NSU Florida
NOVA SOUTHEASTERN UNIVERSITY

Experiential Learning & Teaching in Higher Education

Volume 4 | Number 1 Article 11

Summer 2021

Exploring the Catalyst Energizing the Kolb Learning Cycle

Marc Behrendt
Ohio University, Athens, lifesciteacher@gmail.com

Krisanna Machtmes
Ohio University, Athens, machtmes@ohio.edu

Exploring the Catalyst Energizing the Kolb Learning Cycle

MARC BEHRENDT *Ohio University, Athens*
KRISANNA MACHTMES *Ohio University, Athens*

Models are important devices used to identify important key elements of significant processes. General models may formulate logical links between variables, while specific models include measured parameters that lead to reasonable predictions. "Models can make logical connections easier to see. Often the consequences or results are well known and very visible, but the processes that caused those results are difficult to assess" (Karban, Huntzinger & Pearse 2014, p 29). Much has been published concerning Kolb's experiential learning cycle, however research does little to examine the driving force of the learning cycle (Naeem Akhtar, 2020). What compels the learner to test the new knowledge to create new experiences? What is the catalyst that initiates the experience to continue? What causes the cycle to stop, terminating learning from that experience?

The purpose of this paper is to make visible the interconnectedness of three unrelated free-standing but validated models: Kolb's model of experiential learning (Kolb, 1984; Kolb, 2015), Hidi and Renninger's model of interest development (Hidi & Renninger, 2006), and National Research Council's (NRC) ecological framework of an experience (NRC, 2009). Together, these three models describe the quality of the experience, the cyclic processing of the experience to create knowledge, and the force driving the cycle. It is not the intent of this article to compare or eliminate the models, nor to provide an exhaustive review of each model. The three models will be briefly described, leading to an explanation of how their assimilation can benefit experiential learning theory.

Experiential Learning Theory Model

Kolb established a model based on perception and processing, that all learning is determined by how an individual processes an experience (Kolb, 1984; Hurst-Wajszczuk, 2010). As Kolb developed the model, he illustrated the two concepts of perception and processing as separate intersecting lines, reasoning, "the modes of active experimentation and reflection, like abstractedness/ concreteness, stand in opposition to each other" (Kolb et al., 1974, p. 29). A learner can do only experimentation or reflection, not both at one time. Kolb recognized that "reflection tends to inhibit action and vice versa" (Kolb et al., 1974, p. 29).

Kolb's (1984, 2015) experiential learning theory (ELT) provides a strong,

coherent explanation of how humans learn through experiences. ELT highlights that learning is a result of undergoing an experience and then converting it into an application or outcome. Simply stated, Kolb's model describes a spiral four step process beginning with a concrete experience, leading to reflection of what was observed, critically analyzing the observations into abstract concepts, experimenting on those new concepts, leading back to testing through another concrete experience. The cycle continues by the learner utilizing the enhanced knowledge.

Of particular interest is Kolb's experiential learning cycle (Figure 1, squares). Concrete experience is logically recognized as the first stage of the experiential learning cycle, although it has been suggested that learners can begin the cycle at any stage (Healey & Jenkins, 2000; Hurst-Wajszczuk, 2010; Kolb, 2015; Raschick et al., 1998). The concrete experience stage (feeling/sensing) phases into the reflective observation stage (watching), leading to the abstract conceptualization phase (thinking), then progressing to the active experimentation phase (taking action), leading to a new version of the concrete experience phase, and the cycle continues so long as the cycle is unbroken. Hurst-Wajszczuk (2010) proposed the stages could progress in any order, so long as all four processes take place. "One might begin with active experimentation, for example, and then proceed to reflective observation and concrete experience, before arriving at abstract conceptualization" (Hurst-Wajszczuk, 2010, p. 422).

