

Improving Student Information Search

A metacognitive approach

Barbara Blummer and Jeffrey M. Kenton



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BARBARA BLUMMER

Center for Computing Sciences

AND

JEFFREY M. KENTON

Towson University, College of Education



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Barbara Blummer

About the authors

Barbara Blummer is the reference librarian for the Center for Computing Sciences in Bowie, Maryland. She received a MLS from the University of Maryland in 1995, a Master's degree in Communications/Digital Library from Johns Hopkins University in 2005, and an EdD from Towson University in Instructional Technology in 2012. She has published numerous articles in the library literature and presented at many conferences on information literacy. This research represents an expansion and an update of her dissertation study.

Jeffrey M. Kenton is the assistant dean for the College of Education at Towson University. Among his research interests are: instructional technology, technology literacy, problem-solving, assessment, and metacognition. His present work revolves around studying the intersections among classroom technology use, pre-service teacher preparation, content knowledge development, and metacognition.

Summary of the study

To improve education graduate students' information search behavior during problem-solving exercises, this book presents a mixed method study that evaluated the effectiveness of a tutorial designed to enhance participants' metacognitive strategies during information seeking for problem solving. It represents an expanded and updated version of the first author's unpublished dissertation research (Blummer, 2012). The use of the think-aloud protocol facilitated an understanding of individuals' strategies and perceptions as they searched for information to solve a problem. A variety of quantitative data offered evidence of the impact of the tutorial on students' problem-solving abilities. The study focused on individuals' use of specific idea tactics and especially the differences in their problem-solving efforts executed before and after exposure to the tutorial.

The study centers on the first author's unpublished dissertation research that examined the impact of metacognition on education graduate students' information search. Chapters 3–5, 8–10, and 15–17 focus on the metacognitive aspect of information search. Education students' information-seeking skills are highlighted in chapters 6 and 7. Information on the research study is offered in chapters 1 and 10–18.

The book is organized in two parts. The first half of the book discusses the literature on the main themes in the research study, and these encompassed information search, metacognition, problem solving, metacognitive scaffolds, and education graduate students' information-seeking behavior. Chapter 1 provides an introduction to the study. Chapter 2 presents a review of the literature on information research and online search. Chapter 3 defines metacognition and traces its development. Chapter 4 examines the role of metacognition in problem solving. Chapter 5 considers the impact of metacognition on information problem solving. Chapters 6 and 7 explore education graduate students' information seeking and information problem-solving skills respectively.

Chapter 8 focuses on the role of metacognition in online search. Chapter 9 traces the literature on metacognitive scaffolds.

The second half of the book centers on the research study and its findings. Chapter 10 describes the development of the idea tactics tutorial. Chapters 11 and 12 discuss the research methodology, including the problem-solving activity and post-activity interview and the data analysis respectively. Chapter 13 tracks the impact of the Indexes on six participants' problem solving. Chapter 14 provides the findings in relation to the research questions for these six participants. Chapters 15, 16, and 17 discuss the themes that emerged from the study, including: idea generation and mental pattern breaking, participants' adoption of metacognitive strategies and behaviors, as well as the incorporation of metacognitive strategies in information literacy instruction. Chapter 18 offers suggestions on utilizing the tutorial to maximize its effectiveness and modifying it for different user groups. The last chapter, 19, provides the conclusion and recommendations for future research.

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Overview of the study

Abstract: Students often experience difficulties locating information despite library training in database search techniques. Research suggests metacognitive strategies including: planning, monitoring, and self-regulating actions could enhance individuals' search in research databases. An idea tactic tutorial that promoted metacognitive strategies was developed to improve education graduate students' searching in research databases for problem-solving activities. Bates identified 17 idea tactics, and nine of these concepts were incorporated in the idea tactics tutorial. We developed three additional tactics based on metacognitive strategies and they are included in the tool. A mixed method study evaluated students' use of the tutorial as well as its impact on their search techniques and outcomes. This work constituted the first author's dissertation study and our book represents an expansion and update of the research.

Key words: library training, education graduate students, metacognition, problem solving, research databases, tutorial.

Introduction

Academic library services provide research training to users. Traditional library training focused on students' information literacy skills and included instruction in utilizing advanced database features and searching relevant materials. However, some students still have difficulty locating resources following library training in database search techniques (Blummer et al., 2012). This likely stems from the multitude of problems users encounter during information search. One novel approach to enhancing students' research techniques highlights individuals' information problem-solving abilities and especially their metacognitive skills. This perspective views information problem solving (IPS) as a form of information literacy that requires students to employ

metacognitive skills or the ability to plan, monitor, and evaluate one's own action (Lazonder and Rouet, 2008). IPS researchers equate information problem solving with information seeking in online databases and the web. Moreover, they note the importance of problem solving competencies in fostering students' success in academia and beyond (Walraven et al., 2008, p. 624). To this end, the dissertation study examined the effectiveness of an idea tactic tutorial to enhance participants' information searching in research databases for problem-solving activities. The tool centered on "idea tactics" that expert searchers employ to "help improve the searcher's thinking and creative processes during searching" (Bates, 1979, p. 280). Bates identified 17 tactics, and nine of these concepts are incorporated in the idea tactics tutorial. We developed three additional tactics based on metacognitive strategies and they are included in the tool. This tutorial also contains definitions as well as examples, and it was provided to participants in an online format during a problem-solving exercise.

This chapter discusses the role of metacognition in problem solving during search as well as the lack of research on students' use of metacognition in information seeking. It also highlights the value of metacognitive scaffolds in problem solving and especially the use of online tutorials to deliver skills training.

Background – metacognition in information search

Research on information need, information behavior, and information retrieval highlighted the enormous cognitive demands placed on users during information seeking. Ellis (1989) and Kuhlthau (1991, 2004) suggested that users progress through various stages of information acquisition. Dervin (1983, 1992) maintained that users aim to satisfy an information gap that exists between an individual's experiences and their knowledge. Marchionini (1995) highlighted users' efforts to assess the effectiveness of the information retrieval process especially "how it relates to accepting" the information need and the ability of the retrieved material to support the task (p. 58). Wilson (1999) emphasized the importance of feedback loops in information behavior models due to the "iterative" character of the process that produced "new research questions" (p. 268).