

---

# Experiential Learning Theory as a Guide for Experiential Educators in Higher Education

ALICE Y. KOLB & DAVID A. KOLB

*Experience Based Learning Systems, Inc.*

**ABSTRACT.** Core concepts of Experiential Learning Theory—the *learning cycle*, *learning style*, and *learning space*—have been widely used by experiential educators in higher education for nearly half a century. We examine the latest thinking about these three concepts and highlight some exemplary applications from the many disciplinary applications of experiential learning in higher education.

*I think that only slight acquaintance with the history of education is needed to prove that educational reformers and innovators alone have felt the need for a philosophy of education. Those who adhered to the established system needed merely a few fine-sounding words to justify existing practices. The real work was done by habits which were so fixed as to be institutional. The lesson for progressive education is that it requires in an urgent degree, a degree more pressing than was incumbent upon former innovators, a philosophy of education based on a philosophy of experience.*

John Dewey, *Experience and Education*

This inaugural issue of *Experiential Learning & Teaching in Higher Education* marks a milestone in the growing awareness and use of experiential learning as a learning platform in education. Since the early 1970s, the principles and practices of experiential learning have been widely adopted to create curricula and conduct educational courses and programs. Many of the non-traditional

© 2017 Southern Utah University Press & Design.

Correspondence should be sent to David A. & Alice Y. Kolb, Experience Based Learning Systems, Inc., HC 1 Box 124, 75 Ulua Road, Kaunakakai, HI 96748, USA.

Email: dak5@msn.com

*ELTHE: A Journal for Engaged Educators*, Vol. 1, No. 1 (2017), pp. 7–44

educational innovations that have flowered during this period, such as competency-based undergraduate education (Mentkowski 2000), professional education (Boyatzis, Cowan & Kolb 1995), college programs for adult learners, and prior learning assessment (Keeton & Tate 1978; Simosko 1988) have used experiential learning as their educational platform. As experiential, learner-centered education has gained widespread acceptance in the twenty-first century (Prince & Felder 2006; Slavich & Zimbardo 2012), more and more educators are experimenting with experiential learning practices such as service learning (Bielefeldt et al. 2011; Brower 2011), problem based learning (Gurpinar, Bati & Tetik 2011; Bethell & Morgan 2011), action learning (Revans 1980; Keys 1994; Foy 1977), adventure education (Fuller 2012; Timken & McNamee 2012), and simulation and gaming (Taylor, Backlund & Niklasson 2012; Shields, Zawadzki & Johnson 2011; Schaefer et al. 2011).

In their formulation of transformational teaching, George M. Slavich and Philip G. Zimbardo (2012) describe the multidimensional importance of experience in learning:

[E]xperiential lessons provide students with an opportunity to experience concepts first-hand and, as such, give students a richer, more meaningful understanding of course concepts and of how they operate in the real world.... They enhance the affective quality of the course content. This occurs both when students are engaged in solving problems that are part of the activities and when they are analyzing, sharing, discussing, and reflecting on their personal reactions.... It can significantly improve students' memory for concepts insofar as the information gets stored in autobiographical memory.... Experiential lessons have the ability to shape students' beliefs about learning and about the self.... They can lead to significant personal insights, including a greater awareness of one's personally held perspectives—as well as an improved awareness of other people's experience—with the possibility to enhance these attributes through critical reflection. (594)

In his study of student careers after college, Jeffrey J. Selingo (2016) argues that co-curricular experiential learning experiences are what distinguish successful careers from drifters:

But it's not just the college degree that separates the successful from the drifters these days. If that were the case, recent college graduates wouldn't be standing in the unemployment line or settling for jobs that don't require a bachelor's

degree. While some sort of degree after high school remains the foundation of a successful life and career, other coming-of-age, real-world experiences in the late teens and early twenties—particularly apprenticeships, jobs, or internships—actually matter more nowadays in moving from college to a career. (8-9)