Arguing against Kolb's model and theory of experiential learning, Anderson (1988) suggested the model does not address culture, stating that cultural differences between individuals will provide different learning experiences. Jarvis (1987) believes learning and knowledge were connected, but thought Kolb's ELT fails to examine in depth the nature of the experience or of learning. Jeffs and Smith (1999) suggested that instead of a cycle, some or all of the four stages could occur at the same moment. Boud et al. (1985) thought the learning cycle model did not place enough emphasis on reflection. Long before Kolb's experiential learning model was proposed, Dewey focused considerable attention on experience and learning (Dewey 1929). But in general, Dewey disliked models because the processes were too burdensome because steps might be combined or omitted (Dewey, 1933; Dewey, 1998). Similar learning cycles have been identified. Mirroring Kolb's experiential learning cycle, Córdova et al. (2012) described a cycle that prototypes an idea, explores the idea for empathy, envisions without judging, and enacts to learn from failure. In spite of these issues, Kolb's model of experiential learning continues to provide the foundation to understand how individuals learn, how lessons may be presented to students for optimal learning, and how educators may develop curriculum to reach the diverse needs of the student population (Tennant, 1997).

The Four-Phase Model of Interest Development

Interest and motivation highly correlate with learning outcomes (Gagne et al. 2005). Interest and curiosity increase learning and memory (Fandakova & Gruber, 2021). Hidi and Renninger's four-phase model of interest development (Figure 1, rectangles) describes

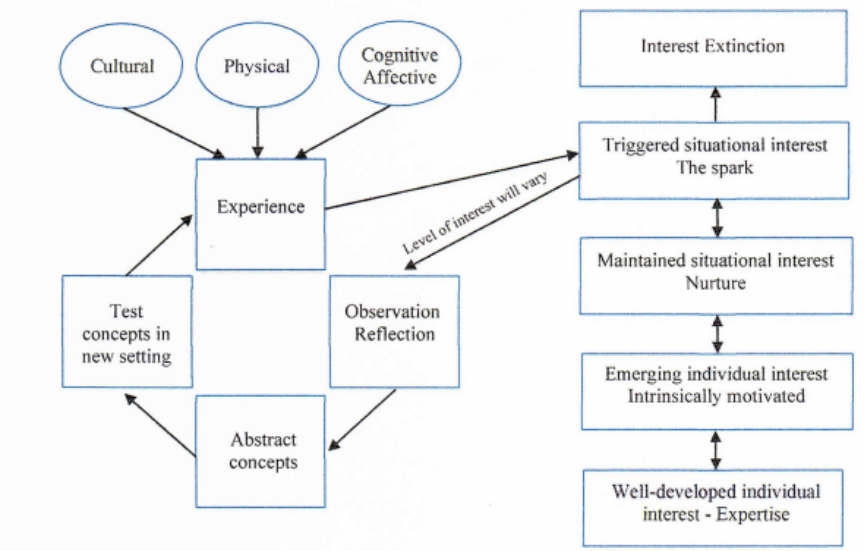

Figure 1. The assimilated model of experiential learning, consisting of Kolb's experiential learning cycle (squares), Hidi and Renninger's four-phase model of interest development (rectangles), and National Research Council's ecological framework (ovals).

how interest is stimulated or diminishes. Interest is a motivational state of an individual who desires to engage or (re) engage with an activity, person, or object (Hidi & Renninger, 2006). Interest also involves affective and cognitive states, and results with an interaction between a person and an object. Hidi and Renninger (2006) identified two types of interest: situational and individual. Situational interest may be momentary or long-lasting, is externally generated, and may motivate and positively influence learning. Individual interest is internal, a person is predisposed to re-engage with something, positively influencing attention and learning. Hidi and Renninger's four-phase model consists of two phases of situational interest and two phases of individual interest. Interest may progress through the phases that are multidirectional; interest may strengthen, remain the same, or diminish, and interest may even disappear altogether.

