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Experiential learning—a systematic review and revision of Kolb's model

Abstract

Kolb's (1984) experiential learning cycle is perhaps the most scholarly influential and cited model regarding experiential learning theory. However, a key issue in interpreting Kolb's model concerns a lack of clarity regarding what constitutes a *concrete experience*, exactly. A systematic literature review was conducted in order to examine: what constitutes a concrete experience and what is the nature of treatment of a concrete experience in experiential learning? The analysis revealed five themes: learners are involved, active, participants; knowledge is situated in place and time; learners are exposed to novel experiences, which involves risk; learning demands inquiry to specific real-world problems; and critical reflection acts as a mediator of meaningful learning. Accordingly, a revision to Kolb's model is proposed: experiential learning consists of *contextually rich* concrete experience, *critical* reflective observation, *contextual-specific* abstract conceptualization, and *pragmatic* active experimentation. Further empirical studies are required to test the model proposed.

Keywords

Experiential learning theory, experiential learning cycle, concrete experience, critical theories, literature review

1. Introduction

What is fascinating about *learning* is that it cannot occur without *experience*. Imagine trying to learn to tie shoelaces without having practical experience of having hands on laces. On the other hand, try to forget your knowledge of how to ride a bike. Perhaps most notably, John Dewey (1938/1963) proposed that although not all experiences are equally educative, "all genuine education comes about through experience" (p. 25).

Experiential learning takes a fundamentally different view of the learning process in comparison to behavioral learning theory. It places life experience as a central and necessary part of the learning process, where "knowledge is created through the transformation of experience" (Kolb, 2015, p. 49). However, relatively little empirical research has been conducted on experiential learning (Bergsteiner, Avery, & Neumann, 2010; Jarvis, 2012).

Nonetheless, according to Kolb (2015), over the past twenty years research on experiential learning theory has more than quadrupled in many fields such as management, education, information science, psychology, medicine, nursing, accounting, and law; this includes a renewed interest in and attention to employing experiential learning theory in formal educational settings, especially in Higher Education. Thus, furthering our understanding of the concept of experiential learning, and how to facilitate it, is an important area for research, especially given the limitations of experiential learning theory highlighted in the following section.

2. Kolb's Experiential Learning Cycle

Kolb's (1984) experiential learning cycle remains the most widely influential and cited model, or "clearest expression", of experiential learning theory (Seaman, Brown, & Quay, 2017, p. 3). Kolb theorized that,

> Learners, if they are to be effective, need four different kinds of abilities—*concrete experience* abilities (CE), *reflective observation* abilities (RO), *abstract conceptualization* abilities (AC) and *active experimentation* (AE) abilities. That is, they must be able to involve themselves fully, openly, and without bias in new experiences (CE). They must be able to reflect on and observe their experiences from many perspectives (RO). They must be able to create concepts that integrate their observations into logically sound theories (AC), and they must be able to use these theories to make decisions and solve problems (AE). (1984, p. 30)

More than thirty years onwards, Kolb (2015) defended his theoretical position against a multitude of critiques (e.g., Bergsteiner et al., 2010, 2014; Jarvis, 2012; Miettinen, 2000; Schenck & Cruickshank, 2015) that the experiential learning process consists of,

> a four-stage cycle involving four adaptive learning modes (p. 66)… [where] Learning arises from the resolution of creative tension among these four learning modes. This process is portrayed as an idealized learning spiral where the learner 'touches all the bases'—experiencing (CE), reflecting (RO), thinking (AC), and acting (AE)—in a

recursive process that is sensitive to the learning situation and what is being learned. (p. 51)

Kolb acknowledged that he discovered or "noticed the dimensions" (Kolb, 2015, p. 56) of the theory in the works of prominent twentieth-century scholars Kurt Lewin, John Dewey, and Jean Piaget, and attempted to "integrate the common themes in their work into a systematic framework that can address twenty-first century problems of learning and education" (2015, p. xvii). Intertwined with experiential learning theory is the concept of learning styles (outside the scope of the present paper; refer to Kolb & Kolb, 2013 for review (Schenck & Cruickshank, 2015 for critique)).

A damming critique of experiential learning theory is that it lacks sound theoretical and empirical foundations (cf. Coffield, Moseley, Hall, & Ecclestone, 2004; Miettinen, 2000). In particular, Miettinen (2000) noted that Kolb's interpretation of key works, upon which his model was assembled, fundamentally "gives a unilateral and erroneous picture" (p. 65) of the original theories.

Miettinen also argued that Kolb's work is eclectic. Consequently the phases of the learning cycle "do not connect to each other in any organic or necessary way" (p. 61).

In addition, some scholars (e.g., Seaman, Brown, & Quay, 2017) proposed that Kolb's model in its current form actually presents as a barrier to a clearer understanding and successful facilitation of experiential learning. Alternative models have been proposed (e.g., Bergsteiner et al., 2014; Miettinen, 2000; Schenck & Cruickshank, 2015). However, these alternative models also lack sound empirical foundations.

