Simulation in psychology –A sketch of a future digital workplace environment

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Abstract

Studies of the human operator are either laboratory based in order to have a stable and controlled research environment available, or they are carried out in the real work environment to maximise analogy to reality. Advanced simulation facilities in a digital workplace environment enable both high levels of experimental control and considerable gain in (ecological) validity.

Introduction

Ergonomic research projects on task performance and / or (mental) workload are often carried out in laboratories, in settings that try to resemble tasks and task environments in real everyday life with respect to the relevant features as close as possible. However, there is nonetheless usually a large gap between laboratory-based studies and real life investigations. The advantages and disadvantages of either facility will not be discussed in detail here. It suffices to mention that a real work location gives a close analogy of the working conditions and tasks conducted, but suffers from unexpected and uncontrollable disturbances, while a laboratory environment provides a stable and largely controllable research environment but lacks sufficient analogy to reality, i.e. ecological validity.

Although there is no perfect solution as yet, the recent developments in digital equipment and technique seem to enable new possibilities for the development of a digital workplace environment that encompasses most of the emulated features (Bos, Mulder & Van Ouwerkerk, 1999). A digital workplace can provide a dynamic computer-generated environment that enables the research community to simulate conditions resembling real life environments to an acceptable level of similarity. High standards of experimental control and improved accuracy, and efficiency of data collection procedures are characteristic of a digital workplace. It is proposed that these benefits are achieved with concomitant gains in internal validity (afforded by high levels of experimental realism) and external validity (afforded by the replication of the temporal-interactive nature of most field phenomena).

For this, a multidisciplinary approach is central. The digital workplace is a meeting place for scientists and students from disciplines like cognitive ergonomics, behavioural biology, experimental psychology, linguistics, computer science (informatics), telecommunication technology and what have you. The workplace