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A REVIEW OF KOLB’S LEARNING STYLES IN THE CONTEXT OF EMERGING INTERACTIVE LEARNING ENVIRONMENTS

Rui Wang1* and Sidney Newton2

1. The University of New South Wales, Australia, rui.wang@unsw.edu.au * Corresponding author
2. The University of New South Wales, Australia, s.newton@unsw.edu.au

ABSTRACT

The influential work of David A. Kolb in the 1980’s ranged the learning styles of each individual across two related approaches to experiencing the world (Concrete Experience and Abstract Conceptualisation) and two related approaches to converting experience into understanding (Reflective Observation and Active Experimentation). Whilst there have been many critiques of Kolb’s and related work on learning styles, the conceptualisation remains compelling and is still widely applied. However, what happens to Kolb’s experiential learning theory when the learning context for concrete experience and active experimentation is a virtual one? How is the learning experience affected by technologies that adopt particular abstract conceptualisations and promote specific reflective observations? These are two of the critical potential impacts of emerging interactive learning environments (such as serious video games) on the learning style models derived from Kolb’s work. This paper reviews and critiques Kolb’s experiential learning theory, and the principal models of learning it has spawned, from a primarily learning contexts perspective. Learning contexts represent the predominant consideration when considering the design and development of an interactive learning environment.

Keywords: Experiential learning, Interactive learning environments, Learning contexts, Learning styles

INTRODUCTION

For decades researchers have been working on models of learning and learning styles that aim to enhance the learner experience and promote effective learning outcomes. John Dewey (1910), the most influential educational theorist of the 20th century, established the guiding principles for a family of experiential learning theories that shifted attention more directly to the learner. American social psychologist Kurt Lewin (1951) moved Dewey’s work into organisational learning, and set experiential learning along a new dimension. Based on this Kolb later established that “learning is best facilitated in an environment where there is dialectic tension and conflict between immediate, concrete experience and analytic detachment” (Kolb, 1984: 36). This dichotomy between actual doing and reflective consideration has had a profound influence on the practice of adult education, training and organisation development.

Another influential theorist was Jean Piaget, whose work focuses on children’s development and describes how intelligence is shaped by experience. According to Piaget (1950), intelligence is not an innate internal characteristic of the individual but rather a product of the interaction between the person and their environment.

Drawing together several perspectives on the central role played by experience in human understanding, Kolb and Goldman (1976) first promoted a theory of learning based in
experience. In his most cited book “Experiential Learning”, Kolb (1984) suggests that learning is actually a process of creating knowledge rather than outcomes. In other words, that learning may draw from and be influenced by our engagement in the world, but that learning itself is a mechanism of internal change. Kolb (1984) framed learning in terms of the transactions that experience provides between a learner and the environment. The different forms of transaction Kolb (1984) refers to as ‘learning styles’. Significantly, Kolb and Goldman (1976) also proposed a survey instrument through which different learning styles might be identified with a particular learner. The, so-called, Learning Style Inventory (LSI) was first developed in 1976. The later version in 1984 has been widely adopted and applied and has become very influential.

One of the critical issues for Kolb’s theories of experiential learning and learning styles is that the environment with which the learner transacts has changed quite radically since the 70’s and 80’s. In particular, the rapid development and greatly enhanced capabilities of digital technologies has fundamentally changed the context for many learners. One might anticipate that with such a fundamental change in the learning environment, the learning styles would also change. Certainly the measurement of those learning styles would need to change. However, there is a distinct lack of research on the consequences of new digital technologies for the range of learning styles being recognised and the learning style inventory we use to assess them. Questions also arise over the consequences for learning caused by the changing nature of the learning environment, as it becomes increasingly rich and more dynamic.

This project seeks to challenge the veracity of Kolb’s learning style definitions in the context of emerging digital technologies. A review of Kolb’s work highlights those aspects most challenged by the emerging digital context, and those aspects are then used to promote a modification of Kolb’s learning styles. The critical factor then is how an alternative measurement instrument to the LSI might be devised in order to reflect and assess such a revised model of learning styles.

