practice. Students who receive deliberate information literacy instruction, particularly when provided in the context of practical work, demonstrate an increased ability to critically evaluate and skillfully apply information to their research assignments. As students meet the objectives of the information literacy competency, they become skilled and knowledgeable researchers, capable of using information effectively to achieve their academic and professional goals.

Assessment of students' competency in information literacy, fundamental to developing the full potential of students, serves to identify strengths and weaknesses in students' information literacy skills that can be addressed through instruction. Also key to successful implementation of instruction is understanding

the students' point of view--their participation and experience in research and academic writing, and their perceptions of their own proficiency in information literacy. The goal of improving students' information literacy entails understanding the wide range of factors—from learning opportunities to students' experiences and confidence—that can affect progress.

Together, assessments of students' information literacy in multiple disciplines and students' self-assessments and experiences inform an overall understanding of information literacy and instruction at the University. This report describes the use of assessment to understand student information literacy from across the undergraduate disciplines. The report also highlights in detail examples of instruction in critical thinking in the College of Arts and Sciences, in the undergraduate program in Media Studies, in the School of Nursing, and through the work of the University Library Teaching and Learning program.

INFORMATION LITERACY: DEFINITION

Information literacy is an intellectual framework for identifying, finding, understanding, evaluating, and using information, including written, oral, visual, or digital information.¹ Fourth-year students at the University of Virginia are expected to learn to know when there is a need for information, and to identify, locate, evaluate, and effectively and responsibly use and share that information for the problem at hand. Specifically, students will:

- Know when information is needed to refine a research question, how to evaluate the usefulness of information, how to separate opinion from evidence, and when one has sufficient information to stop researching.
- be able to identify, locate, access, and manage information, including that from multiple media sources, such as digital technology, communication tools, and/or networks.
- evaluate information and sources to determine validity and credibility, to seek multiple perspectives, and to place authority in context.
- responsibly acknowledge and appropriately cite sources.

INFORMATION LITERACY: ASSESSMENT METHODS

In 2022, the University undertook an assessment of undergraduate student information literacy, as defined above. The assessment incorporated two methods: direct assessment of samples of student papers, and a survey that elicited students' self-assessment of and attitudes about their skills in information evaluation, interpretation, and citation.

¹ Middle States Commission on Higher Education. (2002) Characteristics of Excellence in Higher Education: Eligibility Requirements and Standards for Accreditation

DIRECT ASSESSMENT OF STUDENT LEARNING

The direct assessment articulated and focused on three learning outcomes:

A third- or fourth-year student at the University of Virginia shall be able to:

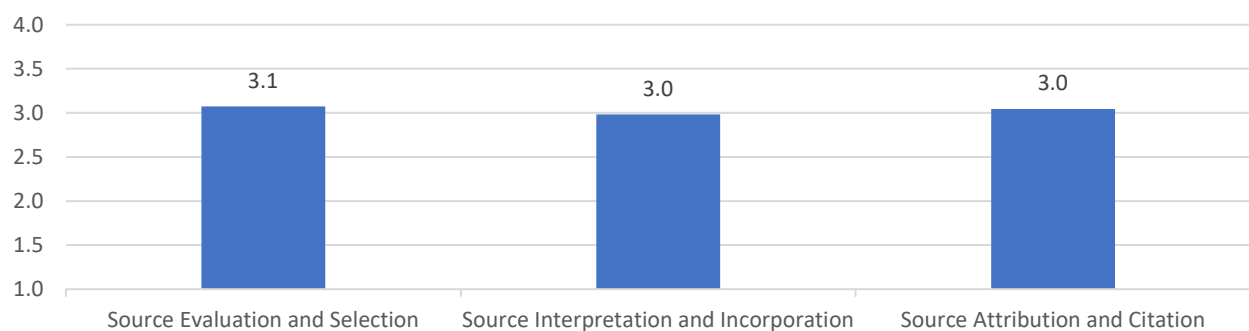
1. evaluate information and select sources effectively to accomplish the assignment purpose.
2. interpret and incorporate information and evidence to accomplish the assignment purpose.
3. demonstrate understanding of the importance of crediting the work or ideas of others; use proper attribution and citation, in text and notes/ bibliography.