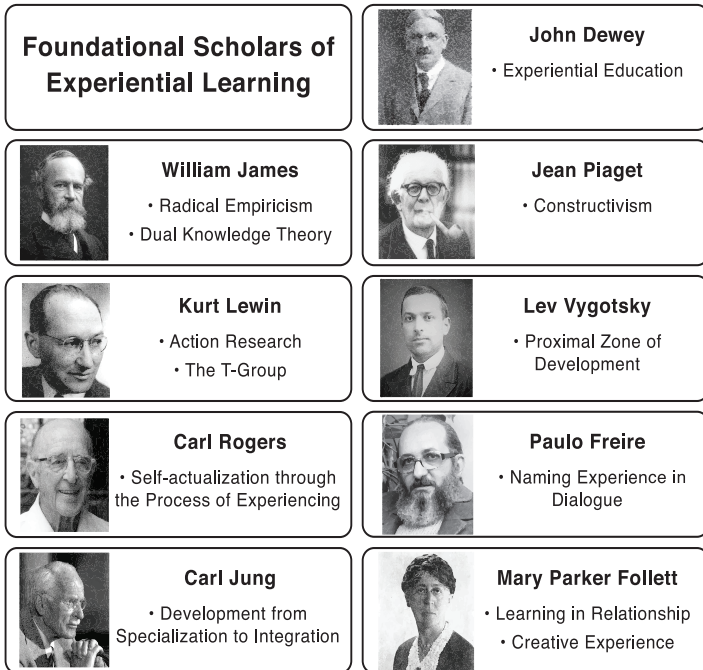
Selingo found that 79% of the most successful college graduates had at least one college internship as well as other out of the classroom projects. Many educational institutions offer these co-curricular experiential education programs to add a direct experience component to their traditional academic studies.

In this essay we will examine these applications of experiential learning in higher education through the lens of Experiential Learning Theory (ELT) (Kolb 2015) by examining exemplary applications of experiential learning concepts in several of the many disciplines of higher education. From the countless numbers of college teachers around the world who have begun to define themselves as experiential educators, we have selected a few documented examples of how ELT concepts are used in their work. We begin with the central ELT concept of the learning cycle and how it can be used to teach around the learning cycle. Two applications of the concept in management education are described. Next, the ELT concept of learning style is addressed, emphasizing how its status as a dynamic state as opposed to a fixed trait is unique among the many learning style approaches. Trait learning style approaches emphasize matching style to instructional method while ELT learning styles emphasize learning flexibility and expanding one's preferred style to encompass all learning modes for full cycle learning. The application of this learning style concept to develop law students' meta-learning capabilities is described, and current research on adaptive learning systems in digital education is examined. Finally, we turn to the concept of learning space and examine two applications. One examines how a positive learning identity can be developed in a hospitable learning space. This study addressed remedial mathematics education in a community college. The second example shows the power of conversational learning spaces in a (college-level), general-education freshman seminar.

