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Title

Measuring Information Literacy Outcomes: Process as Value Added

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Publication Date

2017-08-02

Peer reviewed

Measuring Information Literacy Outcomes

Process as Value Added

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Introduction

In 2014, the University Library at UC Santa Cruz implemented a locally developed online tutorial for the EBSCO Academic Search Complete (ASC) database as the primary method for supporting library instruction for the campus's Composition 2 curriculum. During the 2015/16 academic year, the library's Undergraduate Experience Team (UET) collaborated with the Writing Program and the Office of Institutional Research, Assessment, and Policy Studies (IRAPS) under the aegis of the Association of College and Research Libraries (ACRL) Assessment in Action Program to measure the effectiveness of this tutorial at supporting the development of student research skills.

The online tutorial we sought to measure had been designed to replace in-person, one-off library instruction sessions for Composition 2 that we had supported for many years. It reflected the concepts and exercises that the library had covered in those sessions. We worked with our project partners to reach a common understanding of information literacy (IL) learning outcomes and evidence of proficiency in them. We developed a rubric that we applied to learning artifacts for five classes in fall quarter 2015. What we learned helped us substantially revise the online tutorial, but the work with our partners to model standards-based IL learning outcomes is of perhaps greater value as the campus works to define IL program learning outcomes across the curriculum.

Literature Review

Collaboration

Hoffmann and LaBonte (2012) collaborated with Writing & Rhetoric program faculty to assess IL levels for first-year and third-year undergraduate students by creating a rubric to facilitate assessing students' writing assignments. Using an "authentic assessment approach" (i.e. examining students' real-world application and understanding of information rather than modular tasks), they found that librarians and faculty shared the same IL goals for students. They examined assessment rubrics from other institutions, linked the developing rubric to campus learning outcomes, and normalized the grading process—steps that UET undertook as well. They found that student IL proficiency levels might be reliably measured by assessing writing assignments. They also found that targeted rubrics could be an effective assessment tool.

Rubrics

Turbow and Evener (2016) focused on the work of graduate students in Health Sciences rather than that of first-year undergraduates. They pointed out issues of rubric development common across disciplines and academic levels: the validity of the rubric to measure what is intended, and the reliability of scorers to consistently apply assessment criteria. Turbow and Evener gave an analysis of the value of rubrics to

the assessment process, described the rubric norming process, and addressed challenges to inter-rater reliability for different types of student data.

Belanger et al. (2015) describe the massive Rubric Assessment of Information Literacy Skills (RAILS) project, conducted over a five-year period across nine disparate academic institutions. The use of rubrics is demonstrated not only as a tool for librarians and faculty to assess the work of students, but also as a means to communicate to students what they need to learn, thus facilitating self-evaluation, direct feedback, and making scores more meaningful. Setting out in great detail the entire assessment process from selection of assignments and rubric creation to rubric norming and application of findings for assignment and assessment improvement, they found that working collaboratively with faculty is useful both in the assessment of information literacy and research skills and in the development and use of rubrics, the latter of which led most of the institutions' stakeholders to closer collaborative partnerships.

Gola et al. (2014) took a different approach by partnering with their campus Director of Assessment and Accreditation Services for General Education from the Office of Institutional Effectiveness in an accreditation-required project to assess the information literacy of graduating fourth-year students across the institution. They found the application of rubrics crucial to evaluating the use of information in student papers, as reflective of current instructional practices. Consequently, assessment results can be used to identify IL competencies on which students scored lower to help create corresponding, targeted learning outcomes and further engage with faculty and other campus stakeholders on the incorporation of information literacy into the curriculum by both librarian- and faculty-led instruction.

Oakleaf (2009) highlighted the advantages of rubric-based assessment over fixed-choice, test-based measures of IL. The piece offered a thoroughgoing introduction to the concept, value, and application of rubrics for assessment, emphasized the need for librarians to take a rigorous approach to the methodology of rubric creation and—most particularly—inter-rater reliability, methods of assurance of which are detailed at length. The value of librarian training was stressed as a prerequisite for consistent and accurate application of rubrics.

