Enterprise Systems Training Strategies: Knowledge Levels and User Understanding

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ABSTRACT

Enterprise systems (ESs) are customizable, integrated software applications designed to support core business processes. This paper reports research contrasting the relative effectiveness of two strategies for ES end-user training that differentially reflect the Sein, Bostrom, and Olfman (1999) hierarchical knowledge-level model. One strategy—procedural—involves training that targets the three lowest knowledge levels of the model (command-based, tool-procedural, and business-procedural); the other—tool-conceptual—involves training that also includes a higher knowledge level (tool-conceptual). A non-equivalent quasi-experimental design was used for groups of senior business students being trained to use an authentic ES. Performance measures were administered during training and ten days after training concluded. Both experiments demonstrated that training involving the tool-conceptual knowledge level leads to superior mental models, compared with training oriented toward lower knowledge levels, as expressed in the recollection and communication of ES concepts. Tool-conceptual knowledge-level training can be used to promote understanding and communication, and should be incorporated into training strategies for ES.

Keywords: End-User Training, Enterprise Systems, Knowledge Levels, Mental Models, Training Strategies

INTRODUCTION

Enterprise systems (ESs) are customizable, integrated software applications designed to support core business processes. Enterprise systems such as ERP, CRM and SCM often take years to implement, but unfortunately a significant number of ES implementations fail (Viehland & Shakir, 2005). Successful training strategies can help reduce failure (Wheatley, 2000). This study seeks to advance research in ES end-user training, examining strategies that could lead to more effective use of ESs and increase the chances of ES implementation success.

A large body of training research exists that relates to ES end-user training. From this literature, the Sein, Bostrom and Olfman (1999) hierarchical knowledge-level model (Figure 1)
can serve as the basis for alternate ES training methods. The model can be used to develop specific training approaches and methods across a wide variety of end-user training settings.

According to this model, training strategies should consider the types of trainees and IT tools on which they will be trained. The training methods should be designed using these inputs with the goal of achieving desired levels of knowledge, instead of focusing narrowly on skills and procedures (Sein et al., 1999). Table 1 characterizes ES end-user training outcomes in terms of knowledge levels.

End-user training provided by ES vendors is traditionally classroom based and focused on the interface and transaction procedures (Wheatley, 2000). In terms of knowledge level outcomes (Table 1), typical ES training focuses on a small portion of potential knowledge levels, specifically: the syntax and semantics of the command-based knowledge level; the combining of commands to complete tasks

Figure 1. Hierarchical knowledge-level model (adapted from Sein et al. 1999)

Table 1. Knowledge level outcomes for training (adapted from Sein et al. 1999)

<table>
<thead>
<tr>
<th>Knowledge Level</th>
<th>Focus</th>
<th>ES System Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command Based</td>
<td>Syntax and semantics</td>
<td>Learning the nuances of the system interface</td>
</tr>
<tr>
<td>Tool Procedural</td>
<td>Combining commands to complete tasks</td>
<td>Learning the steps to enter and recall transaction data</td>
</tr>
<tr>
<td>Bus. Procedural</td>
<td>Application of tool procedures to a task</td>
<td>Learning to complete and entire business process (i.e. procurement)</td>
</tr>
<tr>
<td>Tool Conceptual</td>
<td>The big picture of what to do with the tool</td>
<td>Understanding workflow of the whole process and the organizational impacts</td>
</tr>
<tr>
<td>Bus. Motivational</td>
<td>Reason to use</td>
<td>Business purpose of the system (e.g. integration, competitive necessity)</td>
</tr>
<tr>
<td>Meta-Cognition</td>
<td>Learning to learn</td>
<td>Continuous learning cycle, ways to approach the learning system</td>
</tr>
</tbody>
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