EXPERIENTIAL LEARNING AND LEARNING STYLES

According to experiential theories of learning, learners are disposed to particular learning styles (Kolb et al, 2001). These learning styles are characterised in terms of the two significant dimensions illustrated in Figure 1. One significant dimension is specific to how learners experience the world and attend to the learning experience, so-called ‘grasping’. At the one extreme of this dimension is grasping via apprehension, meaning to learn from the direct and concrete experience itself. At the other extreme is grasping via comprehension, meaning to learn from experience but through an abstraction of that experience (ie. in thought).
Figure 1 Kolb’s Experiential Learning Model (Source: adapted from Kolb, 1984)

The other significant dimension is specific to how learners accommodate that learning into their understanding by converting experience into understanding, so-called ‘transformation’. At the one extreme of this dimension is transformation via extension, meaning to learn from active experimentation and trying things out. At the other extreme is transformation via intension, meaning to learn from observation from a more passive and removed perspective.

Each of these four extreme positions signals a particular stage in what Kolb presents as a learning cycle: concrete experience, during which learners are said to rely on their feelings; reflective observation, during which learners are said to learn by watching; abstract conceptualisation, during which learners are said to learn by thinking; and active experimentation, during which learners are said to learn by doing.

Significantly, whilst all learners are considered to rotate through the learning cycle, Kolb (1984) maintains that for a given period of time a learner will tend to prioritise, emphasise and generally be more disposed towards a particular quadrant of the model. Each learning style is then associated with a particular quadrant and characterised as: the divergent learner who focuses on the question ‘why?’; the assimilator who focuses on the question ‘what?’; the convergent learner who focuses on the question of ‘what about?’; and the accommodator who focuses on the question of ‘how?’.

The significance of having discrete potential learning styles is that they would each demand a different combination and nature of learning resources. Learning resources can be developed and deployed accordingly. This ability to better align teaching resources and methods to particular learners and learning styles has been key to the outstanding popularity of Kolb’s work. However, despite the influence and popularity of Kolb’s experiential learning model
and the LSI, the work has been criticised on a number of grounds. The modelling approach is criticised because of the poor definition for key terms – what constitutes learning via concrete experience, for example (Bergsteiner et al, 2010). The research methodology is criticised because of the response-set bias in the LSI, which uses a single-scale-per-column format (Ruble and Stout, 1990). The data validity is also criticised, largely because empirical studies have shown conflicting results from the LSI (Coffield et al, 2004).

Other critiques build on the potential shortfalls in the modelling approach, methodology and data validity to question the relevance of this model to a contemporary situation. A comprehensive review of the critical literature by Kayes (2002) resulted in a number of broader challenges to Kolb’s model. These broader challenges included how the model might accommodate the dichotomy between personal and social knowledge, and how better to acknowledge the role of language in shaping experience (Kayes et al, 2005). Recently the broad challenges have focussed on the impact of emerging digital technologies and the transformation of learning environments which those technologies promote (Chaves, 2006; Zhang and Bonk, 2008).

Of particular interest in this regard is the work of de Freitas (de Freitas and Jarvis, 2006; de Freitas and Oliver, 2006). de Freitas seeks to extend Kolb’s learning styles specific to non-traditional learning situations – the non-traditional learning situations enabled by immersive digital game environments such as virtual reality, online worlds and video games. de Freitas focusses on the role that social interaction plays in the learning process. Specifically, how immersive digital environments often entail radically different forms of social interaction (de Freitas and Neumann, 2009). Ultimately, the model proposed by de Freitas simply extends Kolb’s basic learning cycle through replication. The term ‘exploration’ is used by de Freitas to reference a learning style that involves cycling not just through a personal learning style, but by using social interaction to explore the learning styles (and insights) of others.

Certainly social interaction is one of the most significant features and impacts of emerging digital technologies. This suggests that in the context of emerging digital technologies, the experiential learning model must broaden in scope to include the learning environment.

LEARNING ENVIRONMENTS AND CONTEXTS

Kolb realised that “learning results from synergetic transactions between the person and the environment” (Kolb and Kolb, 2005:194). To provide a framework for understanding the interface between the individual students’ learning style and the institutional learning environment within which that student learns, Kolb and Kolb (2005) introduced the concept of a learning space. This concept of learning space builds on Kurt Lewin’s field theory and the notion of a life space on which it is based (Lewin, 1951). A return to the work of Lewin reminds us that learning (life) spaces extend well beyond the immediate learner, teacher or classroom. The advent of the internet means that the learning space is, in any event, no longer limited to a physical or built environment. Indeed, Schwanen et al (2008) argues that the real impact of emerging digital technologies on learning is not about the technology itself at all, but rather the radically different environment that digital technologies now offer.