Phase 1: Triggered situational interest – extrinsic motivation. This level is triggered through the senses, environment, or through interaction with print, providing surprising information, recognition of a person or topic, or an affective source providing intense feelings. Triggered situational interest might motivate the person to (re)-engage with the subject and move to phase 2. For example, a teacher begins class with a demonstration that draws the students' attention.

Phase 2: Maintained situational interest – extrinsic motivation. This level involves focused attention, persistence, and personal involvement, but still externally supported. Maintained situational interest may or may not develop further motivation to (re)-engage with the subject over time.

For example, a teacher utilizes project-based learning, meaningful activities, or works individually with students. Maintained situational interest may or may not motivate the person to re-engage with the object or topic over time.

Phase 3: Emerging individual interest – intrinsically motivated. This level develops strong feelings with new knowledge and a new value system for the subject. The individual desires to follow the interest if given the option, generating personal curiosity and challenges. The work seems to require minimal effort. External support remains necessary from peers, models, or teachers, who also contribute to the knowledge level. For example, teachers support individual interest by enabling a learning environment.

Phase 4: Well-developed individual interest – intrinsically motivated. This level may be a long-term consequence of Phase 3. The individual continues to generate stored knowledge, develop deeper learning, transfer the knowledge to different applications, and cultivate more value and positive feelings. This individual will have sufficient knowledge to contribute to others' knowledge. External support continues to be important. Teachers support well-developed individual interest by providing interaction and challenges that lead to stimulated curiosity and knowledge construction.

Three alternative models of interest development provide contrast to the four-phase model. Alexander (2004) described three stages of interest development: acclimation, competence, and expertise. Academic expertise determines the level of interest, although only individuals out of high school are able to develop expertise, and the progression is irreversible, suggesting that once expertise was developed, it would not diminish.

Hidi and Renninger also provided a second model, suggesting interest was specific to an object and provided positive emotions. The level of emotion to the object helped to determine level of interest (2006). Silvia (2001) developed the model of psychology of constructive capriciousness, which defined interest as a basic emotion. Innate interest was a catalyst for interest development that promoted knowledge, experience, and skills. There were no stages in Silva's model, nor was there any concern for the interaction between the individual and an object.

Ecological Framework

NRC (2009) developed the ecological framework model, which provides a set of lenses that allow examination of the cognitive, physical, and cultural processes of an experience. The term "ecological" describes the relationship between the individuals, the physical environment, and the cultural environment. The ecological framework illustrates how individuals with the same experience will vary in what they learn because of differences in personal development, schooling, family income, family culture, peers, and environment (Bronfenbrenner, 1977; NRC, 2009).

The ecological framework model (Figure 1, ovals) utilizes three lenses:

- **Cognitive/Affective centered lens (people-centered lens)** – examines the development of knowledge, interest, affective responses,

and personal identity, describing how individuals acquire knowledge, affective responses, and develop interest. NRC (2009) proposed the term "people-centered lens" because it focused upon affective and cognitive reactions. Instead of the term people–centered lens, this study will use the term "cognitive/affective," which more clearly defines the focus of the lens.

• **Place-centered lens** – examines the physical aspects of learning. The venue defines what resources, tools, and equipment may be used for the experience. For example, a biology classroom provides a given set of physical resources, whereas a natural history museum provides a completely different set of physical resources. Different physical settings and associated tools define the potential skills and knowledge that may be developed (NRC, 2009).

• **Culture-centered lens** – examines an individual's interactions with associated communities, which defines how that individual acts, performs, experiences, and learns in different environments (NRC 2009). A community provides values, skills, knowledge, and personal identity to the individual (Moll et al., 1992). Conversely, the individual brings prior knowledge and experiences to the community.

The aforementioned are three examples that illustrate three lenses working together to define a low, middle, and high quality experience. A lecture taught in a sterile classroom may be high cognitively, but very low physically or culturally, providing a lower quality experience than a hands-on laboratory, which would have richer physical and social lenses. A trip to the zoo may be higher culturally and physically, but variably low cognitively, providing a medium quality experience (Behrendt & Machtmes, 2017). A trip to a biological field station may provide a high quality experience that is high cognitively, physically, and culturally (Behrendt, 2015). The combination of the three lenses define the overall quality of the experience.