A representative sample of academic programs identified courses taught in 2021-2022 in which 3rd and 4th year students were assigned papers requiring them to analyze sources and evidence. The sample of students' papers was assessed by applying a rubric based on the AAC&U VALUE Information Literacy rubric², mapped to the learning outcomes, and modified as needed to reflect disciplinary expectations. For each learning outcome, faculty raters scored over 300 student papers from 18 courses on a scale from 1 (Developing) to 4 (Highly Proficient); each paper was scored by at least two raters to assure consistency.

Expectations for students' proficiency in information were determined by faculty committee: 25% highly proficient; 75% proficient, 100% competent. On average, students' papers were scored as demonstrating proficiency. The expectations were exceeded for high proficiency (36% of the papers scored as highly proficient) but not met for proficiency (67% were proficient or better) or basic competency (91% scored as competent or better). Averaged scores for each of the three learning outcomes did not differ (Figure 1).

Figure 1

Average Information Literacy Scores by Outcome



Note. A four-point scale was used for assessment scoring; 1=Developing, 2=Competent, 3=Proficient, 4=Highly Proficient

² <https://www.aacu.org/value/rubrics/information-literacy>

These results should be considered with caution as they may reflect the impact of the pandemic on learning and instruction. The sampled papers had been submitted by third- and fourth-year students enrolled in Fall 2021 or Spring 2022 courses. These students, just one and a half to two years prior, had experienced the sudden pandemic-driven switch to online classes and new grading schemes on top of the personal stress of negotiating a pandemic. That experience may have affected their opportunities to learn best practices in evaluating, interpreting, and citing sources of information.

STUDENT SELF-ASSESSMENT

For the assessment via survey, this report relies on results from the 2022 administration of the Student Experience in the Research University (SERU) survey³. All undergraduate students, representing all four classes, are invited to take the survey. In 2022, 24% of students (3950 students) did so. The survey addresses students' educational, extracurricular, and social experiences at the university. Among the topics, the survey asks students about information literacy, including about instruction they receive in information evaluation and management. They are also asked to self-assess their skills in information management "now" and when they started at UVA. The following analyses represent answers from students in all four classes and from population groups (gender, first-generation, international/not a citizen, low income/Pell recipient, and race).

INFORMATION LITERACY INSTRUCTION

How often did students say that they were offered instruction in their courses regarding how to evaluate, apply, and cite sources of information? Over half of respondents reported that they were often or very often offered instruction in both how to judge the value of information and in what constitutes plagiarism. Differences among populations were slight to not apparent.

In 2022, respondents appeared to be confident in their ability to find, evaluate, and correctly cite sources. In the survey, they were asked to rate their agreement or disagreement with four statements:

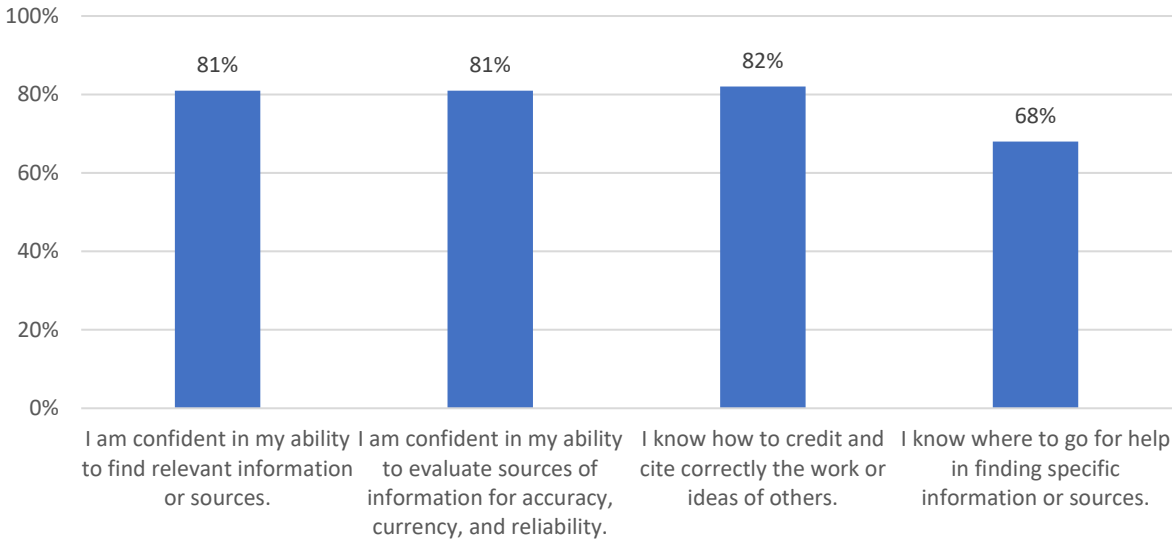
1. I know where to go for help in finding specific information or sources.
2. I am confident in my ability to find relevant information or sources.
3. I am confident in my ability to evaluate sources of information for accuracy, currency, and reliability.
4. I know how to credit and cite correctly the work or ideas of others.

