



Chapter XVI

An Overview of Acquiring Cognitive Skills While Receiving Spreadsheet Training

S.E. Kruck, James Madison University, USA

John J. Maher, Pamplin College of Business, USA

Reza Barkhi, Virginia Tech, USA

ABSTRACT

It is well documented that electronic spreadsheet models utilized in many professions to enhance decision-making frequently contain errors that have negative effects on the ultimate quality of decisions. Limited research has been published that systematically identifies potential reasons for the causes of these errors, and what procedures can be taken to minimize or eliminate them. Our research provides initial evidence concerning this problem area by investigating how several important cognitive skills are affected by formalized spreadsheet training. Results indicate that one cognitive skill, logical reasoning, significantly increases after a six-week training period.

INTRODUCTION

Cognitive skills play a critical role in how individuals perform their tasks in today's knowledge-based economy. Employers have identified competent spreadsheet skills as one of the most beneficial, fundamental computer literacy skills a worker can possess following word processing skills (see Davis & Leitch, 1988; O'Leary, 1989; Coy & O'Grady, 1992; Heagy & Gallum, 1994; Davis, 1997; AAA, 2000). However, it has been well documented that spreadsheet models developed by end users contain surprisingly high error rates (e.g., Brown & Gould, 1987; Davis & Ikin, 1987; Cragg & King, 1993; Janvrin & Morrison, 1996; Panko & Halverson, 1996; Panko & Havlerson, 1997; Panko & Sprague, 1998). Spreadsheet errors can have a dramatic effect on the performance and decision process of end users.

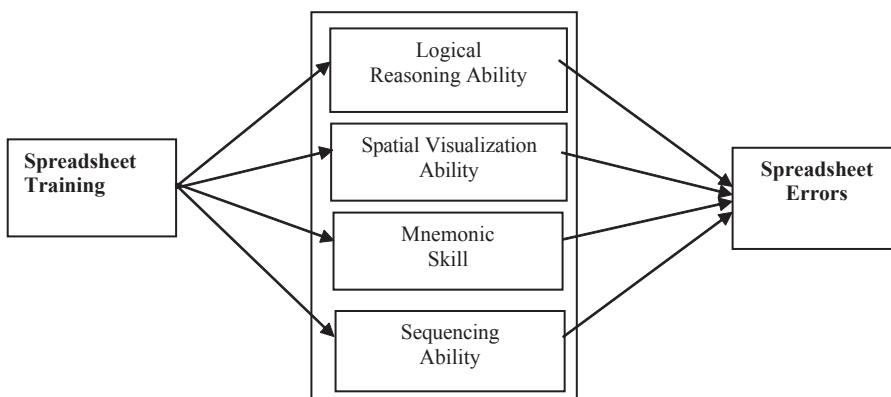
We develop a framework and report the results of empirical tests that suggest spreadsheet training will influence four cognitive skills, namely logical reasoning, spatial visualization ability, mnemonic skill, and sequencing ability, and that these cognitive skills will influence the errors in spreadsheet models.

LITERATURE REVIEW

Cognitive Skills

Figure 1 illustrates a framework that suggests spreadsheet training influences cognitive skills, namely logical reasoning, spatial visualization, mnemonic skill, and sequencing skill of end users that will subsequently influence the error rate in spreadsheet models developed by the end users. Cognitive skills are related to how individuals acquire, store, retrieve, and utilize knowledge. Different types of cognitive skills are necessary to complete different tasks. When end users develop spreadsheet models, they are highly engaged in problem solving, planning, and perceptual-motor functions. The demand on their working memory is high,

Figure 1: A Framework for Cognitive Skills, Spreadsheet Training, and Errors



10 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/overview-acquiring-cognitive-skills-while/4469

Related Content

A Three-Tier Technology Training Strategy in a Dynamic Business Environment

Albert H. Huang (2003). *Advanced Topics in End User Computing, Volume 2* (pp. 263-282).

www.irma-international.org/chapter/three-tier-technology-training-strategy/4453

Mobile E-Health Information System

Flora S. Tsai (2013). *Mobile and Handheld Computing Solutions for Organizations and End-Users* (pp. 247-274).

www.irma-international.org/chapter/mobile-health-information-system/73216

Quality of Use of a Complex Technology: A Learning-Based Model

Marie-Claude Boudreau and Larry Seligman (2005). *Journal of Organizational and End User Computing* (pp. 1-22).

www.irma-international.org/article/quality-use-complex-technology/3803

The Influence of Perceived Source Credibility on End User Attitudes and Intentions to Comply with Recommended IT Actions

Allen Johnston and Merrill Warkentin (2012). *End-User Computing, Development, and Software Engineering: New Challenges* (pp. 312-334).

www.irma-international.org/chapter/influence-perceived-source-credibility-end/62802

Exploring the Factors Influencing End Users' Acceptance of Knowledge Management Systems: Development of a Research Model of Adoption and Continued Use

Jun Xu and Mohammed Quaddus (2009). *Evolutionary Concepts in End User Productivity and Performance: Applications for Organizational Progress* (pp. 226-248).

www.irma-international.org/chapter/exploring-factors-influencing-end-users/18655