Discussion

By itself, Kolb's learning cycle model does not explain what energizes the cycle. This proposed model illustrates how the combined quality of the three components defining an experience drives the level of interest, which energizes the learning cycle, and will continue the cycle as long as interest is maintained. These three unique models combine to illustrate how experiences generate interest and knowledge. The NRC ecological framework (2009) defines the quality of each experience through the three lenses of cognitive, social, and physical aspects. Kolb's experiential learning model (1984) describes the process of learning. Hidi and Renninger's four-phase interest model (2006) provides the catalyst driving the cycle. This integrated model (Figure 1) illustrates how an experience may be evaluated for quality and may predict the potential for learning through the amount of interest generated.

An experience's three ecological lenses, cognitive/affective, physical, and cultural, combine to define the quality of the experience and create the learner's level of interest. A high quality experience, defined by the energizing

ecological framework, will stimulate the senses and create an increased level of interest, suggesting a directly proportional relationship between the quality of experience and interest. The interest generated by the experience may be extrinsic or intrinsic. Extrinsically, the learner participates with an experience that is energized from someplace outside or beyond the learner. This extrinsic motivation drives the learning cycle, but only so long as the outside forces continue, when the extrinsic motivation ends, the learning cycle ends. When the experience is driven by intrinsic motivation, an interest that is already in place, the learning cycle continues long past the experience. As long as any interest exists, the learning cycle will continue to move forward, resulting in learning.

Conclusion

This proposed model illustrates how the quality of an experience is determined by three factors: the lesson or cognitive aspect, the venue or physical aspect, and the social or cultural aspect. The experience stimulates a level of interest that varies with each student. The interest drives and energizes the learning cycle. As long as interest exists, the learning cycle may continue. Without interest, the learning cycle stops.

This model relates to any learning experience. In reference to education, the proposed model explains student interaction and learning during classes. It is up to the teacher to create quality experiences, which include setting, cognitive, and social scaffolding that motivate students to experience, reflect, think, retest, and learn. A lesson or lab provide the experience. The richness of that lesson or lab defines the quality of the experience. The venue is usually the classroom or laboratory; is there anything physical that might be added to increase the quality of that venue? The cognitive lens provides the lesson and activity. The cultural lens defines how each student experiences that lesson or activity. If the lesson or lab is stimulating, it creates external motivation. Students reflect on the activity, and respond by re-examining their knowledge by assimilating the new data. The experience, reflection, abstraction, and retesting continue until the motivation disappears, often at the end of the lesson or when the student exits the classroom. Whether the learning terminates or continues is determined by the student's level of interest. The experience determines the level of interest. The level of interest drives the learning cycle. ■

References

Alexander, P. (2004). A model of domain learning: Reinterpreting expertise as a multidimensional, multistage process. In *Motivation, emotion and cognition: Integrative perspectives on intellectual functioning and development, eds.* D. Y. Dai & R. J. Sternberg, Mahwah, New Jersey: Lawrence Erlbaum Associates, 273–298).

Anderson, J. A. (1988). Cognitive styles and multicultural populations. *Journal of Teacher Education, 39*(1), 2-9.

Behrendt, M. (2015). The Nature of High School Students' Experiences at a Great Lakes Biological Field Station. *International Journal of Learning, Teaching and Educational Research, 10*(4), 1-16.

Behrendt, M., & Machtmes, K. (2017). Promoting experiences in outdoor environments as a way of enhancing interest and engaging learning. In *Contextualizing teaching to improving learning: The case of science and geography*, ed. L. Leite, USA: Nova Science Publishers, p. 85-102.

Boud, D., Keogh, R., & Walker, D. (1985). *Promoting Reflection in Learning: A Model. Reflection: Turning Reflection into Learning*. London: Routledge.