Kolb's model remains the principle and most influential model in experiential learning theory (Seaman, Brown, & Quay, 2017). Nevertheless, the lack of empirical foundation to the model remains a foremost concern.

A key issue in interpreting the Kolb model, that remains unresolved, is the issue of interpretation of what is meant, exactly, by a "concrete experience". In this regard, Bergsteiner, Avery, and Neumann (2010) describe Kolb's typology as "highly muddled" (p. 32).

For example, Blenkinsop, Nolan, Hunt, Stonehouse, & Telford (2016) note that many educators will not consider activities such as reading a book or sitting listening to a traditional lecture a concrete experience or part of experiential learning, whereas some educators would. This confusion seems somewhat ironic given *experience* is, theoretically, the central and perhaps most salient feature of experiential learning theory.

Further understanding in this regard may assist the successful facilitation of and contribute to scholarly work on the concept. To address this concern, the aim of the present study was to understand how educators interpret the meaning of a "concrete experience". A systematic literature review of empirical studies on experiential education was conducted in a genuine attempt to examine, in experiential learning,

Research Question 1: what constitutes a concrete experience?

Research Question 2: what is the nature of treatment of a concrete experience?

3. Methodology

An inductive thematic analysis was conducted upon data collected through a systematic and targeted literature review.

3.1. Data collection

The systematic literature review was made on the premise that there is a tendency and nature of knowledge to develop and advance over time, especially in scholarly journals. A sample of 60 journal articles (summarized in Table 1) from a total of 1323 published journals in the targeted depository were analyzed in the present study. Data were drawn initially from the most recent up-to-date empirical literature on experiential learning (starting with advance online publications).

The investigator reviewed the sample in a stepwise nature. Journal articles were drawn from the Journal of Experiential Education, with the premise that the editors and peer-reviewers are experts in the field of experiential learning and publish articles that are fitting with the concept.

All articles were fully read by the investigator, who sought themes in the data. The investigator systematically drew on further research published in each preceding year of publication until themes were finalized and further data did not appear to significantly further the findings and conclusions drawn.

Document classification during systematic analysis
Authors, date of publication

Violence/poverty prevention program
Browne & Roll, 2016
Gass, Gough, Armas, & Dolcino, 2016

middle school
McBride, Chung, & Robertson, 2016
James & Williams, 2017
Scogin, Kruger, Jekkals, & Steinfeldt, 2017

teacher education
Burns, & Danyluk, 2017
Glazier, Bolick, & Stutts, 2017

Study/experience abroad
Pipitone, 2018
Harper 2018
Pipitone & Raghavan, 2017

adult education workshop
Glowacki-Dudka et al. 2017

out-of-school learning
Wainwright, Bingham, & Sicwebu, 2017
Fifolt, Morgan, & Burgess, 2017
Fűz, 2018
Djonko-Moore, Leonard, Holifield, Bailey, & Almughyirah, 2017

sport education
Newman, Alvarez, & Kim, 2017

adventure/ outdoor therapy
Davidson, Ewert, & Chang, 2016
Ritchie, Patrick, Corbould, Harper, & Oddson, 2016
Roberts, Stroud, Hoag, & Combs, 2016
Russell & Gillis, 2017
Karoff, Tucker, Alvarez, & Kovacs, 2017

work experience/employment as experiential learning
Fede, Gorman, & Cimini, 2018
Sonti, Campbell, Johnson, & Daftary-Steel, 2016
Barron, Khosa, & Jones-Bitton, 2017

service-learning
Bennett, Sunderland, Bartleet, & Power, 2016
Lovat & Clement, 2016
Barnes, 2016
Bialka & Havlik, 2016
Knackmuhs, Farmer, & Reynolds, 2017
Fisher, Sharp, & Bradley, 2017
Hou & Pereira, 2017
Larsen, 2017
Jia, Jung, & Ottenbreit-Leftwich, 2017
Ricke, 2018

museum/art/historic sites
Blair, 2016
Blenkinsop, Nolan, Hunt, Stonehouse, & Telford, 2016
Dorfsman & Horenczyk, 2017

outdoor studies & outdoor activities, wilderness or fieldwork
Collins, Sibthorp, & Gookin, 2016
McGowan, 2016
Ribbe Jr, Cyrus, & Langan, 2016
Cooley, Burns, & Cumming, 2016
Asfeldt & Beames, 2017
Bailey, Johann, & Kang, 2017
Gress, S., & Hall, T. 2017
Deringer, 2017
Asfeldt, Hvenegaard, & Purc-Stephenson, 2017
Hougham, Nutter, & Graham, 2018
Schary & Waldron, 2017
Grimwood, Gordon, & Stevens, 2017
Smith & Segbers, 2018
Gibbons, Ebbeck, Gruno, & Battey, 2018

all girl camp
Whittington, Garst, Gagnon, & Baughman, 2017

review papers
Seaman, Brown, & Quay, 2017
Munge, Thomas, & Heck, 2018

higher education
Coker, Heiser, Taylor, & Book, 2017
Breunig, 2017
Murphy, Wilson, & Greenberg, 2017
Roberts, 2018
Isaak, Devine, Gervich, & Gottschall, 2018
Jordan, Gagnon, Anderson, & Pilcher, 2018