## Experiential Learning Theory

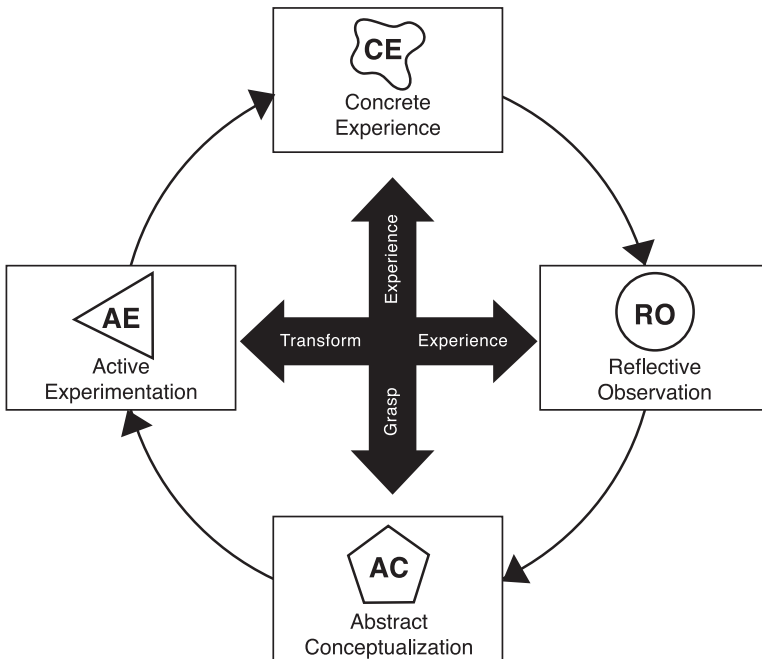
ELT was created to provide an intellectual foundation for the practice of experiential learning responding to John Dewey’s call for a theory of experience to guide educational innovation. ELT is a synthesis of the works of those great scholars who gave experience a central role in their theories of human learning and development. We have come to call them the “foundational scholars of experiential learning”: William James, John Dewey, Kurt Lewin, Jean Piaget, Lev Vygotsky, Carl Jung, Mary Parker Follett, Carl Rogers, and Paulo Freire. Figure 1 depicts these foundational scholars of ELT and a summary of their contributions to experiential learning. Their contributions span over one hundred years, beginning at the end of the nineteenth century with William James, John Dewey, and Mary Parker Follett, and ending at the end of the twentieth century with the deaths of Carl Rogers and Paulo Freire.

Figure 1. Foundational Scholars of ELT



ELT is a dynamic, holistic theory of the process of learning from experience and a multi-dimensional model of adult development. The dynamic view of learning is based on a learning cycle driven by the resolution of the dual dialectics of action/reflection and experience/abstraction (see Figure 2). It is a holistic theory that defines learning as the major process of human adaptation involving the whole person. As such, ELT is applicable not only in the formal education classroom but in all arenas of life. The process of learning from experience is ubiquitous, present in human activity everywhere all the time. The holistic nature of the learning process means that it operates at all levels of human society from the individual, to the group, to organizations, and to society as a whole.

Figure 2. The Experiential Learning Cycle



To appreciate the holistic and dynamic nature of the learning cycle it is useful to examine its philosophical foundations in the radical empiricism of William James. James (1904) proposed radical empiricism as a new philosophy of reality and mind which resolved the conflicts between nineteenth-century rationalism and empiricism as expressed in the philosophies of idealism and materialism. For James, everything begins and ends in the continuous flux and flow of experience. In short, experience is all there is: “We start with the supposition that there is only one primal stuff or material in the world, a stuff of which everything is composed... we call that stuff ‘pure experience’” (1142). He goes on to write,

In this formulation the duality between the mind (thought) and physical world (thing) is resolved since both are experienced but with different characteristics, thought is the concrete here-and-now experience “redoubled” in reflection.... If it be the self-same piece of pure experience taken twice over that serves now as thought and now as thing... how comes it that its attributes should differ so fundamentally in the two takings? As thing, the experience is extended; as thought, it occupies no space or place. As thing, it is red, hard, and heavy; but who ever heard of a red, hard or heavy thought? (1153)

Dewey stressed the dynamic nature of pure experiencing in the learning cycle, noting that ordinary experience is conservative, tradition-bound, and prone to conformity and dogmatism, being culturally mediated by many previous trips around the learning cycle and saturated with previous conclusions. He emphasized that this conservative experience must be interrupted to initiate reflection and learning. He argued that it was necessary to reflect on experience in order to draw out the meaning in it and to use that meaning as a guide in future experiences; but he observed that the reflective process seemed to be initiated only by pure experiences that break out of conservative experiencing, such as when we are “stuck” with a problem or difficulty or “struck” by the strangeness of something outside of our usual experience (Dewey 1933).

