

## Chapter II

# The Effects of Human Factors on the Use of Web-Based Instruction

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## Abstract

*Web-based instruction is prevalent in educational settings. However, many issues still remain to be investigated. In particular, it is still open about how human factors influence learners' performance and perception in Web-based instruction. In this vein, the study presented in this chapter investigates this issue in a Web-based instructional program, which was applied to teach students how to use HyperText Markup Language (HTML) in a United Kingdom (UK) university. Sixty-one master's degree students participated in this study. There were a number of interesting findings. Students' task achievements were affected by the levels of their previous system experience. On the other hand, the Post-Test and Gain scores were positively influenced by their perceptions and attitudes toward the Web-based instructional program. The implications of these findings are discussed.*

## **Introduction**

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Web-based instruction is prevalent in educational settings. The value of Web-based instruction lies in the capabilities of hypermedia, which permit significant flexibility in the delivery of non-linear course material (Khalifa & Lam, 2002). Students are allowed to learn in their own way—to determine their own path through the material available (Barua, 2001)—and to learn things at their own pace (Chen, 2002). However, the freedom offered by Web-based instructional programs may come with a problem, because flexibility increases complexity (Ellis & Kurniawan, 2000). Learners are forced to determine their own learning strategies and, therefore, will differ in their perceptions and approaches to learning. In particular, some learners who lack the skills of independent learning may find this difficult and become confused (Last, O'Donnell, & Kelly, 2001), so they may forget what they have already covered, and miss important information (McDonald, Stodel, Farres, Breithaupt, & Gabriel, 2001). This suggests that not all students will appreciate the flexibility and freedom offered by the Web and that human factors, therefore, are important issues to be considered in the development of Web-based instruction programs.

In this vein, the study reported in this chapter aims to investigate how human factors influence students' reactions to a Web-based instruction program. The chapter begins by building a theoretical framework to present the relationships between Web-based instructional programs and individual differences. It then describes an empirical study of students' learning experiences in a Web-based instructional program. Subsequently, the design implications are discussed based on the findings of this empirical study.

## **Theoretical Framework**

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### **Web-Based Instruction**

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Over recent years, the World Wide Web (Web) has been becoming a useful tool for information distribution (Sridharan, 2004). In particular, there is an increase in use of the Web for instruction (Evans, 2004). Web-based instruction provides a number of advantages, among which dynamic interaction and flexible schedule are two key items. In terms of dynamic interaction, Web-based instruction presents an enormous amount of information through various interconnections that offer students a rich exploration environment. The development of Web-based instruction provides learners with many opportunities to explore, discover and learn in theory according to their individual needs. Students can create individualized learning

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