Table 1. Summary of journal articles included in the review

3.2. Data analysis

Data analysis software MAXQDA10 (VERBI GmbH, 2011) was used to code and organise the data. The sixty journal articles were uploaded in PDF format into the software in order to begin the process of data coding and identifying themes. The analysis followed six phases suggested by Braun and Clarke (2006) and exampled by Morris (2018), which involves the investigator (1) familiarising themselves with the data (2) generating initial codes (3) searching for themes (4) reviewing themes (5) defining and naming themes, and (6) producing the report.

Data familiarisation was made where the investigator began to read the articles in full and noted down initial ideas regarding possible themes and codes within the data. The analysis was inductive in that codes and themes were not predetermined, but defined and redefined during the analysis. Using the data analysis software, parts of sentences, whole sentences, and groups of sentences were assigned one or more code(s). During the analysis new codes were defined and the initial analysis revisited and data were recoded, where applicable. Themes were identified and redefined a number of times during the analysis. A thematic map was drawn (Figure 1) to assist the organisation of themes.

After completion of the coding stage, the data software program was used to extract a Microsoft Excel (Microsoft Office Professional Plus, 2016) data document with data extracts. At times, the data organisation was complicated by the overlapping of data into the themes identified at this stage of the analysis and the researcher took a “best-fit” approach to the classification of the data. The researcher made further notes about the data extracts, which assisted the process of finalising the themes presented in this report (refer to Figure

1). Post hoc of data analysis, the themes were critically analysed against the dimensions of Kolb's experiential learning model (cross-references shown in Figure 1).

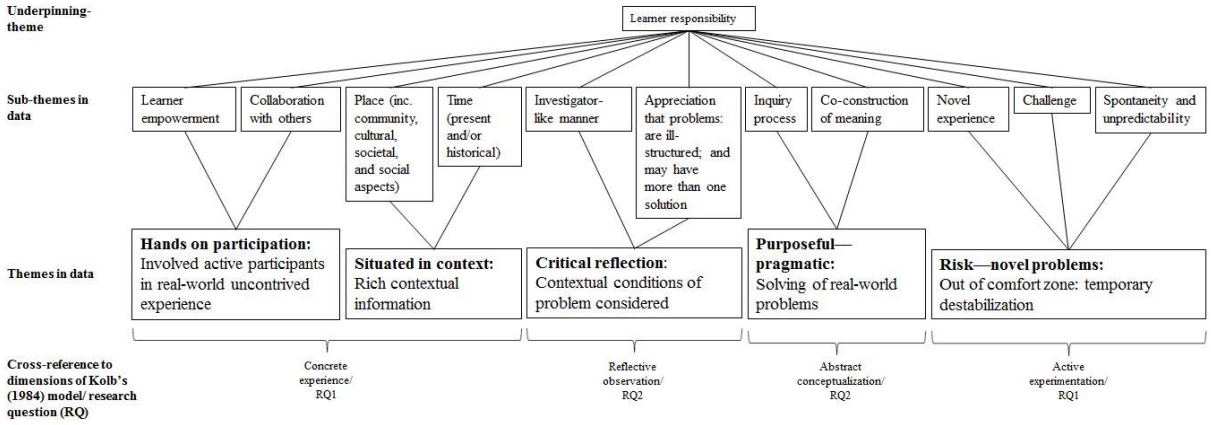

Figure 1. Thematic map

4. Results

The results give a rich overview of the conceptualization of the experiential learning in accordance with the studies analysed. A notable observation when eyeballing Figure 1 (summary of themes in data) is that learner responsibility was an underpinning theme of the concept. This should be considered by readers when interpreting the findings presented. Five themes were identified; three relating to research question 1, two relating to research question 2 and are discussed in detail in the forthcoming sections of this report, which is followed by a proposed revision to Kolb's (1984) learning cycle.

4.1. Research question 1: what constitutes a concrete experience?

In experiential learning, learners are involved, active, engaged, participants in the learning process. Learner participation is central, were "learning by doing" is a founding concept (Munge, Thomas, & Heck, 2018). It is a "hands on", task-oriented, process (Blair, 2016; Dorfsman & Horenczyk, 2017), which is based on direct experience (Blair, 2016; Seaman, Brown, & Quay, 2017) that necessitates that learners are active in the process (Fűz, 2018; Munge, Thomas, & Heck, 2018).

