

Learning Styles in Online Environments

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INTRODUCTION

Research into the learning styles and preferences of students is well established but is currently the subject of renewed interest driven by a number of factors. First, following policies to encourage and facilitate widening participation, the student population is being drawn from more varied backgrounds, and greater emphasis is being placed on helping students to learn (Smith, 2002).

Second, models of learning theory have largely been developed in isolation from the subsequent advances in the use of information communication technology (ICT) and its changing role in education (Sadler-Smith & Smith, 2004). The flexibility offered by online learning environments changes both the temporal and spatial dimensions of the learning context. Technology increases the physical distance between student and lecturer and imposes a technical aspect, which may be seen as a physical barrier to learning or may be perceived as a way of removing cultural and social barriers and therefore opening and creating new opportunities for dialogue. The impact of ICT on the learning context offers new opportunities and challenges to learners and instructors that need to be considered within the context of learning preferences.

Third, the renewed interest in learning styles is perhaps also fuelled by the ease with which multiple modes of learning can be accommodated and combined using ICT. Within online learning environments learning objects can be developed and reused more easily, for example, short videos can be created without the use of extensive production equipment. This provides the opportunity for lecturers to reconsider their pedagogic strategies to effectively integrate the use of technology into teaching (Fisher & Baird, 2005).

BACKGROUND

Research in learning styles recognises the need to understand how students learn (Smith, 2002). Most

individuals have one or two preferred styles with the other styles being used to a lesser degree (Shaw & Marlow, 1999). When designing the learning context it is necessary to consider how to respond to and challenge the variety of learning styles and preferences of learners (Sadler-Smith & Smith, 2004), irrespective of whether the learning context is Web-based (Byrne, 2002).

Carl Jung introduced the concept of learning style in 1927. Jung noted major differences in the way people perceived (sensation vs. intuition), the way they made decisions (logical thinking vs. intuitive feelings), and how active or reflective they were while interacting (extroversion vs. introversion) (Silver, Strong, & Perini, 1997).

A number of different constructs are labeled as learning styles (Lum, 2006). Riding (1996) suggests that the way people learn is strongly influenced by in born strategies and styles. This is reflected in the way in which learning styles of students are identified. Most approaches that are used to identify an individual's learning style, do so independently of context, and then assume that the learning styles identified are also present within the context of learning activities (Laurillard, 1993). The degree with which styles are considered to be dependent or independent of context is reflected in the following definitions of related learning theories and concepts.

Learning styles are:

- A distinctive and habitual manner of acquiring knowledge and skills (Sadler-Smith, 1996).
- 'Stable and pervasive characteristics of an individual, expressed through the interaction of one's behaviour and personality as one approaches a learning task' (Garger & Guild, 1984, p. 11).
- A preferred way of acquiring and using information (Lawson & Johnson, 2002).
- A persistent use of a learning strategy in relation to multiple tasks and may be thought of as cognitive styles observed in learning contexts (Ford, 2004).

Learning styles focus on the learning process in terms of the way in which individuals differ in their interaction with the learning environment (Diseth, Pallesen, Hovland, & Larsen, 2006). A learning style reflects habitual patterns of behavior where as a learning strategy is a conscious plan of action adopted in the acquisition of knowledge and skills (Sadler-Smith, 1996).

Approaches to learning reflect the orientation of a student to the learning situation (Diseth et al., 2006). Marton and Booth (1997) introduce the phrase 'approach to learning' (Entwistle, 2001) and propose three types of approach: deep, surface, and strategic. A deep approach to learning describes a student's active engagement and extensive development of the learning material. In contrast, a surface approach to learning describes a student's limited engagement with the learning material as the student seeks only to memorise sufficient material to enable reproduction of those aspects on which the student is to be assessed.

Diseth et al. (2006) differentiate these approaches to learning in terms of student intentions. A deep approach to learning is adopted by students with an intention to understand the material presented to them, surface learning reflects an intention to reproduce the learning material for assessment purposes, and the strategic approach to learning is adopted by students with an intention to succeed.

These intentions can be considered to be both context and student dependent (Entwistle, 2001). They are partly determined by the learning context in terms of how the student responds to the specific learning context (Entwistle, 2001) but are also developed over time through the student's prior experience of learning situations.

A learning preference is a disposition to a mode of learning which reflects the extent to which a particular learning activity provides learners with the opportunity to process information in a manner that is consistent with their cognitive style (Sadler-Smith, Allinson, & Hayes, 2000).

Cognitive styles are:

- In built dispositions linked to personality (Riding & Rayner, 1998) and therefore represent a consistent way of responding to and using stimuli in the context of learning.
- A plan of action adopted in the process of organising and processing information (Sadler-Smith, 1996).

- Characteristic modes of thinking, remembering, and problem solving (Messick, 1984).

Sadler-Smith et al. (2000) suggest that preferences for learning activities are a function of innate cognitive style, which can be seen as a consistent set of preferences in the manner in which information is organised and processed (Messick, 1984). For example, based on the cognitive style index (Allinson & Hayes, 1996) students with analytical cognitive styles prefer sequential approaches to learning, focusing on procedure building. In contrast, holistic intuitive learners prefer synthesis and description building.

Riding and Cheema (1991) define two dimensions of cognitive style: field dependence and field independence. Field dependency is the extent to which a person uses the context to understand and make sense of new information (Smith, 2002).

Ford (2004) reports studies that link:

- Field independence and lower use of information services and lower preferences for broad Internet exploration.
- Verbaliser/imager dimension of cognitive style and use of visual information sources, lower levels of unplanned Internet browsing and poor retrieval effectiveness in the Web society.
- Visuo-spatial ability and the acquisition of navigational knowledge.

Cognitive styles represent approaches to understanding material that are conceptually linked to theories of divergent and convergent thinking (Ford, 2004).

The human brain is split into two halves, each with its own unique abilities (Huston & Huston, 1995) processing different types of information. Learning styles vary based on the development of the left and right hemispheres. The left hemisphere specialises in verbal and numerical information processed sequentially and analytically, while the right hemisphere is the intuitive, creative, part of the brain and deals with three-dimensional forms and images. The left hemisphere adopts a systematic approach and predominantly left-brained people prefer a step-by-step build up of information. The right hemisphere seems to process information more 'holistically,' and can process clusters of stimuli at the same time; predominantly right-brained people need to see the big picture. Optimal learning requires learning activities that include the strengths of both hemispheres.

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