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist, 35*, 513-531.

Córdova, R.A., Kumpulainen, K., & Hudson, J. (2012). Nurturing creativity and professional learning for 21st century education: Responsive-Design and the cultural landscapes collaboratory. *LEARNing Landscapes, 6(*1), 155-178.

Dewey, J. (1929). *Experience and nature*. Lasalle: The Open Court Publishing Company.

Dewey, J. (1933). *How we think*. New York: Heath.

Dewey, J. (1998). *The essential Dewey: Pragmatism, education, democracy*. L. Hickman and T. Alexander (Eds.). Bloomington: Indiana University Press.

Fandakova, Y., & Gruber, M. J. (2021). States of curiosity and interest enhance memory differently in adolescents and in children. *Developmental Science, 24*(1), 1-15, https://doi.org/10.1111/desc.13005

Gagne, R. M., Wager, W. W., Golas, K. C., Keller, J. M., & Russell, J. D. (2005). Principles of instructional design. *Performance Improvement, 44*(2), 44–46, https://doi.org/10.1002/pfi.4140440211

Healey, M., & Jenkins, A. (2000). Kolb's experiential learning theory and its application in geography in higher education. *Journal of Geography, 99*(5), 185-195.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist, 41*(2), 111-127.

Hurst-Wajszczuk, K. (2010). Do they really get it? Using the Kolb LSI to reach every student. *Journal of Singing, 66*(4), 421-427.

Jarvis, P. (1987). *Adult learning in the social context*. London: Croom Helm.

Jeffs, T., & Smith, M. K. (1999). *Informal education*. Ticknall, Derbyshire: Education Now Publishing.

Karban, R., Huntzinger, M., & Pearse, I. S. (2014). *How to do ecology*. Princeton University Press: New Jersey.

Kolb, D. A. (1984). *Experiential learning, experiences as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.

Kolb, D. A. (2015). *Experiential learning: Experiences as the source of learning and development, second edition*. NJ: Pearson Education.

Kolb, A. Y., & Kolb, D. A (2013). *The Kolb learning style inventory- version 4.0: A comprehensive guide to the theory, psychometrics, research on validity and educational applications*. Experience Based Learning Systems 2013. Retrieved from https://www.researchgate.net/profile/David_Kolb/publication/303446688_The_Kolb_Learning_Style_Inventory_40_Guide_to_Theory_Psychometrics_Research_Applications/links/57437c4c08ae9f741b3a1a58/The-Kolb-Learning-Style-Inventory-40-Guide-to-Theory-Psychometrics-Research-Applications.pdf

Kolb, D. A., Osland, J.S., & Rubin, I.M. (1974). *Organizational psychology: A book of readings*. Englewood Cliffs, NJ: Prentice Hall.

Moll, L. C., Amanti, C., Neff, D., & Gonzalez, N. (1992). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory into Practice, XXXI* (2), 132-141.

Naeem Akhtar, R. (2020). Exploring experiential learning models and developing an EL based ERE cycle in teaching at higher education in Pakistan. *International Journal of Experiential Learning & Case Studies, 5*(2), 250-264, https://doi.org/10.22555/ijelcs.v5i2.44

National Research Council (1999). *How People Learn: Brain, Mind, Experience, and School*. Committee on Developments in the Science of Learning. J.D. Bransford, L. Brown, and R.R. Cocking (Eds.). Washington, DC: National Academy Press.

National Research Council (2009). *Learning science in informal environments: People, places, and pursuits*. Washington, DC: The National Academies Press.

Raschick, M., Maypole, D. E., & Day, P. A. (1998). Improving field education through Kolb learning theory. *Journal of Social Work Education, 34*(1), 31-42.

Silvia, P. J. (2001). Interest and interests: The psychology of constructive capriciousness. *Review of General Psychology, 5*, 270-290.

Tennant, M. (1997). *Psychology and adult learning* 2e. London: Routledge.