Eight in ten respondents agreed or strongly agreed that they were confident in their abilities to find, evaluate, and correctly cite sources of information (Figure 2).

³ <https://cshe.berkeley.edu/seru>

Figure 2

Percent of 4th Year Survey Respondents Who Agree or Strongly Agree That...



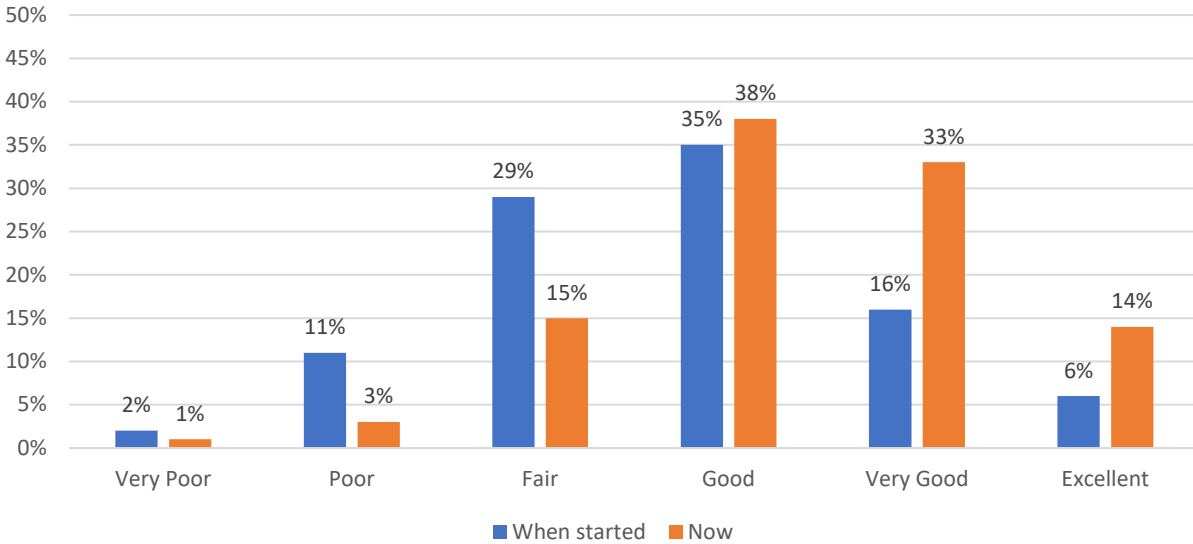
Somewhat fewer (68%), however, apparently did not know where to go for help in finding specific information or sources of information. How frequently did respondents interact with library staff, receive instruction from library staff in a class, or receive help from library staff with research or technology? While respondents overall said that they rarely interacted with library staff, students from underrepresented minority groups such as international students, first-generation students, and Black students, appeared to be somewhat more likely to interact with library staff in person or virtually and to receive instruction.

SELF-ASSESSMENT OF INFORMATION LITERACY WHEN STARTED AT UVA AND “NOW”

The survey asks students to self-assess their skills in information literacy when they started at UVA and “now.” Results reveal respondents’ perception that, on average, their online and library research skills improved during their undergraduate education (Figure 3). While 22% of respondents assessed their proficiency as very good or excellent when they started at UVA, fully 47% assessed their proficiency “now” as very good or excellent. That is, the percent self-assessing as very good or excellent more than doubled. Notably, the percentage of respondents who assessed their proficiency as very poor to fair shrank from 42% when they started to 18% “now.”