The implication of the philosophy of radical empiricism for ELT and the experiential learning cycle is that it is not only the Concrete Experience mode of pure experiencing that is experiential; all modes of the learning cycle are experiences. Both modes of grasping experience—Concrete Experience (CE) and Abstract Conceptualization (AC)—and both modes of transforming experience—Reflective Observation (RO) and Active Experimentation

(AE)—are part of the experiential learning process. Many use the term *experiential learning* to refer to exercises and games used to involve students in the learning process. However, a classroom lecture may be an abstract experience but it is also a concrete one, when, for example, a learner admires and imitates the lecturer. Likewise, a learner may work hard to create an abstract model in order to make sense of an internship experience or experiential exercise. From the learner's perspective, solitary reflection can be an intensely emotional concrete experience and the action of programming a computer can be a highly abstract experience.

Since ELT is a holistic theory of learning that identifies learning style differences among different academic specialties, it is not surprising to see that ELT research is highly interdisciplinary, addressing learning and educational issues in many fields. ELT is being used extensively by experiential educators as a guide for practice in at least 30 fields and academic disciplines (Kolb & Kolb 2013). Included are research studies from every region of the world, with many contributions coming from the U. S., Canada, Brazil, the U. K., China, India, Australia, Japan, Norway, Finland, Sweden, the Netherlands, and Thailand. Since its first statement in 1971 (Kolb, Rubin & McIntyre 1971), there have been many studies using Experiential Learning Theory to advance the theory and practice of experiential learning. Since 2000, ELT research in many fields around the world has more than quadrupled. The current experiential learning theory bibliographies include over 4,100 entries dating between 1971 and 2016 (Kolb & Kolb 2016). A 2013 review of management education research (Arbaugh, DeArmond & Rau 2015) showed that 27% of the top-cited articles in management education journals were about experiential learning and learning styles. "Learning Styles and Learning Spaces" (Kolb & Kolb 2005) ranked second in a more extensive study of the 100 most-cited papers in management education research (Arbaugh & Hwang 2015), with papers about experiential learning and learning styles accounting for 9% of the total citations.

## Defining Experiential Learning

From the perspective of ELT there is a widespread idea of what experiential learning is that fails to capture the full potential of the process of learning from experience. A common usage of the term defines it as a particular form of learning from life experience, often contrasted with lecture

and classroom learning. Morris T. Keeton and Pamela J. Tate (1978) offered this definition of experiential learning: “[L]earning in which the learner is directly in touch with the realities being studied. It is contrasted with the learner who only reads about, hears about, talks about, or writes about these realities but never comes into contact with them as part of the learning process” (2). Thus, many people think about experiential activities such as exercises, role plays, ropes courses, games, and field projects when they hear the term *experiential learning*. A similar limited definition of experiential learning is found in theoretical scholarship. In *The Ambiguities of Experience*, the great organizational theorist James March (2010) contrasts his definition of experiential knowledge, “lessons extracted from the ordinary course of life and work,” with academic knowledge “generated by systematic observation and analysis by experts and transmitted by authorities” (9). In this view of experiential learning, the emphasis is often on direct sense experience and in-context action as the primary source of learning, often downplaying a role for thinking, analysis, and academic knowledge. The definition of experiential learning as in-context experiencing and action is not the meaning of experiential learning as defined in ELT. Such a definition includes only half of the learning cycle, ignoring the holistic, dialectic nature of the process of learning from experience. The learning cycle is driven by the integration of action and reflection and experience and concept.

