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

Information Research NAME_Math_Teacher   
   1. Write a question for your topic. Be sure that it is sufficiently manageable for your research project. 
   2. Search for articles that can be used with your topic. Provide a list of sources. Enter your essential concepts in the space below. 
   3. Use search engines to determine the related terms for each main index in the concept maps. 
   4. Select appropriate databases for your topic. Enter the method(s) of this database below. 
   5. For each entry, provide a rationale for your choice. Include the reasoning(s) that led you to your decision(s).

   Topic: Math Education 
   1. Mathematics for Educators 
   2. Math Education Research 
   3. Math Education Tools 

   Database: ERIC, JSTOR, Google Scholar, PubMed

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 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

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?