Rinto (2013) used a rubric to assess the extent to which students across a vast landscape of Composition courses at her institution were applying the Currency, Relevance, Accuracy, Authority, and Purpose (CRAAP) criteria in assembling their annotated bibliographies. Rinto employed Mertler's seven-step model to guide the rubric development process. She applied her institution's IL learning outcomes for Composition courses, mapping these to the ACRL Information Literacy Competency Standards. Similar to UCSC's experience, Rinto found some of these criteria (Relevance and Authority) taken in account by students, while others were much less so. The process of training scorers to ensure inter-rater reliability was acknowledged as less than successful.

A commonality across all of these studies is that librarians reaped unexpected benefits of establishing greater collaborative ties with their classroom faculty for a deeper and shared understanding and articulation of IL goals, and reinforcement of the centrality of the library to campus instructional efforts toward IL.

Methodology

All of the project partners were committed to supporting IL development, but each articulated evidence of such development differently, according to the standards and jargon of their communities. We recognized that we would need to agree on a shared model of IL, develop a common vocabulary, and create learning outcomes that were relevant to each stakeholder's community of practice. Jastram et al. (2014) showed that broad collaboration had the potential not only to improve the assessment instrument but also to help all participants arrive at shared IL goals through productive dialogue.

During the summer and early fall of 2015, we built a shared understanding of measurable outcomes by creating a matrix of ACRL Information Literacy Competency Standards, Writing Program course learning outcomes, and ASC tutorial elements. This matrix was our Rosetta Stone. It allowed us to start building a rubric based on one national standard and do so in a way that met the needs of our project partners.

The rubric we developed addressed seven competencies across three domains: three each related to developing a research strategy and managing search results and one that addressed satisfying the instructor’s assignment requirements. Its development was very much an iterative process that covered several meetings with project partners.

Keywords		Resources		Assignment
K ₁ : Identifies key concepts K ₂ : Identifies keywords, synonyms, and related terms K ₃ : Achieves a manageable focus		R ₀ : Correctly identifies resources R ₁ : Uses database or other relevant Library resources to find articles R ₂ : Identifies source by type: scholarly or non-scholarly		A ₁ : Finds relevant reserach resources
Standard	Evaluation criteria	Beginning	Developing	Proficient
K ₃ :The topic has a manageable focus [ACRL Standard 1, indicator 1.d	Focus topic to manage search results	Topic is unfocused, unclear, too broad or narrow	Topic is somewhat focused	Topic is sufficiently focused
If the research topic is not at the "Proficient" level, provide a comment about what influenced your evaluation				

Figure 1. Rubric elements

We performed our data collection during fall quarter 2015. Four sections of Writing 2 and one section of Core 80B—115 students in all—participated in this project. UC Santa Cruz undergraduate students are required to complete Composition 2 prior to their seventh quarter of enrollment. Students who satisfied the University’s Entry Level Writing Requirement (ELWR) prior to matriculation usually enroll in Core 80B during their first quarter. Those who did not satisfy ELWR prior to arrival take one or more preparatory classes before enrolling in Writing 2. Both pathways satisfy the Composition 2 requirement.

Participating students took the library online ASC tutorial before starting work on their class research papers. They then completed a research process questionnaire and submitted a list of cited works for that assignment. The students completed the questionnaire using online Vovici survey software provided by IRAPS. UET used the same software to score the student-submitted data. We entered each student’s unique identification number and their questionnaire responses pre-populated our rubric scoring instrument.

