

Faculty of Education Studies
EPCL Public Seminar 2008/09

Human cognitive architecture and its instructional implications

John Sweller

University of New South Wales

Chair : Dr Kevin Chung

Prof Sweller's research reputation is associated with cognitive load theory, an instructional theory based on our knowledge of human cognitive architecture. The theory is now a contributor to both research and debate on issues associated with human cognitive architecture, its links to evolution by natural selection, and the instructional design consequences that follow. It is one of the few theories to have generated a large range of novel instructional designs from our knowledge of human cognitive architecture. The following instructional design effects have flowed from cognitive load theory: goal-free, worked example, split-attention, redundancy, modality, element interactivity, isolated-interacting elements, imagination, expertise reversal, completion, variable examples, and guidance fading effects. These effects have been studied by many groups of researchers from around the globe.

Abstract

Our knowledge of human cognitive architecture is progressing rapidly and that knowledge has profound implications for instructional design. Instructional design that does not take human cognitive architecture into account is likely to be random in its effectiveness. The first aspect of human cognition that needs to be considered when devising instruction concerns the categories of knowledge to which instructional procedures normally are applied. There are two categories of knowledge relevant to this issue: biologically primary knowledge and biologically secondary knowledge. Primary knowledge is knowledge we have evolved to acquire over many generations. Examples are listening to and speaking our first language, recognising faces, engaging in routine social relations and using general problem solving strategies. Secondary knowledge is cultural knowledge that humans have required more recently and have not specifically evolved to acquire. Examples are reading, writing and every subject that educational institutions teach. The cognitive architecture discussed in this talk applies to secondary knowledge. That cognitive architecture allows us to process information in a manner similar to the manner in which evolution by natural selection processes information. In this talk, the cognitive structures (long-term memory; working memory) and processes (learning from others; creativity and problem solving) relevant to instructional concerns will be discussed in detail along with their implications for general instructional procedures.

22 October 2008 (Wed)

3:30 – 4:40 pm

Block D3-Lower Podium-01

Organized by the EPCL Departmental Research & Development Committee, FES

Reply slip attached, please enrol via email or fax, thanks.