Learners are placed physically, often in collaboration with others, in rich contextual learning environments that represent in the moment, uncontrived, experience (Karoff, Tucker, Alvarez, & Kovacs, 2017). Learners assume full or collaborative responsibility for the learning process (cf. Hou & Pereira, 2017). Physical contact seems important in the process (Fűz, 2018). Jordan, Gagnon, Anderson, and Pilcher (2018) explain that students are engaged socially, intellectually, and physically, which supports the embodied nature of experiential learning.

Coker, Heiser, Taylor, and Book (2017) highlight that the process of experiential learning can demand a significant amount of time and effort. They refer to two dimensions, breadth and depth, which provide unique benefits: depth (time invested) is perhaps important for higher order thinking. Whereas, breadth (different types of experiences) is essential for fostering softer skills such as social competence.

Knowledge is situated in context: emphasising place and time. Experiential learning occurs in a specified place (Smith & Segbers, 2018), in which interactions and contact with people are key (Harper, 2018). Pipitone (2018) conceptualizes place, which has both geographical and conceptual aspects (cf. Harper, 2018), as "landscapes full of sociocultural and historical meanings to be engaged with" (p. 59).

Engagement with place is imperative in modulating participants to think more deeply and critically about the societal norms and power structures that surround them (Deringer,

2017), providing a broader life experience (Ribbe Jr, Cyrus, & Langan, 2016). Pipitone and Raghavan (2017) highlight the importance of “social interactions, engagement with local rhythms and histories, and intentional narrative activities” (p. 264) in grasping the nature of the experience.

Moreover, Smith, and Segbers (2018) explain that students learn from and learn how to live with people from a variety of cultural backgrounds, which can assist learners to appreciate transculturality. This “attends to the way in which humanity has moved about the globe with single cultures now intertwined” (Smith & Segbers, 2018, p. 77).

Community engagement is central to the process (Deringer, 2017), where learners themselves are central to the context (cf. Burns, & Danyluk, 2017). Blair (2016) identifies that the nature of knowledge construction is a social process (highlighting the works of Dewey, Piaget, and Vygotsky).

Furthermore, Fifolt, Morgan, and Burgess (2017) discuss the role of experiential learning in bringing a community together. This is particularly evident in service learning (cf. Bennett, Sunderland, Bartleet, & Power, 2016). Pipitone (2018) discuss that to consider the learning space or place associated is to consider the sociocultural and sociospatial aspects of learning.

Blair (2016) refers to the work of Roberts (2012) to identify that experience is also bound in time as well as place. In this regard, appreciation of historical aspects of knowledge may necessitate a triangulation of learning means, which could include for example historical artefacts and videos of the historical occasion. Dorfsman and Horenczyk (2017) example that “educational museums are composed of objects, documents, and narratives that together create a learning experience” (p. 1).

Learning involves risk, as experiential learning incorporates novel, challenging, experiences. Learners must respond to and accept challenge and behave with spontaneity to new, novel, learning place or space that involves unpredictability and experimentation (Davidson, Ewert, & Chang, 2016; Fűz, 2018; Karoff, Tucker, Alvarez, & Kovacs, 2017; Whittington, Garst, Gagnon, & Baughman, 2017).

Isaak, Devine, Gervich, and Gottschall (2018) point out that risk and uncertainty is inevitable in engagement with the real world. Experiences are unique, thus learners are unlikely to experience a uniform experience again (Asfeldt & Beames, 2017).

In addition, experiential learning is more often than not a collaborative process. Gibbons, Ebbeck, Gruno, and Battey (2018) provide examples of collaborative challenges: balancing a group on a small object or group negotiation of a challenging obstacle course. Karoff, Tucker, Alvarez, and Kovacs (2017) discuss that for such novel experiences learners do not have a "script", which promotes task difficulty. In this regard, support and trust from co-actors in the learning process seems essential (cf. Dorfsman & Horenczyk, 2017).

Moreover, the educator inevitably plays a very important role in facilitating the process, such as assisting learners to remain open to trying novel solutions to problems, encouraging tenacious attitudes, and promoting the effectiveness of communication skills (Isaak, Devine, Gervich, & Gottschall, 2018).

Additionally, the process is often progressive in difficulty. Educators gradually increase the difficulty of the intellectual, social/emotional, and physical challenge (Gibbons, Ebbeck, Gruno, & Battey, 2018).

4.2. Research question 2: what is the nature of treatment of a concrete experience?

Critical reflection is imperative in the process, which may act as a mediator of meaning making. The complex nature of problem solving involved with experiential learning demands higher order thinking (Collins, Sibthorp, & Gookin, 2016). It is not surprising therefore, that experiential learning fosters critical thinking skills (cf. James & Williams, 2017; Scogin, Kruger, Jekkals, & Steinfeldt, 2017).