Student ID		
Final research topic:		
Initial research topic if modified:		
K1. Identifies key concepts and terms that describe the information needed [ACRL Standard 1, indicator 1.e]: Lists key concepts in the <u>final</u> research topic		
Evaluation Criteria: Lists key concepts in the final research topic		
Lists only one key concept in the final research question. Insufficient focus of topic. (Beginning) <input type="radio"/>	Lists more than one key concept in the final research question but insufficient to focus topic. (Developing) <input type="radio"/>	Lists sufficient number of key concepts in the final research question to focus topic. (Proficient) <input type="radio"/>
If the research topic is not at the "proficient" level provide a comment about what influenced your evaluation:		
Text		

Figure 2. Scoring instrument for K₁: identified key concepts

In winter quarter of 2016, UET undertook a rigorous normalization process to ensure all scoring team members applied the rubric consistently. Writing Program and IRAPS project partners were not included in this work because of the logistical challenges of coordinating so many schedules for normalization exercises and scoring sessions. The first practice scoring exercise used a small subset of results, with each team member scoring the same assignments independently. Variances in ratings were then identified, and differences of process, interpretation, or other disagreements were discussed at length. We created a stepwise set of instructions for scoring each exercise and a glossary of terms to apply to ambiguous data. We performed additional practice scoring exercises in our assigned teams until we reached a common understanding of how to apply the rubric. This helped us minimize subjectivity—despite working with qualitative data—and to get a more objective comparison of results across all sections.

The normalization work was more demanding and time-consuming than anticipated. We allocated two weeks in our project plan for normalization; it took six. Once we set a proper foundation, the actual work of scoring was relatively quick and straightforward. We created ten two-person scoring teams using each unique combination of the five members of UET. Each librarian was assigned to four different teams and served as team leader for two of the four teams they were on. Each team met in person to score student data and held one another accountable for adhering to our agreements. Each student's data were also evaluated independently by two teams that did not have any members in common.

Findings

Students demonstrated proficiency in two of the seven measures of information literacy and development toward proficiency in the other five. They were good at articulating an information need and in selecting the kinds of sources that satisfied the requirements of the assignment. They were less adept at selecting appropriate resources for their searches, translating their information needs into effective keyword searches, achieving a manageable search focus, and differentiating between scholarly and popular sources.

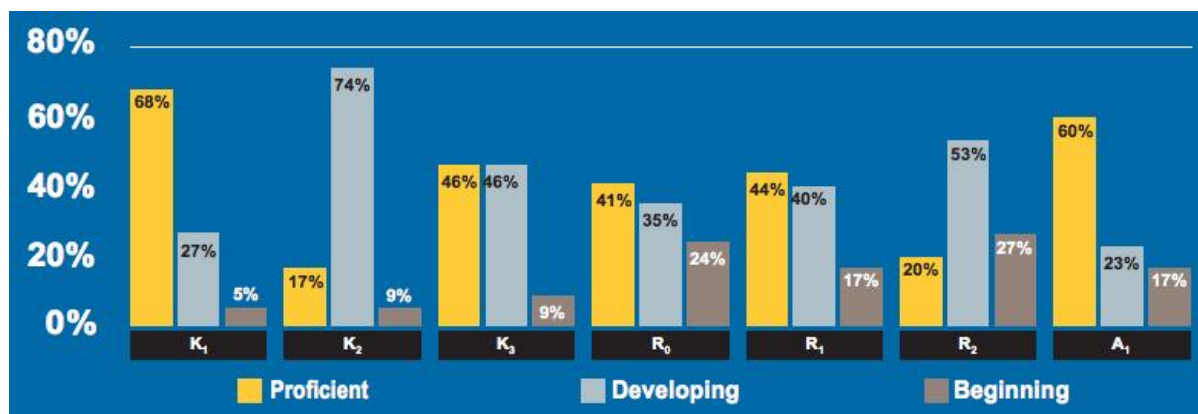


Figure 3. Rubric scores

Only one of the five class sections in this study was a Core 80B class. Those students are mostly freshmen in their first quarter of study. They demonstrated less proficiency than their Writing 2 peers at identifying the database or resource where they discovered their cited sources. They were also less likely to use library databases or resources to find relevant sources. This surprised us because these are high-achieving students—those best prepared to write at a university level at matriculation. Of course, proficiency at written English does not necessarily correlate with a high level of information literacy, and the sample size (one out of twenty-six Core 80B classes in fall 2015) is too small to generalize. However, we suspect that first-quarter college students may simply be less familiar with university library resources in general and our library’s resources in particular. This merits further investigation. It has already informed our approach to marketing library resources and services to first-year students during summer orientation and fall welcome week.