Figure 3

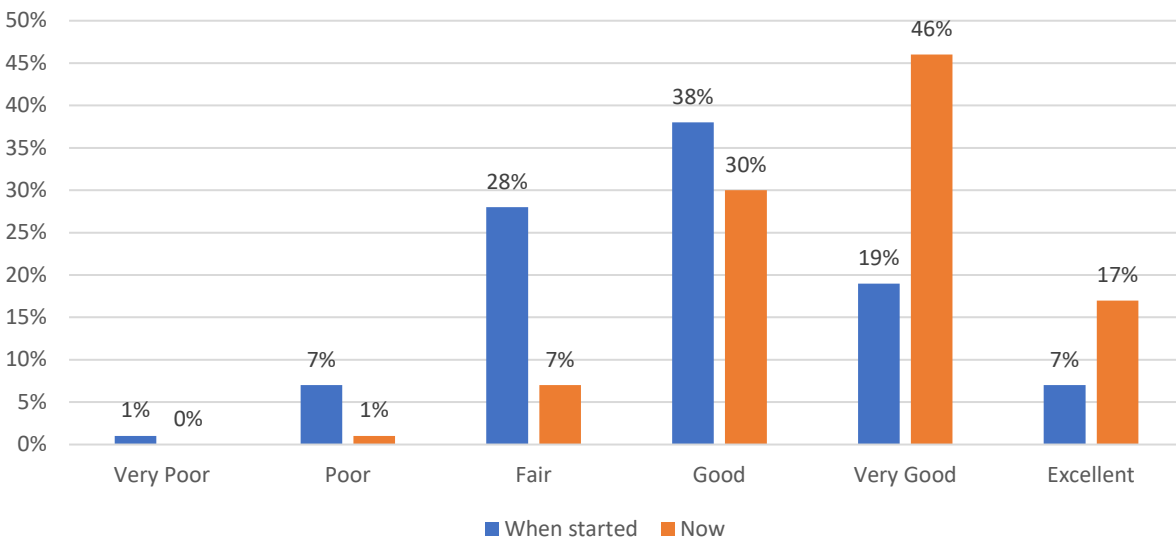
Respondents' Self-assessed Library and Online Information Research Skills: When Started and "Now"



Students' self-assessment of their ability to read and comprehend academic material also more than doubled. Fully 63% assessed their proficiency "now" as very good or excellent, up from 26% when they started at UVA (Figure 4). Likewise, the percentage of students who assessed their proficiency as very poor to fair when they started (36%) declined to 8% "now".

Figure 4

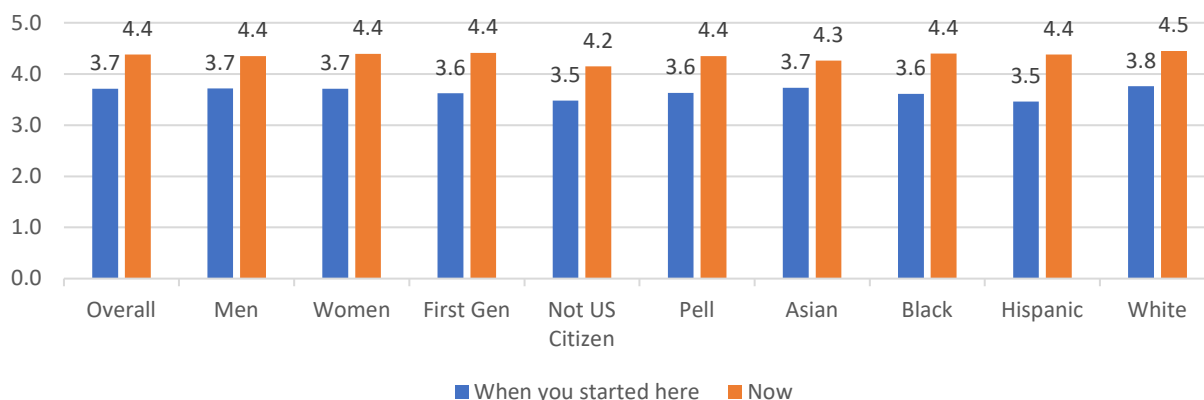
Respondents' Self-assessed Ability to Read and Comprehend Academic Material When Started and "Now"



For both self-assessments, respondents from some under-represented minority groups assessed their skills lower than other groups both “when they started” and “now” (Figure 5). Notably, among respondents from first-generation, Black, and Hispanic population groups, their self-assessments rose at a slightly higher rate than other students (Figure 6).