Reflection and analysis, which is often undertaken both alone (e.g., quiet time for journaling, Harper, 2018) and in collaboration with others, are two central features of the experiential learning process (Fede, Gorman, & Cimini, 2018; Isaak, Devine, Gervich, & Gottschall, 2018).

In reference to the works of Dewey (1916; 1938/1963), Asfeldt, Hvenegaard, and Purc-Stephenson (2017) discuss that reflection plays a central role in the learning process and is vital for making meaning of experience (cf. Deringer, 2017). In this regard, scholars generally position with a constructivist stance toward meaning making (e.g., Dorfsman & Horenczyk, 2017; Grimwood, Gordon, & Stevens, 2017; Isaak, Devine, Gervich, & Gottschall, 2018).

Dialogue in collaboration with others, such as with the instructor and peers, allows further (double loop) deeper critical reflection (Asfeldt, Hvenegaard, & Purc-Stephenson, 2017; Collins, Sibthorp, & Gookin, 2016). This often demands that learners critically reflect upon their previously uncritically assimilated abstract conceptualizations, where learner self-awareness is brought about and new or revised understanding is construed (cf. Hou & Pereira, 2017).

Consequently, experiential learning is often an emotionally intense experience, as metacognitive awareness of "self" is brought about. Larsen (2017) concludes that experiential learning is a "highly charged, emotional experience" (p. 279).

Learning is purposeful and demands learners to take responsibility to act pragmatically to find solutions, through an inquiry process, to specific real-world problems. Learners have clear and purposeful roles and responsibilities in the learning process (Bialka & Havlik, 2016; Fifolt, Morgan, & Burgess, 2017).

Learning is problem-based, often project-based (Scogin, Kruger, Jekkals, & Steinfeldt, 2017). Thus, utilises inquiry-driven learning methodologies (Munge, Thomas, & Heck, 2018). Terms associated with experiential learning include, inquiry-based learning, student-directed learning, active learning, problem-based learning, service-learning, and project-based learning (Blair, 2016; Breunig, 2017).

Furthermore, in reference to the definition of experiential learning given by the Association for Experiential Learning (2017), Fede, Gorman, & Cimini, (2018) point out that a key feature is that students are responsible for decision making throughout the process. This demands initiative and stimulates learner intellectual and emotional engagement.

Thus, there is emphasis on learner *choice*, which Isaak, Devine, Gervich, and Gottschall (2018) identify as the sine qua non of experiential learning. In sum, learners are offered autonomy and are empowered to make decisions (Barron, Khosa, & Jones-Bitton, 2017; Dorfsman & Horenczyk, 2017).

Learners may negotiate solutions through creative means, the outcome of which cannot be predicted at the start of the learning process. Learners often complete problem-solving activities in small teams. Gibbons, Ebbeck, Gruno, and Battey (2018) example that

"Typically, participants work in groups of six to eight on physically challenging tasks that require elements of communication, cooperation, trust, and risk" (p. 3). Isaak, Devine, Gervich, and Gottschall (2018) discuss a "sense of connection" (p. 34) as learners work collaboratively.

Learner communication is essential for success of the process (Gibbons, Ebbeck, Gruno, & Battey, 2018), as students learn with and from each other (Murphy, Wilson, & Greenberg, 2017), pondering solutions through dialogue (Glowacki-Dudka et al., 2017). Consequently, relationships tend to develop through the process (Fifolt, Morgan, & Burgess, 2017).

Solutions to problems inherently stipulates creative ideas and creative solutions. Thus demanding learners to think creatively (Collins, Sibthorp, & Gookin, 2016; Isaak, Devine, Gervich, & Gottschall, 2018; Jordan, Gagnon, Anderson, & Pilcher, 2018; Scogin, Kruger, Jekkals, & Steinfeldt, 2017).

In particular, Collins, Sibthorp, and Gookin (2016) point out that the process involves the solving of ill-structured problems, which is positioned as a critical competency in contemporary complex societies. They identify three important aspects: creativity, tolerance for novelty, and cognitive flexibility, in which *adaptability* is a central feature, which enables the bridging between theory and practice (Barnes, 2016).

4.3 Revision to Kolb's model

The aim of the present study was to understand how educators interpret the meaning of a "concrete experience". In the studies examined, concrete experience represented highly

contextualised, primary, experience that involves hands on learner experience in uncontrived real-world situations.

This is contrary to Kolb's (1984, 2015) own conceptualization that experiential learning refers to "the individual learning process that applied in all situations and arenas in life, a holistic process of learning" (2015, p. xx). This finding represents a clear and important difference in conceptualization of what constitutes a concrete experience and seemingly warrants a revision to Kolb's learning cycle (Figure 2).

The present paper did however provide support for four dimensions of experiential learning, as per Kolb's model (1984). The five themes identified in the analysis coupled closely with Kolb' four dimensions (refer to figure 1), with however some very subtle, but significant differences, which are summarised in Figure 2. These seemingly very important differences are explained further in the following sections.

