Chapter VI

User Interfaces and Markup Language Programming: The Effects of Interaction Mode on User Performance and Satisfaction

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ABSTRACT

The role of the user interface (interaction mode) is of considerable importance, since the method of interaction can have an impact on both performance and satisfaction with regards to using a programming language. While markup languages are now widely used for Web page and site design and electronic publishing applications, they have not been studied adequately compared with other kinds of languages. The impact of interaction mode, in this case command-based coding, versus using a form-fill-in wizard, is examined, with respect to performance and satisfaction while performing a survey-oriented task. Skill level, which classified users as being either a novice or experienced,

was another factor, which was taken into account in this study. The results showed the use of wizards brought about better performance than using the command language, and the difference between modes was far greater for novices rather than experienced users. In addition, using the wizard tended to equalize performance across skill levels. With regards to system satisfaction, there were significant differences between interaction modes, however no differences were reported between skill levels. These differences in performance and satisfaction should be noted and considered when designing interactive systems for programming-related applications.

INTRODUCTION

Interaction mode has long been a key factor in user interfaces, and the choice of mode — whether command, direct manipulation, menu, or other kinds — can impact performance, learning, satisfaction, and other variables. In particular, the type of interaction mode can frequently have a significant impact on how quickly or effectively a task is completed, and also on how satisfied the user is with the language and task. There can also be significant differences when the effects of skill level are considered (Shneiderman, 1992, 1997). In this study, two main interaction modes are examined: command language (manual coding) and menu/form fill-in (wizard).

COMMAND LANGUAGES

Command languages, as a method for communicating with computers, has as its basis in the development of languages for written and verbal communications between humans. Centuries ago, cave writings and Egyptian hieroglyphics were the basis for the modern languages of today. In our modern age, there are not only a multitude of human languages, but also languages for math, music, and the sciences. So, it is not surprising that a system of languages was developed for working with computers (Shneiderman, 1997, 1992, 1987).

Command languages are quite common in the computing world. Operating systems such as MS-DOS, UNIX, and DCL are examples of command languages for dealing with the hardware of computer systems. Programming languages allow for the creation of application and systems programs for various users. Database query languages, such as SQL are also widely used (Shneiderman, 1997, 1992, 1987).

The advantages of command language are most apparent when dealing with systems where users are very familiar with the computer and its structure and tasks. They are also useful when, long menus or direct manipulation objects are a hindrance rather than an asset, memorization of commands can improve performance, and time constraints make the compactness of the commands useful (Shneiderman, 1997, 1992, 1987).

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