



Making the invisible visible: Preparing preservice teachers for first steps in linking research to practice



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HIGHLIGHTS

- Collaborative instructor/librarian workshops benefit the search for research.
- Connecting research to teaching starts with an articulation of the information need.
- Preservice teachers need practice in narrowing/expanding research topics.
- Preservice teachers need support identifying relevant search terms.
- Selecting relevant research articles is a complex process for preservice teachers.

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ABSTRACT

Despite the widespread expectation that teachers leverage research to meet the needs of diverse students, little is known about how to prepare preservice teachers to engage in this complex process. This quasi-experimental study examines a collaborative, standards-based intervention that prepares preservice teachers to articulate classroom-based problems, create research-guiding questions, and design effective search strategies. A MANOVA test indicated that the intervention is associated with stronger performance on those first steps. The authors provide detailed descriptions of the intervention and its results in order to offer a roadmap for supporting preservice teachers in the foundational steps of linking research to practice.

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1. Introduction

Over the past two decades, closing the research-to-practice gap in classroom teaching has been a focus of international educational discourse and policy agendas (Arbaugh et al., 2010; Commission of the European Communities, 2007; Goldacre, 2013; Hargreaves, 1996; No Child Left Behind Act, 2002; Organization for Economic Co-operation and Development (OECD), 2007; Slavin, 2002, 2008). Among the many reasons why the call to link research to practice has taken on an urgent tone is the recognition of persistent educational inequities. Recently, there has been an increase in education research related to redressing the opportunity gaps in

elementary and secondary education classrooms (e.g., *The Canadian Journal for Science, Mathematics and Technology Education: Special Issue on Equitable Access to Participation in Mathematical Discussions*, November 2009; *Journal for Research in Mathematics Education* Special Equity Issue, January 2013; *Teaching and Teacher Education: Virtual Special Issue on Equity and Social Justice*). This research has pointed to promising practices that have been shown to be efficacious at reducing the opportunity gaps for students who are diverse socioculturally, linguistically, and in learning-needs. As this important research emerges, educators, researchers, and policy makers have asked how this research can make its way into classrooms (OECD, 2009).

Closing the research-practice gap has been referred to in the literature as linking research to practice, research utilization, knowledge mobilization, evidence-based practice, and evidence-informed practice. There are multiple facets to consider in closing

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the gap: the research process itself and the extent to which practitioners participate in or inform research design and its implementation, the ways in which research knowledge is disseminated, the ways in which teachers access that knowledge, and then the process teachers engage in when putting the knowledge into practice in the classroom.

Among these facets, this article focuses on how preservice teachers learn to access scholarly literature related to problems of teaching practice. This is not the only approach for closing the research-practice gap, but it is one that has not been fully explicated in the teacher education literature. In the next sections of the introduction, the authors explain how information literacy skills lay the foundation for this approach to linking research to practice, how articulating the information need is the foundational first step for this process, and how this study contributes to the literature by focusing on preparing preservice teachers for these foundational information literacy practices.

1.1. Information literacy skills and teacher preparation

Information literacy skills are crucial not only for preservice teachers in accomplishing research projects for their course work, but also for their work as professionals in the field. In the United States, where this study occurred, the expectation for using research to inform practice is reflected in the National Council for the Accreditation of Teacher Education's (NCATE) Standard 1b, *Pedagogical Content Knowledge for Teacher Candidates* (2008), under which target competencies include the ability to “critique research and theories related to pedagogy and learning” along with the ability to “select and develop instructional strategies and techniques, based on research and experience, that help all students learn” (p.1).

Moreover, federal legislation such as The No Child Left Behind Act (NCLB, 2002) and the 2004 *Individuals with Disabilities Education Act (IDEA)* contained explicit language mandating teacher use of *scientifically-based practices*. The aim of such legislation is to set the expectation that teachers use “replicable research on proven methods of teaching and learning for students with disabilities” (Emmons et al., 2009). Being able to accomplish the goals mandated by legislation requires teachers to locate, access, read, critically appraise, and apply education research to their classroom teaching.

These aforementioned skills of locating, accessing, reading, and critically appraising research have long been grouped under the domain of information literacy. The UK Society of College, National, and Universities Libraries (SCONUL) indicates that “Information literate people will demonstrate an awareness of how they gather, use, manage, synthesize and create information and data in an ethical manner and will have the information skills to do so effectively” (Bent & Stubbings, 2011). In the United States, a newly articulated definition of information literacy adopted by the Association of College and Research Libraries (ACRL) in a draft form states.

Information Literacy is a spectrum of abilities, practices, and habits of mind that extends and deepens learning through engagement with the information ecosystem. It includes:

- understanding essential concepts about that ecosystem
- engaging in creative inquiry and critical reflection to develop questions and to find, evaluate, and manage information through an iterative process;
- creating new knowledge through ethical participation in communities of learning, scholarship and civic purpose; and

- adopting a strategic view of the interests, biases, and assumptions present in the information ecosystem. (ACRL, 2014, Lines 71–78)

This definition is remarkably similar to the one provided by the Australian and New Zealand Institute for Information Literacy (ANZIL) (Bundy, 2004).

Specific to the field of teacher preparation, *The Information Literacy Standards for Teacher Education* (ACRL, 2011) created by the ACRL Education Behavioral and Social Sciences (EBSS) Instruction for Educators Committee also outlines several information literacy performance indicators for preservice teachers. Standard One states, “the information literate teacher education student defines and articulates the need for information and selects strategies and tools to find that information.” This standard includes the student’s ability to determine the nature, extent and format of the information needed. It also includes the ability to explore background sources, to increase familiarity with the scope of information, and to define or modify the information need to a manageable focus (ACRL, 2011). What is described by the EBSS Standard One outlines the starting point for preservice teachers in the research process, the place where they identify a problem or question in their practice and then translate that problem into a research-guiding question that they attempt to answer by consulting the scholarly literature.

The authors of this study have coined this standard as the “*Invisible Standard*” (Ariew & van Ingen, 2012) because it has received little attention in the literature. While there have been several studies that have looked generally at how to include information literacy into preservice teacher education (Asselin, 2002; Baldwin, 2008; Crouse & Kasbohm, 2004; Duke, 2009; Earp, 2009; Floyd, Colvin, & Bodur, 2008; Koufogiannakis & Wiebe, 2006; O’Hanlon, 1988; Rockman, 2003; Templeton & Warner, 2002), no research in the education literature could be found on how preservice teachers learn to articulate the information need for research—the very skill required to initiate the process of finding research to address a classroom problem. The next section presents literature that, although not specific to the context of teacher preparation, addresses the complexity of articulating an information need.

1.2. Articulating the information need

In their widely cited article on information need, Belkin, Oddy, and Brooks (1982) stated that information need “arises from a recognized anomaly in the user’s state of knowledge concerning some topic or situation and that, in general, the user is unable to specify precisely what is needed to resolve that anomaly” (p. 62). Studies by Kuhlthau (1991) have indicated that information need is associated with anxiety and uncertainty as students begin research projects. Generally, literature about information need indicates that the ability of the user (the person who has the information need) to identify an information need is far more complex than it appears at first glance. According to the seminal work by Taylor (1968), articulation of the information need during the start of the literature search process goes through four stages:

- 1) An unexpressed need for information
- 2) The conscious, within-brain description of the need
- 3) The formal statement of the need
- 4) The question as presented to the information system (p. 182).

Taylor’s work focused mainly on how librarians assist students in their research during transactions at traditional reference desks, but Kuhlthau (1991) applied his theories about information need to

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