The failure to view experiential learning as encompassing all four modes of the learning cycle and as applicable in all learning situations both in the classroom and in life is, we believe, the source of many of the practical difficulties encountered by experiential learning advocates in higher education. Most notably, there is a chasm between academic courses and experiential activities that reduces the effectiveness of both. A service-learning program, for example, can bring students in contact with the realities of social conditions that a sociology course seeks to explicate. Too often, however, the two activities are so separated that the benefits of classroom reflection and conceptual analysis are not integrated with the learners’ actions to bring change and improvement to the conditions they encounter in the service-learning project. The gulf is further expanded by the culture of higher education, which enshrines courses in the credit-hour time-block system, giving them and the professors who teach them high status while experiential programs are seen as ancillary and staffed by lower status student development professionals.



## Teaching around the Learning Cycle

The cycle of learning from experience is perhaps the best known and widely used concept of ELT. A Google image search for the words “learning cycle” produces a seemingly endless array of reproductions and variations of the cycle from around the world. The learning cycle was first applied in the late 1960s as part of a curriculum development project to use experiential learning methods in a required organizational psychology course for MBAs at the Sloan School of Management at MIT. The original course, a lecture format with 150 students, was a way to structure learning experiences that would bring the fifteen topics covered in the lecture syllabus into the room. Concrete experiences generated by exercises, business games, role plays, and cases provided a common experiential starting point for participants and faculty to explore the relevance of behavioral concepts for their work. Topics like motivation, perception, and group decision-making were organized around the learning cycle providing the experience, structured reflection and conversation exercises, conceptual material, and a personal application assignment. The teacher’s role was to manage a learning process that was basically learner-directed. They helped students to experience in a personal and immediate way the phenomena in their field of specialization. They stood ready with alternative theories and concepts as students attempted to assimilate their observations into their own conception of the topic. They helped students to deduce the implications of their conclusions for their own life and work and to test these implications through practical, real-world experience. The new approach proved quite successful and resulted in the first management textbook based on experiential learning (Kolb, Rubin & McIntyre 1971), which is now in its eighth edition (Osland et al. 2007).

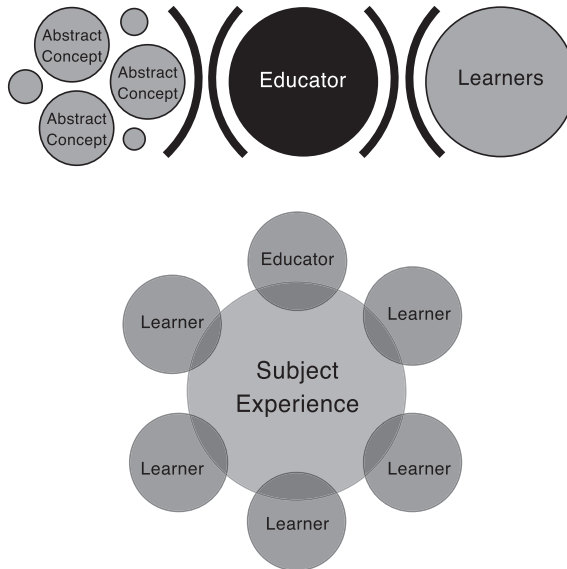
The most important aspect of the learning cycle is that it describes the learning process as a recursive circle or spiral as opposed to the linear, traditional information transmission model of learning used in most education, where information is transferred from the teacher to the learner to be stored in declarative memory for later recall. In the linear model, the learner is a passive recipient of information. Learners, having no direct contact with the subject, are unable to investigate, explore, and judge for themselves. They are left one-down in a power relationship with only the choice of “taking the teacher’s word for it.” Teachers, for their part, are left in a one-way interaction that is ultimately deadening and boring. Learners’ engagement is rewarded and

measured only by points for participation and not by their ability to inquire in depth.