Some of the tutorial elements could be linked directly to rubric outcomes; others could only be linked to one of the three rubric domains. The original ASC tutorial was written before this deep collaboration with the Writing Program and IRAPS. It was not written to measure these outcomes, but rather to render electronically what had been the core of a long-established, in-person, constructivist approach to one-off instruction for Composition 2. It is not surprising that the tutorial was limited in its ability to measure learning outcomes that had not been articulated before its creation.

The work to create a shared understanding of information literacy learning outcomes that was relevant to the library, to Writing Program faculty, and to the campus department responsible for demonstrating compliance with accreditation standards helped us to develop a strategy for recreating the tutorial and, more importantly, for contextualizing information literacy for Composition 2 as the foundation for articulating IL course and program learning outcomes generally.

Librarians at the University of California are not members of the Academic Senate and therefore lack a direct voice in policy setting for information literacy in the curriculum. We have been strong IL advocates, but our success has been variable across departments and often driven by working relationships between librarians and individual faculty members. Learning outcomes are often articulated at the capstone level by program and those related to information literacy or “research skills” have not been consistently tied to any national standard.

We were fortunate to work with the Writing Program while they were conducting a rigorous review of their program learning outcomes. They have since adopted standards-based IL outcomes for Writing 2 that take effect in fall 2017. This foundation gives us a much-needed framework for scaffolding information literacy up the curriculum to the capstone level. Our next opportunity is to engage with the Disciplinary Communication (DC) curriculum. All upper-division students are required to take a DC

course to situate themselves in the discourse of their chosen field. Our goal is to work with faculty to model standards-based information literacy outcomes for the various DC courses. This has the potential to bring us closer to consistent capstone IL learning outcomes based on a national standard.

We entirely rewrote the ASC tutorial that supports Composition 2 using the lessons learned from this project data. We launched the new version in time for summer session 2017 Writing 2 students. We look forward to working with our Writing Program and Core 80B partners to assess the effectiveness of the new instrument.

Conclusion

We carried out this assessment project during a time of heightened campus attention to program learning outcomes, information literacy, and a newly articulated strategic goal around student success. The University Library had recently established the Undergraduate Experience Team to assess undergraduate research needs and make evidence-based changes to learning and instruction tools. The Writing Program had been using a new library online tutorial to support student research assignments for over a year—a tool that had yet to be rigorously assessed. They were simultaneously reviewing long-standing program learning outcomes. The Office of Institutional Research, Assessment, and Policy Studies was documenting compliance with and promoting broader adoption of accrediting body recommendations with respect to program learning outcomes. Our collaboration advanced the immediate needs of each of the project partners, helped us develop a better, shared understanding of information literacy, and contributed to building a culture of assessment on campus.

This campus culture of assessment, and the library's emerging place in it, allowed us to establish partnerships that placed the library in an active and central role supporting student success. The project helped us to gain a foothold with broader faculty efforts to describe or measure IL outcomes. The UCSC University Library is much better positioned to support information literacy and student success with the online research tools we provide.

Project files

Our scoring rubric, process worksheet, other supporting documents, and project poster may be viewed at: <http://tinyurl.com/ucsc-aia>.

Acknowledgments

The University Library is indebted to our indefatigable project partners. Tonya Ritola and Terry Terhaar from the Writing Program and Anna Sher from the Office of Institutional Research, Assessment, and Policy Studies were vital to all phases of this work. We would also like to acknowledge faculty members Lindsay Knisley and Mark Baker for integrating our assessment project into their courses.

This project was part of the program “Assessment in Action: Academic Libraries and Student Success” which was undertaken by the Association of College and Research Libraries (ACRL) in partnership with the Association for Institutional Research and the Association of Public and Land-grant Universities. This program, a cornerstone of ACRL's Value of Academic Libraries initiative, was made possible by the Institute of Museum and Library Studies.

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