Figure 5

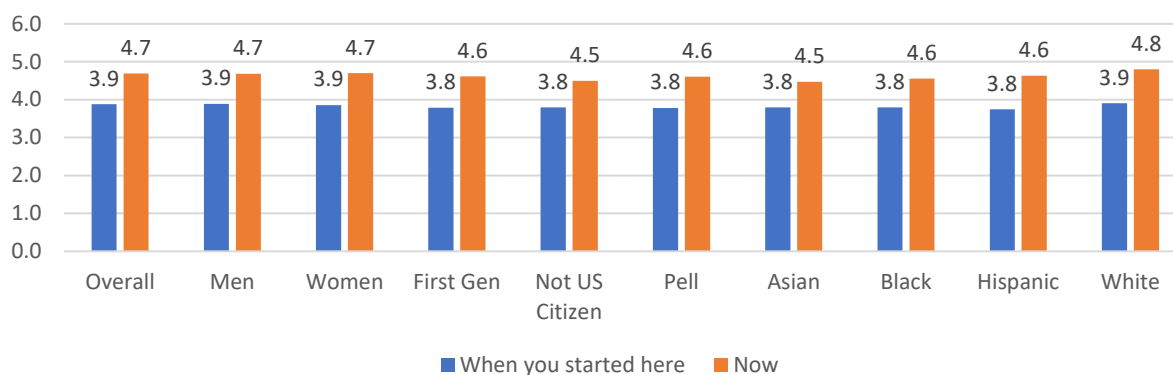
Respondents' Self-Assessed Library and Online Information Research Skills When Started and "Now" by Population Group (Averages)



Note. Survey responses represent the following scale; 1=Very poor, 2=Poor, 3=Fair, 4=Good, 5=Very Good

Figure 6

Respondents' Self-assessed Ability to Read and Comprehend Academic Material When Started and "Now" by Population Group (Averages)



Note. Survey responses represent the following scale; 1=Very poor, 2=Poor, 3=Fair, 4=Good, 5=Very Good, 6=Excellent

SUMMARY OF ASSESSMENT RESULTS

In combination, the results from the assessment of survey respondents and the results of the assessment of student papers reflect proficiency among a large proportion of undergraduate students. In general, two-thirds of students' papers were judged to reveal information literacy at a level of proficiency with another 24% deemed as competent. Three-quarters of survey respondents report confidence in their ability to find, evaluate, and credit relevant information or sources. When asked to self-assess their information skills, respondents on average report improvement in their skills while studying at the university. Finally, worth noting, Black, Hispanic, and first-generation respondents reported greater gains than respondents in other population groups.

INFORMATION LITERACY: CURRICULAR EXAMPLES

The College of Arts and Sciences and the School of Nursing, which together account for two-thirds of undergraduate students at UVA, provide a window into the range of curricular and pedagogical practices that support instruction in information literacy. Below, four programs illustrate different approaches to improving students' information literacy: College Curriculum, Media Studies program, Nursing School initiative, and UVA Library Teaching and Learning program.

INFORMATION LITERACY: COLLEGE CURRICULUM

In October 2019, the faculty of the College of Arts & Sciences approved the adoption of the *College Curriculum* as the general education requirements for Arts & Sciences undergraduates. The College Curriculum entails three groups of requirements: *The Engagements*, *The Literacies*, and *The Disciplines*. Students must complete all three subcomponents, accounting for 51-55 credits in the College.

The *Engagements* are a series of four courses taken exclusively in the first year of study. The Engagements introduce students to four intellectual dispositions that undergird all scholarly inquiry at the collegiate level:

- Engaging Aesthetics,
- Empirical and Scientific Engagement,
- Engaging Differences, and
- Ethical Engagement.

These small, seminar-style courses ask big questions and emphasize participation and engagement. They are taught primarily using group projects and discussion in an “engaging” environment. Having completed this series of four courses, students will be prepared to think critically about their continued studies including about the forms and types of information integral to each intellectual disposition.

The *Literacies* help students master vital skills and expand their capacity to understand and engage the world even more deeply. Students equip themselves with the study of a “world language” through the

intermediate level, learn how to communicate in speech and writing through the completion of two writing-intensive courses, and learn to communicate with numbers through the completion of two courses in the “Quantitative, Computational, and Data Analysis” category.

The *Disciplines* ask students to explore the different scholarly practices, sources of information, and disciplinary thinking manifest throughout the Arts & Sciences. Students complete one course in each of the following seven categories of classes:

1. Artistic, Interpretive, & Philosophical Understanding
2. Chemical, Mathematical, & Physical Universe
3. Cultures & Societies of the World
4. Historical Perspectives
5. Living Systems
6. Sciences & Society
7. Social and Economic Systems.