For educators, the magic of experiential learning lies in the unique relationship that is created between the teacher, the learner, and the subject matter under study (see Figure 3). The experiential approach places the subject to be learned in the center to be experienced by both the educator and learner. Using the cycle of learning, all participants receive information through concrete experience of the subject matter and transform it through reflection and conceptualization and then transform it again by acting to change the world including what information is attended to in the new experience. They are both receivers of information and creators of information. This has a leveling effect on relationships, to the extent that all can directly experience the subject. Everyone has a perspective on the subject. Those with different learning styles, for example, will view the subject experience through their own way of processing experience. Questioning differences that arise from these multiple perspectives is the fuel for learning and new insights. Challenging the expert's viewpoint even becomes possible. This can be quite unsettling to novice experiential educators, but it also becomes a source of unpredictable new insight and learning for them. In becoming an experiential educator with this approach, the teacher also becomes an experiential learner. Parker Palmer (1998), a strong advocate for the subject-centered approach, put it this way:

The subject-centered classroom is characterized by the fact that the third thing (the subject) has a presence so real, so vivid, so vocal, that it can hold teacher and students alike accountable for what they say and do. In such a classroom there are no inert facts. The great thing is so alive that teacher can turn to student or student to teacher, and either can make a claim on the other in the name of that great thing. Here teacher and students have a power beyond themselves to contend with—the power of a subject that transcends our self-absorption and refuses to be reduced to our claims about it. (117)

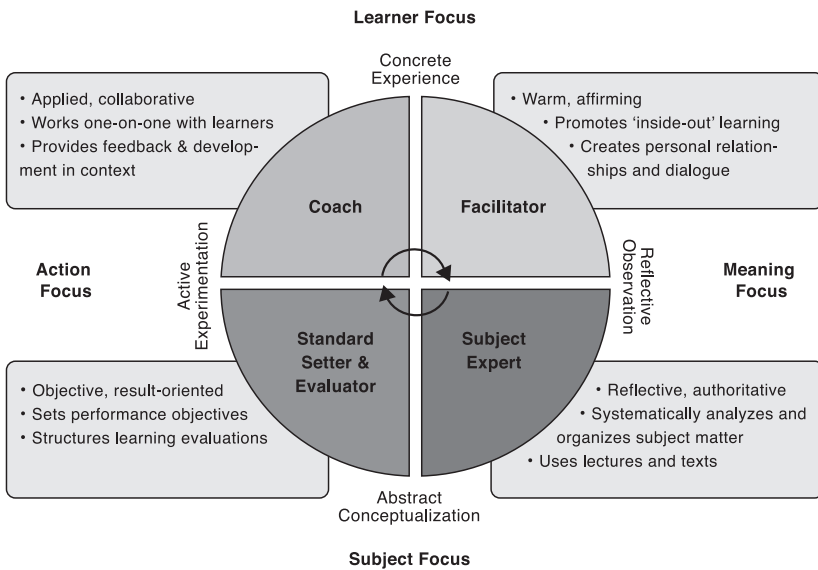
Figure 3. Subject Matter, Educator and Learner Relationships in the *Discourse* and *Experiential Learning* Models



Recently, we have created a framework to assist educators in their application of the ELT concepts of the learning cycle and learning style in the dynamic matching model of teaching around the learning cycle (Kolb et al. 2014). In our interviews and observations of highly successful educators, we find that they tend to organize their educational activities in such a manner that they address all four learning cycle modes—experiencing, reflecting, thinking, and acting—using some form of the dynamic matching model in the roles they adopt. We developed a self-assessment instrument called the Kolb Educator Role Profile (KERP) to help educators understand their own teaching approach from the perspective of teaching around the learning cycle.

The KERP describes four common educator roles: Facilitator, Subject Expert, Standard-Setter/Evaluator, and Coach. To help learners move around the learning cycle, educators must adapt their role, moving from Facilitator to Subject Matter Expert to Standard-Setter/Evaluator to Coach, as shown in Figure 4.

Figure 4. Educator Roles and Teaching around the Learning Cycle.