Luckin (2010) goes further, to consider not just the radically different environment that digital technologies now offer, but in addition the crossovers between the traditional physical (or built) environment and the new digital (or virtual) environments. Luckin (2010) proposes a theoretical framework to capture the various crossovers between different learning
environments, the learner, what is being learned, and the learning resources available. In this theory, the learner is placed at the centre of three dimensions: the skills and knowledge to be learned, the resources available to support learning, and the environment within which learning occurs (see Figure 2 for a representation of this model).

Figure 2 The Ecology of Resources Model (Source: adapted from Luckin, 2010)

In broad terms, this framework includes three key perspectives: knowledge (pedagogy); the available resources (context); and the environment (representation). The relationship of each perspective to the learner is processed/filtered through a particular delivery medium: knowledge is filtered through the particular design of the curriculum; resources are filtered through the particular way those resources are administered and made available to the learner; and the environment is represented to the learner through the particular organisational/technological structure within which they learn. Luckin (2010) also articulates a further consideration (represented in Figure 2 by the grey box surrounds), that recognises each element is contingent on the broader historical/cultural background against which they must be set. The significance of this historical shadow to each element (the history of experience that impacts upon how the various elements interact) is still to be demonstrated empirically. However, in principle, the existence and the importance of a wider cultural perspective warrants special consideration.

CONCLUSIONS

Kolb’s experiential learning model appears to have survived the extensive criticism it has been subjected to in basic terms of modelling, methodology and data (Kolb and Kolb, 2005). Broader criticisms have gained more traction however, and a number of extensions and modifications to Kolb’s original model have now been proposed (Kayes et al, 2005; Zhang
and Bonk, 2008; de Freitas and Neumann, 2009). None of these proposed extensions has had the impact of Kolb’s original theory.

Nonetheless, the broader criticisms have substance. None more so than the challenge that emerging digital environments represent. Interactive and multi-user systems challenge in a fundamental way, the conceptualisation of learning styles as specific points within a fixed model framework. A key principle has to be that learners have “Profiles (or patterns) of styles, not just a single style” (Sternberg, 1997:83). Learning styles will vary across tasks and situations. More fundamentally, the two dichotomies that Kolb adopts to characterise the two dimensions of the experiential model will at times fold into themselves and one another. That is to say, that the dichotomies no longer represent a stable surface of four quadrants. Rather, the relationships inherent to the model are being distorted and dynamically changed with the introduction of new digital technologies. New questions arise, such as ‘What happens to Kolb’s experiential learning theory when the learning context for concrete experience and active experimentation is a virtual one?’, and ‘How is the learning experience affected by technologies that adopt particular abstract conceptualisations and promote specific reflective observations?’.

Much in line with Luckin (2010), the experiential learning model of Kolb needs to be set against a variety of perspectives, including knowledge, environment, resources and the historical background. This immediately privileges learners with the flexibility to adjust their learning style to suit the circumstance. The more flexible a learner can be in the context of new digital technologies, the better placed they will be to adjust for the distortions and dynamics those technologies inevitably introduce.

The critical issue for Kolb’s learning styles in the context of emerging interactive learning environments is how they should be measured. The current measurement instrument (LSI) measures against a framework that does not necessarily exist in the current digital context – meaning it measures something, but it is far from clear what. The result is that learners may be assessed as having a strong disposition towards one particular learning style when for that situation they actually prefer another or combination of others.

This project is about to begin data collection on the impact that emerging interactive technologies have on the dynamics of learning styles for undergraduate construction management and architecture students in Australia and New Zealand. The study will compare survey results from the LSI between construction management and architecture students, first year through to final year of study, between students experiencing traditional and non-traditional learning environments, and in several institutional contexts in Australia and New Zealand. The aim is to test the utility of the LSI in distinguishing between different learning styles that are meaningful in current education contexts, specifically those where interactive digital technologies are being deployed. If we better understand the impact that interactive digital technologies have on student learning styles, we can better design for an effective ecology of learning resources for construction management and architecture higher education.

Of course the entire theoretical grounding of situated cognition is not without its critics (Vosniadou, 2007). Any approach to teaching and learning that is exclusively sociocultural in focus would undoubtedly ignore key cognitive aspects of learning and teaching. However, where knowledge-based learning is necessarily a precursor to skill-based learning, it seems equally inconceivable that learning styles can ignore human dispositions and social constructs (Hager and Holland, 2006).
REFERENCES


