Predicting college students' online information searching strategies based on epistemological, motivational, decision-related, and demographic variables

Yasemin Demiraslan Çevik

Hacettepe University, Department of Computer Education and Instructional Technology, 06800, Beytepe, Ankara, Turkey

ARTICLE INFO

ABSTRACT

This study examines the extent to which epistemological, motivational, decision-related, and demographic variables predict college students' use of online information searching strategies (behavioural, procedural, and metacognitive strategies). The participants included preservice teachers (N = 538) from 13 universities in different parts of Turkey. Stepwise multiple regression analyses were conducted to identify the variables predicting each online information searching strategy. The results revealed that online information searching strategies were best predicted by epistemological beliefs and then decision-making styles, web search experience, and goal orientations. Students who had advanced epistemological beliefs in speed of learning tended to have better behavioural, procedural, and metacognitive strategies, while students having naive epistemological beliefs in ability to learn had lower level online searching strategies. Students having more web search experience had better online searching strategies. Additionally, as the level of students' mastery-approach goals increases, the use of procedural and metacognitive domain strategies increase as well, while the increase in the level of mastery-avoidance goals were related to the use of less behavioural domain strategies. Finally, students having rational decision styles were more likely to use higher levels of online information searching strategies, while students with avoidant styles tended to use less behavioural and procedural domain strategies.

1. Introduction

Online information searching is defined as a complex process including a number of cognitive and metacognitive strategies (Hofer, 2004; Tsai & Tsai, 2003). Tsai and Tsai (2003) identified 3 domains of online information searching strategies including behavioural, procedural and metacognitive domains. Behavioural domain incorporates control and disorientation aspect strategies, which describe skills to manipulate the Internet searching applications and navigate through the search process. Procedural domain consists of trial and error, and problem solving aspect strategies that indicate skills for applying different search approaches and overcoming problems occurred during search process. Finally, metacognitive domain includes such strategies as purposeful thinking, select main ideas and evaluation that are required for monitoring the search process, identifying key information, and interpreting and evaluating information obtained from the Internet.

E-mail address: yasminey13@gmail.com.

Examining the individual differences influencing the information search behaviour has become a significant area of inquiry. Studies revealed that individual characteristics such as gender and web search experience highly impact the searching strategies and search outcomes. To exemplify, it is indicated that males possess better behavioural and procedural strategies than their female counterparts (Maghferat & Stock, 2010; Roy & Chi, 2003; Tsai, 2009). In other words, males are identified with having better control of the Internet search applications, scrolling through search results, using different search techniques and solving search-related problems. Maghferat and Stock (2010) advocate that females do more comprehensive search and try to gather information from a variety of resources while, Tsai (2009) expresses no difference between males and females in terms of metacognitive domain strategy use. In the same vein, it is stated that those with more web search experience have better behavioural and procedural domain strategies and there is no relationship between web search experience and metacognitive domain strategies (Tsai, 2009). In a recent study, however, Kammerer, Bråten, Gerjets, and Strømsø (2013) found that students' self-reported web search experience was positively associated with their evaluation of searched information. That is, more experienced web searchers tended to evaluate the credibility of information obtained from the Internet and select the more relevant resources.

In addition to the previously mentioned individual differences, the analysis of correlation between online information searching behaviour and belief structures is a dynamic area of inquiry. The main focus so far has been on the relationship between online information searching strategies and epistemological beliefs. However, the literature lacks a study on the relationship between individuals' motivation and decision-making styles with their online information searching skills and strategies. Online information searching indeed requires decision-making (Foltz, 1996) and decision-making styles may affect the quality of this process. Similarly, goal orientations of individuals may play a crucial role in choosing the online information searching strategies. Focussing on epistemological beliefs, goal orientations and decision-making styles, this study will provide a holistic insight to variables affecting online information search and gathering. Within this context, it aims to investigate the epistemological, motivational, decision-related and demographic variables influencing the prediction of online information searching strategies.

1.1. Relationship between online information searching strategies and epistemological beliefs

Epistemological beliefs are defined as beliefs about the nature of knowledge and learning (Schommer, 1990). Schommer (1990) argues that these beliefs are too complicated to be unified in a single dimension; therefore individual epistemology is seen as a belief system with independent dimensions. It is closely linked to simple knowledge (i.e., discrete facts), certain knowledge (i.e., existence of absolute knowledge), omniscient authority (i.e., authority access to knowledge), quick learning (i.e., learning occurs in a quick or not-at-all fashion), and innate ability (i.e., knowledge acquisition by birth). In more recent works, Schommer-Aikins, Mau, Brookhart, and Hutter (2000) relabelled these factors as structure of knowledge, stability of knowledge, speed of learning, and ability to learn. The structure of knowledge (simple knowledge) factor addresses students' beliefs about the complexity of knowledge. Positions range from viewing knowledge as a collection of isolated facts to seeing knowledge as a series of interrelated ideas. The stability of knowledge (certain knowledge) factor addresses students' beliefs as to whether knowledge is absolutely certain or tentative and conditional. The speed of learning (quick learning) factor represents students' beliefs about the speed of knowledge acquisition. Positions on this factor range from the belief that learning should occur quickly or not at all to the belief that learning occurs gradually over time. Finally, the ability to learn (innate ability) factor reflects students' beliefs about the innateness of ability and students' control over the acquisition of knowledge. Positions range from the beliefs that ability is fixed at birth to the belief that students can be taught how to learn.

Many scholars have agreed on the argument that individuals, although they may not be well aware of, activate their epistemological beliefs to monitor, judge and evaluate information during online searching (Hofer, 2004; Mason, Boldrin, & Ariasi, 2010). Hofer (2004) maintained that "As the manner in which students access information has changed, we need to be aware of how individuals evaluate ideas, coordinate theory and evidence, and justify their knowledge assumptions, all aspects of epistemological thinking" (p.44). The critical role of epistemological beliefs in online information search context has also been supported by other scholars (Kammerer et al. 2013; Strømsø & Bråten, 2010; Tsai, 2004). Therefore, an extensive array of research studies has been conducted to examine the relationships between individuals' epistemological beliefs and their online information search behaviours (i.e., Hofer, 2004; Kammerer et al. 2013; Mason et al., 2010; Strømsø & Bråten, 2010; Tu, Shih, & Tsai, 2008; Yang, Chen, & Tsai, 2013).

To illustrate, Lin and Tsai (2008) express that students with more advanced epistemological beliefs use more effective and advanced strategies in online information searching, editing and assessing. Tu et al. (2008) demonstrate that eighth grade students believing that knowledge consists of highly interrelated concepts and is constructed actively do research on a controversial topic with more thorough and rich summaries while engaged with purposeful thinking. Similarly, Yang et al. (2013) present that students believing that knowledge is actively configured and learning is effort-based are referring to more judgement criteria to assess online information. Research employing the think aloud method to see the impact of students' epistemological beliefs on their online search process (Hofer, 2004; Mason et al., 2010) conclude that students with advanced epistemological beliefs about the nature of knowledge are more successful at online searching process and critically comparing and assessing information gathered from various web sources. Furthermore, in a study with eye-tracking methodology by Kammerer et al. (2013) focussing on the relation between university students' assessment of information from online search and their epistemological beliefs, epistemological beliefs are found to be determinant of page selection and time spent on a particular page. To note, those seeing the information as accurate and persistent choose the commonly