- *The Facilitator Role.* When facilitating, educators help learners get in touch with their personal experience and reflect on it. They adopt a warm affirming style to draw out learners’ interests, intrinsic motivation, and self-knowledge. They often do this by facilitating conversation in small groups. They create personal relationships with learners.
- *The Subject Expert Role.* In their role as subject expert, educators help learners organize and connect their reflections to the knowledge base of the subject matter. They adopt an authoritative, reflective style. They often teach by example, modeling and encouraging critical thinking as they systematically organize and analyze the subject matter knowledge. This knowledge is often communicated through lectures and texts.
- *The Standard-Setter/Evaluator Role.* As a standard setter and evaluator, educators help learners master the application of knowledge and skill in order to meet performance requirements. They adopt an objective results-oriented style as they set the knowledge requirements needed for quality performance. They create performance activities for learners to evaluate their learning.

- *The Coaching Role.* In the coaching role, educators help learners apply knowledge to achieve their goals. They adopt a collaborative, encouraging style, often working one-on-one with individuals to help them learn from experiences in their life context. They assist in the creation of personal development plans and provide ways of getting feedback on performance.

Most of us adopt each of these roles to some extent in our educational and teaching activities. This is in part because these roles are determined by the way we resolve fundamental dilemmas of education. Do we focus on the learner's experience and interest or on subject matter requirements? Do we focus on effective performance and action or on a deep understanding of the meaning of ideas? All are required for maximally effective learning. Individuals, however, tend to have a definite preference for one or two roles over the others because of their educational philosophy, their personal teaching style, and the requirements of their particular educational setting, including administrative mandates and learner needs. The KERP assessment instrument is designed to help educators sharpen their awareness of these preferences and to make deliberate choices about what works best in a specific situation. (The KERP is a free assessment available at <http://survey.learningfromexperience.com/>).

## **Learning Cycle Applications in Higher Education**

Dissatisfied with the application of experiential methods in the business classroom, Barbara Dyer and David W. Schumann (1993) developed an experiential learning laboratory classroom applied to their senior-level marketing advertising/promotion class. They addressed the shortcomings they saw by emphasizing two principles. First, they created a teacher/learner relationship that partnered with learners to facilitate their engagement with the learning cycle instead of the traditional information transfer approach as described above: "Educators have spent their time 'parroted' the instructional approaches of other teachers rather than 'partnering' experience and knowledge as intended by experiential learning models and the traditional laboratory method" (32). Second, they created a laboratory experience in marketing classrooms that went beyond a single concrete application experience to create a course structure that spiraled through nine iterations

around the learning cycle. The text assignments and lectures were integrated with experiences generated from two types of learning tasks, multiple group projects and multiple individual case studies. The traditional performance evaluations (multiple choice and essay exams) were eliminated altogether to give central focus on the recursive cycle of lecture, discussion, feedback, and hands-on experiences. At the completion of the course, students reported increased levels of critical thinking abilities and the capacity to apply and connect theoretical knowledge with real-life business application.

Cynthia A. Lengnick-Hall and Martha M. Sanders (1997) designed a learning system for graduate- and undergraduate-level management courses structured around the learning cycle to give students with different learning styles a variety of ways to master each segment of the course material. Results indicate that despite wide variety in their learning styles, experiences, academic levels, and interests, students demonstrated consistently high levels of personal effectiveness, organizational effectiveness, ability to apply course materials, and satisfaction with both course results and the learning process. The study also showed learning style differences in student ratings of various outcome measures; divergent learners rated their personal effectiveness higher than the non-divergent learners, while assimilating learners rated the lowest on the same outcome measure. Converging learners, on the other hand, rated their ability to apply course material significantly higher than did the non-converging learners, an indication of their tendency to seek out opportunities to apply what they have learned. Looking at the positive learning outcomes generated by the courses, the authors contend that high-quality learning systems are the ones in which extensive individual differences are matched with a variety of options in learning methods, thus creating opportunities for student behavioral, emotional, and intellectual transformation of lasting impact.