As noted in the methodology section of the present report, the data organisation was complicated by the overlapping of the data into the themes identified. In this regard, themes, which are represented in the proposed model (Figure 2), were clearly very organically adjoined, which addresses Miettinen's (2000) concern of Kolb's model that its dimensions do not couple in a very organic or necessary way.

Moreover, the proposed model takes into account graphical syntax issues highlighted by Bergsteiner, Avery, and Neumann (2010) that: (1) in accepted modelling practice time-lines should represent activities; and, (2) simplification of the model can be achieved by removing the horizontal and vertical bidirectional arrows on Kolb's model, which merely highlights orthogonal bi-polar relationships between active experimentation and reflective

observation, and concrete experience and abstract conceptualization (Figure 2). The proposed changes to the Kolb model are detailed in the following sections.

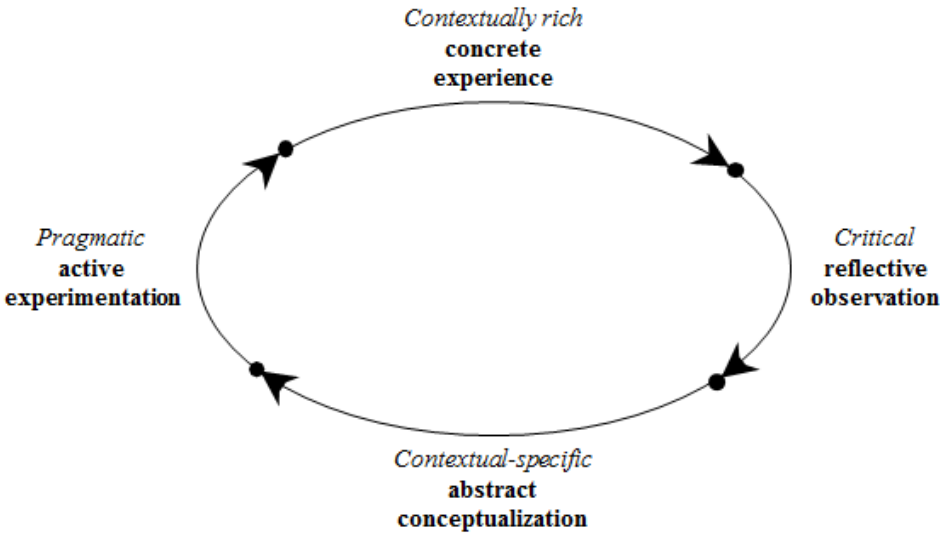

Figure 2. Experiential Learning Cycle (a revision to Kolb's 1984 model)

4.3.1. Concrete experience

In the studies examined in the present report, learners were involved, active, engaged, participants in the learning process. Learners were placed physically, often in collaboration with others, in *contextually rich* learning environments that represented in the moment, uncontrived, "hands on", real-world primary concrete experiences (e.g, Grimwood, Gordon, & Stevens, 2017; Larsen, 2017; Schary & Waldron, 2017).

The idea of a "contextually rich" concrete experience (refer to Figure 2) actually falls against Kolb's own conceptualization of experiential learning theory, who rather viewed

concrete experience as experiences that occur in “all situations and arenas in life” (Kolb, 2015, p. xx) that come through the sensory cortex (Kolb & Kolb, 2013).

An important difference concerning the interpretation of what is considered a concrete experience in experiential learning theory is highlighted in one theme in the data of the present report: that knowledge is situated in context: emphasising place (including community, cultural, societal, and social aspects) and time (present or historical).

A key aspect of the learning process concerns learners learning to appreciate that knowledge is situated in context: fluid across time and place. Again the need for learning to be situated in context was not stipulated in Kolb’s conceptualization of experiential learning (1984, 2015).

However, the present research report found that, rather, experiential learning is conceptualized by educators and scholars as a process in which learners are immersed in learning experiences that contain the fullest contextual information possible, in which the experiential learning process takes place.

In this regard, Jarvis (2012), in particular, voiced a clear critique of Kolb’s model: that it does not take into consideration the social context of learning. Again, the studies examined in the present paper highlighted that the social context of learning has a central place in experiential learning theory.

For example, in examining experiential learning from a socio-spatial perspective, Pipitone and Raghavan (2017) identified meaning making as both a “participatory and collaborative process mediated through the body and embedded within social, spatial, and temporal realities” (p. 265) and it is through our *bodies senses* that we are able to experience place.

Embodiment is a central consequence of immersing learners physically in the learning space. This is a key area for further research, which is discussed in more detail in the conclusions of the present report.

4.3.2. Reflective observation

Kolb (1984, 2015) did not stress the need for "critical" reflection in his conceptualization of experiential learning: he did not differentiate between the requirement for critical or non-critical reflection during the learning process.

