

Chapter 4.6

The Effectiveness of Online Task Support vs. Instructor-Led Training

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ABSTRACT

This study investigates the effectiveness of online task support (the wizard type in particular) relative to instructor-led training, and explores the underlying cognitive process in terms of the development of mental models. Ninety-two novice users of Microsoft Access were either trained by an experienced instructor or performed exercises with online task support, and then completed a variety of performance-based tests. Analysis shows that users of online task support tended to outperform instructor-trained individuals on high-level tasks, whereas the performance difference on low-level tasks was not significant. The cognitive processes underlying the difference are also noteworthy. Task support users were more likely to develop conceptual mental models as opposed to procedural ones, which accounted

for their better high-level performance. Mental model completeness was also found to be closely associated with performance on both low and high-level tasks. These findings offer support for increased use of online task support.

INTRODUCTION

End-user training is a multi-billion dollar business, critical to the successful implementation of systems and the productive use of technology (Compeau, Olfman, Sein, & Webster, 1995). However, spending is no guarantee for success. Traditional training approaches tend to remove trainees from the context of work, provide them with a loaded training program, and then send them back to their jobs. They run the risk of teaching material that would never be transferred

to the actual job context. By providing all training in massed sessions, the knowledge acquired might deteriorate over time.

After an initial training, users tend to practice only those procedures that they need to accomplish their most urgent tasks. "As a result, much of what they were initially trained to do but did not continue to do regularly was forgotten" (Bullen & Bennett, 1996, p. 371). Occasional users in particular are not interested in regular training sessions, nor would they benefit from such training (Eason, 1988). According to Eason, what they really need is the "point of need support," which provides specific answers when questions arise from real work. A variety of mechanisms could be used to provide such types of support, including online help facilities.

Advances in information technologies have created both challenges and opportunities for end-user training. On one hand, learning everything in advance has become impossible, and it is difficult to be proficient with many applications or many functions of a single application. End-users must develop the ability of self-learning and support. On the other hand, online task support has become increasingly sophisticated and increased in variety including help and references, examples, wizards, cue cards, and custom-designed job aids. More importantly, online task support has emerged as a potential viable alternative to the conventional training, allowing training to be integrated into working.

The central idea of online task support is embedding training and support functions within an operational system, to enhance knowledge workers' performance by providing access to knowledge, information, advice, and learning experiences in the context of work (e.g., Gery, 1995; Marion, 2002; Masumian, 2000). In other words, online task support is provided to users within the context of work via integrated and on-demand access. Only granular task-specific knowledge is delivered to retain the job context. Rather than lengthy comprehensive lectures on

system functionality, sufficiently small task-oriented modules are offered to provide information just enough to complete the task at hand. Training and support are accessed only as required to deal with actual problems arising from work. As a result, the issue of transferring learning from the training environment to the work environment would no longer be a concern, because the training environment would be the work environment. Similarly, rather than massed training sessions, online task support provides ongoing support.

A common feature of online task support is wizard-based scaffolding (Hmelo et al., 1999). A *wizard* in a computer application typically consists of a set of simple dialogue boxes that guide the user through a cognitively complex task. The task is decomposed into multiple subtasks organized sequentially to reduce the cognitive load required to complete the task. There are several benefits of wizards in providing support or scaffolding to a task. A wizard can make the user aware of the expected task components, and necessary parameters to be set. In other words, the user is given a structure and transparency of the task. As a result, the task becomes less cognitively demanding as the user can concentrate on one subtask at a time rather than approaching the task as a whole piece. Navigation from one subtask to another is guided and facilitated. The online task support tool evaluated in this study is primarily based on wizards.

To date little empirical research has been conducted on online task support. Most of the work that does exist is either conceptual or anecdotal in nature (cf., Hudzina, Rowley, & Wager, 1996; Moore & Orey, 2001). One of the few empirical studies investigated the effectiveness of wizards for supporting medical students to design clinical trials (Hmelo et al., 1999). They were asked to design and critique a clinical trial to test a new anticancer drug, assisted by a wizard type of scaffolding tool. Subjects gained a 34% increase in the quality of their group design, and improved by 48% in their individual critiques of flawed

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