Making the Invisible Visible: Collaborative Assessment of ACRL Competency Standard One

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The Problem

ACRL Competency Standard One

Standard One of the Association of College and Research Libraries (ACRL) Competency Standards states, "the information literate student defines and articulates the need for information" (2000, pg 8). Outcomes under this standard include: exploring general information sources to gain familiarity with the topic, defining or modifying the information need to a manageable focus, identifying key concepts and terms, and formulating key questions. Despite the fact that this standard is foundational to the research process, we have found that this "invisible" standard slips through the cracks and is not given more than cursory instruction and assessment by either university classroom instructors or university librarians. As a result of this lack of in-depth instruction and assessment, undergraduate students are unable to engage fully with the tools, resources, and strategies that promote authentic information literacy instruction.

In the case of undergraduate preservice teachers, the consequence of the failure to master ACRL standard one is that future teachers are not well prepared to leverage education research to meet the specific needs of the students in their classrooms. The present study is part of a larger design-based research agenda that is focused on findings ways to prepare preservice teachers to link research to practice.

Linking Research to Teaching

The Collaboration

A mathematics education instructor and an education librarian collaborated together to design, implement, and assess a four-week sequence of library instruction that was related to ACRL Standard One.
1) Students completed online learning modules to develop basic information literacy skills.
2) An initial instruction session—students asked to partner with one another to create manageable topics.
3) Topics were critiqued by librarian and instructor
4) Students filled out concept sheets (see below) to plan their search process
5) Students used concept sheets in a library workshop to begin their work on the Education Research Project.

The Concept Map

The Research Design

Researchers obtained IRB approval and recruited undergraduate elementary education students (N=53) who were enrolled in two sections of the first semester of Mathematics Methods. Both Class A (*n*=28) and Class B (*n*=24) were given the opportunity to create a portfolio, called the Education Research Project. However, only section A experienced library instruction as a product of the collaboration between instructor and librarian.
Research Question: Is there a difference between Class A (Collaboration & Intervention) and Class B (No Collaboration & No Intervention) on the set of three indices?

The Education Research Project
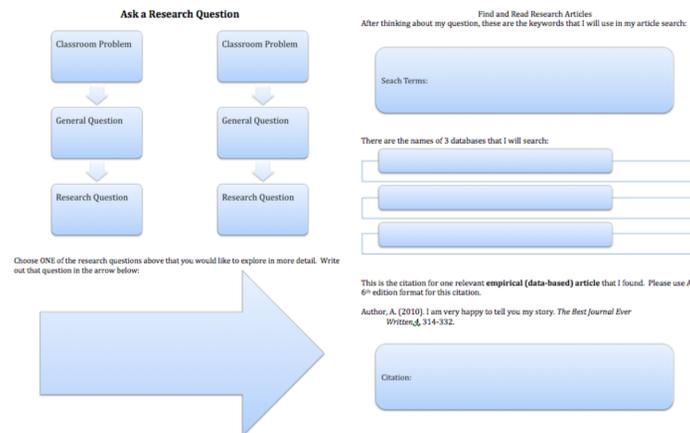
The Assessment

The collaborators scored the projects according to a rubric that was developed for this purpose. Seven items from the Education Research Project were scored and grouped into three indices. The Research Question Index represents the student's ability to ask a manageable research question that is related to a classroom problem. The Search index relates to a student's ability to plan, conduct, and cite results from a literature search. The Article index represents a student's ability to select an article of adequate quality that addresses the research question.

The Instrument

Research Question Index	1. Was the research question related to the identified problem?	0 = No 1 = Weakly Related 2 = Related 3 = Strongly Related
	2. Was the research question manageable?	0 = No (too broad or too narrow) 1 = Manageable
Search Index	#3. Did search terms cover all major and minor concepts in the research question?	0 = missing a major concept 1= all majors, but missing a minor, 2= all major and minor concepts.
	#4. Was there an appropriate choice of database?	0 = listed one or more non-usf databases 1 = all items listed are usf article databases
	#7. Were the essential elements present in the article citation of sufficient quality (general APA format) that to enable another to find the article?	0= missing key elements 1= missing some elements 2=all essential elements present (author, year, title, journal, volume number)
Article Index	#5. Did student find article that addressed the research question?	0 = No 1 = Weakly Related 2 = Related 3 = Strongly Related
	#6 Did the student make an appropriate choice of an article?	0 = Inappropriate (not current, not peer-reviewed, or not empirical) 1= Appropriate

The Results

Table 1 provides descriptive statistics on the three indices (dependent variables) for classes A and B. The mean for class A was larger than the mean for class B on the Research Question and Search Indices.

Researchers conducted a one-way multivariate analysis of variance (MANOVA) and found that there was statistically significant differences between the means for the two classes on the set of dependent variables, Wilks = .792, $F(3, 38) = 4.19$, $p < .05$. This means that group A, the group that experienced the collaboration achieved higher scores on the set of three indices than the group that did not experience the collaboration.

Table 1
Descriptive Statistics for class A and class B on the three indices

Index	Class	M	SD	Skewness	Kurtosis
Research Question	A	.412	1.30	-.712	-0.570
	B	-.481	2.00	-.151	-1.78
Search	A	.636	1.83	-1.55	1.80
	B	-.742	2.58	-.464	-1.19
Article	A	-.074	1.68	-2.00	3.63
	B	.086	1.47	-2.07	3.71

Discussion

The statistical findings in this study suggest that the collaboration between the mathematics educator and the education librarian made a significant impact on students' abilities to acquire and demonstrate the skills in ACRL Competency Standard One. As a result of this study, several more sections of the mathematics methods course have adopted the same collaborative methods used with Class A to insure student success on the Education Research Portfolios. In the Fall of 2012, five sections of mathematics methods were taught library instruction with the same number of classes, tools, and assignments. The present study is part of a larger design-based research agenda that is focused on finding ways to prepare preservice teachers to link research to practice.

For the next stage of this study, the collaborators would like to follow the preservice teachers into their internships and early years of teaching in order to determine if the gain in ACRL Competency Standard One translates into the willingness and ability to turn classroom problems into researchable questions. Do these teachers look to education research to answer their questions, and does this research make an impact upon their teaching?