As of this year, AY2023-2034, the Engagements curriculum has been fully scaled to serve all students in Arts and Sciences. During the roll-out, the program underwent comprehensive assessments in AY 2018-19 and AY2019-20. Since then, the program conducts both programmatic and learning outcomes assessments semi-annually.

INFORMATION LITERACY: MEDIA STUDIES

The undergraduate program in Media Studies emphasizes the knowledge and skills essential to evaluate, interpret, and create information. When in 2021 the BA in Media Studies replaced an existing interdisciplinary degree program, significant changes were made to the program to strengthen the structure of the curriculum and to improve student learning.

The core curriculum is designed to provide students with a solid foundation in media studies to analyze and shape media. Students gain fundamental media literacy, interpretation, and research skills, all of which are necessary to evaluate and shape media culture, technology, infrastructure, and policy. Students develop these skills by learning to critically analyze and evaluate media through a variety of methods: study of media history; critique of media aesthetics and form; analysis of audience uses of media; and examination of media policy aims and effects. More broadly, the core curriculum equips students with critical reasoning, writing, reading and research skills, and promotes rigorous examination of media craft and industry. The program now requires students to take a media research methods course, a global media course, and a capstone course to earn the degree.

In the Topics in Media Research courses, students learn to assess the validity of information, of different research and data collection methods, and the ethical issues raised. Through reading, studying, and evaluating existing research in media studies, students are prepared and required to propose new, original research.

The Topics in Global Media courses offer students the opportunity to explore the media systems, cultural traditions, technologies, and roles of media in national and international affairs. Course topics may range from film-making in small nations to East Asian transnational media.

Through the Capstone seminar, students conduct original research in media student under the supervision of faculty. Their research requires design of a research question, extensive collection and analysis of literature and data, and completion of a 15–20-page paper that provides new critical insights or information on their research topic.

To support this new curriculum, the program conducts direct assessments of students' research essays, focusing on competencies in written communication, information literacy, and critical thinking. Assessment results confirm that the core curriculum is successful in enabling students to cultivate and refine crucial critical assessment skills through practices that culminate in the composition of a research-based essay. These practices include careful selection of sources, based on assessment of source reliability and viability; integration of selected sources into written work for the purpose of supporting, contesting, and/or elaborating original arguments; and organization and articulation of ideas in writing, ideas that are developed through the process of identifying, evaluating, and integrating sources.

INFORMATION LITERACY: INITIATIVE IN THE SCHOOL OF NURSING

To assess undergraduate student competency in information literacy, the office of Institutional Research and Analytics and the Library Teaching and Learning Director created and pilot-tested a multiple-choice test. The goal was to design a test that 1) would be sufficiently challenging, 2) would reflect selected topics defined by the American Library Association Information Literacy Standards (ACRL)⁴, and 3) could be modified to address specific disciplines or topics. The questions were pilot tested with populations of undergraduate students, ranging from 2nd year Nursing students to 4th year History majors. This report describes the pilot in the School of Nursing.

The test consisted of 16 multiple choice questions linked to ACRL standards, one multiple choice question asking how challenging the test was, one multiple choice question asking if respondents had had a class with a librarian, and one open-ended question (*What did you think of this test? Please share any feedback you have here.*).

Early in Spring term 2021, 87 second year students enrolled in a required second-year course, *Research, Ethics, Advocacy, and Leadership: Intro to Professional Practice*, were required by the instructor to take the test online and on their own time. Aggregated results overall and by question were shared with the instructor. At the end of the term and after grading the students' research papers, the instructor

⁴ [Guidelines, Standards, and Frameworks | Association of College & Research Libraries \(ACRL\) \(ala.org\)](https://www.acrl.org/standards/guidelines-standards-and-frameworks)

requested a test of correlation between test scores and grades on research papers for the 56 students who had not worked on their papers with a teaching assistant.

RESULTS

Eighty-five of the 87 students completed the test. On average, respondents correctly answered 75% of the questions. Total scores ranged from 19% to 100%. Forty-two percent of respondents found the test to be somewhat or very challenging. Fifty-six percent reported that they had not had a class with a librarian. Respondents were most likely to answer incorrectly the questions on databases, search strategies, and methods for extracting and managing sources.