However, it was clear in the present study that the solving of problems in context stipulates the need for critical reflection. Indeed, some authors (e.g., Harper, 2018) acknowledged that their course of experiential learning was informed by critical theory (Brookfield, 2001; Mezirow, 1981).

In this regard, the studies analyzed in the present report highlighted that *critical* reflective observation is essential in the process (Figure 2), which acts as a mediator of meaning making. In the process, learners must act in an investigator-like manner and test the fittingness of new or pre-existing abstract conceptualizations against the present moment real-world experience (cf. Barron, Khosa, & Jones-Bitton, 2017).

That is, in order to effectively solve problems situated in context that are posed during the learning process, considering the details of the conditions of the context seems imperative because solutions to problems are inherently context specific (cf. Langer, 2017). In the studies examined in the present paper, problems were authentic, but also generally open-ended (Scogin, Kruger, Jekkals, & Steinfeldt, 2017), with a purposeful aim (Breunig, 2017), where there was a need for learners to be comfortable with ambiguity and uncertainty (Ricke, 2018).

This may be understood further in terms of the Socratic concept that learners may approach the learning situation with a stance that all knowledge is provisional: learners appreciate that they do not yet "know" and that solutions to problems in a real-world context are context specific (cf. Scott, 2018). Through experiential learning, learners may begin to appreciate the fluidity of contextual-conditions across place and time and become comfortable with change and uncertainty (cf. Langer, 2017).

Indeed, in remodelling Dewey's theory on experience and reflective thought and action, Miettinin (2000) interprets Dewey's ideas in a different way to Kolb: depicting a process of learning that includes defining the problem and studying the conditions of the problem situation in order to formulate a working hypothesis. The model presented by Miettinin (2000) is seemingly complementary to the model proposed in the present paper and may, in addition, assist readers to understand the meaning of experiential learning theory.

4.3.3. Abstract conceptualization

Resultant from critical reflection on contextually rich concrete experience, the present model proposes that abstract conceptualizations may construe critically, that is, contextual-specific (Figure 2).

Again, Kolb (1984, 2015) did not make the distinction between the formation of uncritically or critically assimilated abstract conceptualizations. Conversely, the proposed model predicts that in order for the model to operate as a spiral, with increasing complexity as humans develop and mature, *contextual-specific* abstract conceptualizations are mandatory.

A key aspect of this concerns learners becoming to appreciate that the conditions of the context may change across time and place and therefore all knowledge is provisional and needs testing in context. This could be conceptualized as a “working hypothesis” (as per Dewey’s ideas, described in Miettinin, 2000), which when passed through active experimentation in new concrete experiences they become, potentially, higher order concepts.

The importance of appreciating that abstract conceptualizations construe as contextual-specific in experiential learning theory, which are critically assimilated, rather than contextual-indifferent, which are uncritically assimilated, is found in critical theory. Mezirow’s (1978, 1981, 1991) work highlights that when abstract conceptualizations are uncritically assimilated, we get “caught in our own history and are reliving it” (1978. p. 101; readers are encouraged to read further in this regard: Mezirow, 1991). This form of learning may actually limit a person’s growth potential toward becoming the person they could be (Arnold, 2017).

In this regard, it is possible to plot a very different alternative learning cycle which involves (1) contextually-poor experience (2) uncritical reflective observation (3) contextual-indifferent abstract conceptualization and (4) reinforcing/repeating active experimentation. Rather than a spiral this cycle would represent a circle, where actions are repeated and would, rather, complement behaviourist epistemology (cf. Murtonen, Gruber, & Lehtinen, 2017)

Indeed, it seems important to point out that experiential learning theory does not capture all forms of human learning; and probably no learning model will ever do so (Merriam, Caffarella, & Baumgartner, 2007).

4.3.4. Active experimentation

A key consequence of *contextual-specific* abstract conceptualizations is that they may enable learners to act pragmatically—to base their actions on their concrete experiences—in active experimentation with an encounter with a new concrete experience. In other words, this involves *testing* the fittingness of abstract conceptualizations formulated against new concrete experiences.

Indeed, Roberts (2018) explains that a central tenet of experiential learning is found in the etymology of the word "experience", which means "to test", or "to risk" in Latin. In this regard, the process integrally involves risk, as experiential learning incorporates novel, challenging, experiences. Learners must respond to, accept the challenge of, and behave with spontaneity to unpredictability that is inherent in the process.

It should be considered that experiential learning is a process that deliberately places learners out of their comfort zones and, consequently, learners may become to appreciate that conditions change, sometimes very discretely, across time and place. Bailey, Johann, and Kang (2017) discuss that novelty and challenge, inherent in experiential learning, facilitates the process of inducing cognitive dissonance, as learners are challenged and "destabilized" (Glazier, Bolick, & Stutts, 2017; McGowan, 2016).