The test scores and research paper grades were positively correlated (moderate $r=0.64$). The test results and positive correlation with grades affirmed that an identifiable portion of the students needed additional instruction. Indeed, less than half of respondents had had a class with a librarian.

RESPONSE

The instructor worked with the Library Teaching and Learning Team to develop self-paced instructional modules tailored to second-year nursing student needs for information literacy as revealed by the test. The modules are based on writing assignments for the course and designed to enhance research skills around database searches, peer reviewed sources, and primary and secondary sources.

The instructor continues to administer the test at the beginning of the course and requires low-scoring students to take the self-paced module. Identified students also work with peer support teaching assistants to review their research plans and draft papers. The test and peer support are available to all students in the course, but those with low test scores are required to show completion of the module and check in with teaching assistants as part of their grade. Overall student performance on the research paper has improved since the instructor adopted this educational intervention.

INFORMATION LITERACY: LIBRARY TEACHING AND LEARNING ONGOING COLLABORATION

The Library Teaching and Learning department consults with faculty members to determine what information literacy outcomes they seek to address in their classes and to design hands-on activities and class instruction to improve student information literacy skills. Surveys are administered before and after each library information literacy instruction session in lower-level undergraduate general education classes. Survey data from Fall 2021-Fall 2023 reveal that undergraduate students identify information literacy-related gaps in their knowledge or skills and that, after the sessions, they report having improved understanding of the research process and learned about using the resources the UVA Library has to offer.

The Library partners with faculty across the university through Course Enrichment Grants⁵, designed to increase students' information literacy and classroom learning experience. Grant recipients work with Library staff to include assignments and classroom interventions that improve students' ability to find,

⁵ [Course Enrichment Grants | UVA Library \(virginia.edu\)](https://library.virginia.edu/course-enrichment-grants/)

evaluate, and ethically use information. During the 2022-2023 school year, the Library worked with faculty in a number of departments, such as Art, Drama, and History. Librarians taught information literacy classes to the students at the beginning of the semester, focusing on such skills as finding and interpreting primary sources; understanding copyright; and evaluating sources. Students in two of the courses used these skills to contribute to the development of exhibits at the Fralin Museum of Art and in the Harrison Small Special Collections Library Gallery.

As another example from the School of Nursing, librarians worked with the instructor of the fourth-year course, *Foundations of Professional Nursing*, to develop an online, asynchronous module⁶ to help develop students' information literacy skills specifically related to understanding evidence-based practice. The instructor administered pre- and post-tests before and after the module was assigned. Responses to all questions in the post-test indicated an increase in student comfort with the information literacy concepts covered in the module.

Looking forward, the Library conducted a review of information literacy instruction in 14 peer and regional institutions to learn how other institutions incorporate such instruction into academic curricula. Eleven of the 14 institutions require students to take a course that includes instruction in information literacy. Often, the course is part of the first-year general education or core curriculum. Results of this review are under discussion as the Library considers new avenues for collaborating with instructors and strengthening curricula to improve students' information literacy skills and knowledge.

IN CLOSING

This methodologically integrated approach to assessment revealed substantial evidence of undergraduate students' information literacy competency. Seven in ten students are not just competent, but proficient in evaluating, interpreting, and correctly citing sources of information, a conclusion agreed upon both through the direct assessment of students' papers (67% proficient or very proficient) and survey-based assessment of students' self-assessments (63% very good or excellent in their ability to read and comprehend academic material, although only 47% very good or excellent in library and online information research skills). While survey respondents from underrepresented minority groups self-assessed at slightly lower levels of proficiency some also showed higher rates of improvement. Eight in ten respondents agreed or strongly agreed that they were confident in their abilities to find, evaluate, and correctly cite sources of information.

The University of Virginia promotes undergraduate competency in evaluating, interpreting and citing information sources, that is, information literacy. Students encounter instruction that fosters information literacy throughout their undergraduate program of study as exemplified by the curricula in the College of Arts and Sciences and in the School of Nursing. Moreover, schools and academic programs continue to

⁶ [Evidence Based Practice \(EBP\) - Overview | Rise 360 \(articulate.com\)](#)

pursue and modify instructional pedagogy and content to improve students' information literacy. The recent curricular developments in the College of Arts and Sciences and in the School of Nursing, plus the ongoing collaboration by the Library Teaching and Learning program, demonstrate the broad and deep commitment to fostering information literacy at the University of Virginia.