It was clear in the analysis of the present paper that experiential learning is a process in which the concrete experiences "push the edges of what they [the learners] are familiar with" (Grimwood, Gordon, & Stevens, 2017, p. 9). Wainwright, Bingham, and Sicwebu (2017) discuss that immersion in a new place or space is one aspect that induces unfamiliarity.

Kolb (1984) did acknowledge that active experimentation involves utilizing "theories to make decisions and solve problems" (p. 30). However, the model proposed in the present

paper (Figure 2) makes the distinction, which was not made by Kolb (1984, 2015) that problems are contextual specific; therefore learners must appreciate the conditions in which the problem is situated in order to progress successfully, in a spiral, towards maturation and growth.

5. Conclusions and future works

The present study provides a rich insight into how educators may conceptualize and facilitate the concept of experiential learning (refer to Figure 1 for a summary of themes). The findings warranted subtle but key adjustments to Kolb's (1984, 2015) learning cycle (Figure 2), which are proposed as important considerations in further works on experiential learning theory.

The revision to Kolb's model proposed addresses many key critiques that: there is a lack of a sound empirical foundation to the model (e.g., Coffield, Moseley, Hall, & Ecclestone, 2004; Miettinen, 2000); the dimensions of the model do not connect to each other cohesively (e.g., Jarvis, 2012; Miettinen, 2000); and, the model typology fails clarity (Bergsteiner, Avery, & Neumann, 2010).

There were some weaknesses of the present study. In particular, although the systematic nature of the study allowed a rich insight into how educators conceptualize and facilitate experiential learning in practice, most studies reviewed were limited to contexts that represented out-of-classroom experience.

There may be multiple reasons for this, including that physically getting out of the classroom may assist to facilitate experiential learning. In this case, examining the factors that encourage or discourage out-of-classroom experience seems essential. Moreover, publication bias toward what is seen as experiential learning cannot be ruled out.

Furthermore, many of the studies analyzed were conducted in North America. This is an important consideration because it is possible that there are differential conceptualizations of experiential learning in different contexts. Moreover, studying the factors that limit the facilitation of experiential learning was not an aim of the present study but is an important area for future research.

Empirical testing of the proposed model is required, with potentially further revisions. Further studies may focus to address other critiques, which was not possible to in the present research; especially concerns of further modelling issues including whether the arrows should be bi-directional rather than unidirectional and whether concrete experience should be assigned as the starting point (cf. Jarvis, 2012).

Furthermore, the complexity of the experiential learning process as depicted in Figure 1 should not be taken for granted. In this regard, further research could consider facilitation of experiential learning from an educator's perspective, including how to train educator competence to facilitate experiential learning.

Moreover, another key area for further research concerns how over time one's learning spiral may become more complex, as a human develops and matures. In this regard, some scholars in the field of experiential learning have realized the need to appreciate complementary knowledge in the field of cognitive science (e.g., Schenck & Cruickshank, 2015).

Specifically, as identified in the present paper, embodiment that accompanies the experiential learning process appears a very important focus for further studies. Embodiment is a relatively underdeveloped area of research in educational and cognitive sciences (refer to Dijkerman & Lenggenhager, 2018; Kiefer & Trumpp, 2012, for reviews).

Further studies should appreciate the recent findings from cognitive science that suggests that embodiment is an essential part of fostering a learner's deep conceptual understanding. In particular, in a review article Kiefer and Trumpp (2012) discuss that over the last decades scholars wrongly assumed that when perceptual and motor systems coded knowledge in abstract-symbolic format, modality-specific sensory-motor information was lost. Rather, there is surmounting evidence that cognition is, vitally, based on *reinstatements* of sensing (using the relevant sensory organs), and/or feeling/acting (using the motor/proprioceptive organs) that accompanied the original experience.

Thus, when learners are immersed, *with their body*, in a contextually rich experience, sensory-motor information becomes embodied in memory traces. It is thought that embodiment is essential for deep conceptual understanding and "for human cognition to develop at the highest level" (Kiefer & Trumpp, 2012, p. 19). In other words, potentially, to secure deep and meaningful learning the body cannot be decoupled from the mind during the process of learning.

Indeed, in some educational contexts, such as in the vocational training of adults in the Netherlands, there has been a shift away from domain-specific knowledge taught in classrooms (mind work, no body work) exactly because it has been realized that such education does not foster a deep conceptual understanding of workplace knowledge and skills (cf. Biemans, Nieuwenhuis, Mulder, & Wesselink, 2004; Descy & Tessaring 2002; Jossberger et al., 2010, 2017).

In this regard, experiential learning may represent a particular form of learning that, in addition to the many other possible learner benefits gained from the process detailed in the present paper, has much potential to foster learners' deep conceptual understanding.

Thus, experiential learning is potentially applicable, but to date perhaps hugely unrealized, in a wide variety of educational contexts.

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