The Engineering and Technology College at Brigham Young University undertook a systematic change effort to introduce the ELT teaching around the learning cycle model to the faculty and conducted training sessions for the faculty in the use of the model (Harb et al. 1995). They developed sample curricula for teaching around the cycle that addressed questions posed by each quadrant of the learning cycle: Why, What, How, and What If. They followed a systematic change process for teacher development that involved 80% of the faculty for an introductory session and 35 faculty volunteers for the program. The program involved course development training and implementation of

fall-semester course designs that were evaluated by videotaping and review sessions by the faculty support groups. One faculty member evaluated the program as follows:

My effort as a faculty member to pass through the four types of learning activities has definitely increased.... The four-step process is definitely a practical and simple reference frame to use as a skeleton for any concept, technique or principle that needs to be taught. I believe that even though all of us as faculty and students may tend to have a dominant learning style, my experience has shown me that providing learning experiences in all four of the quadrants enhances learning for just about every person no matter what his dominant or preferred learning style quadrant may be. As a result, my effort in designing learning activities is much more diverse than it was previously. (64)

## Learning Style

The ELT concept of learning style and the Kolb Learning Style Inventory (KLSI) are also widely known and used in higher education, although the unique message of the experiential learning concept of learning style has been diluted by the presence of the many trait-based learning-style instruments that have emerged since the term and KLSI instrument were introduced in the late 1960s (Kolb, Rubin & McIntyre 1971). Since then, over one hundred other learning-style frameworks and assessments have been created, assessing a wide spectrum of human individuality—cognitive styles, preferences for sense modalities, Jungian personality types, study strategies, instructional preferences, preferences for learning alone, in groups, etc. While this is a testament to the multi-dimensional uniqueness of individual learners, the theory base and research evidence for these different learning-style frameworks vary widely. Consistent with the prevailing psychometric tradition, they describe learning styles as independent fixed traits or personality characteristics. Catherine Scott (2010), citing Carol Dweck (2007), argues that this trait approach is an “entity approach” to ability that promotes stereotyping and labeling rather than a “process approach” that emphasizes developmental potential and contextual adaptation. Trait-based learning-style frameworks advocate a matching model of education where it is hypothesized that instructional methods that match a student’s learning style will result in greater learning, an approach that is contrary to the ELT

approach to teaching around the learning cycle described above. There has been substantial critique of this matching model with few empirical studies supporting it (Cuevas 2015; Pashler et al. 2008). Unfortunately, these critics do not recognize the uniqueness of the ELT learning-style model and lump all learning-style models together to argue that the concept of learning style in general is useless.

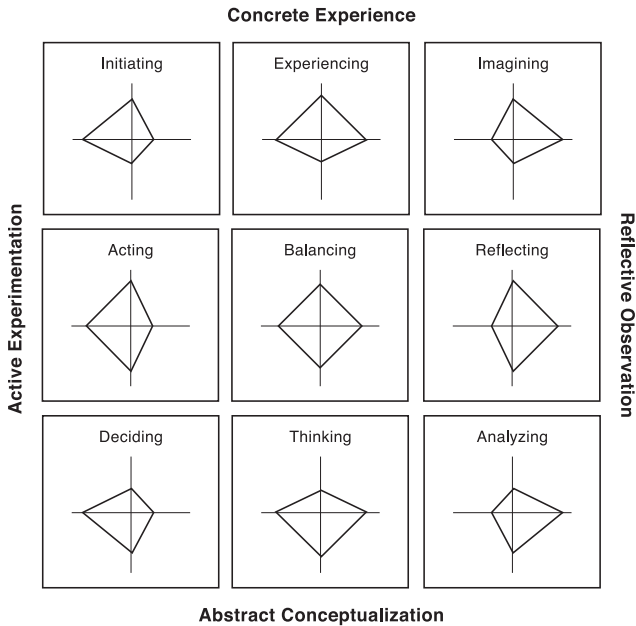
ELT posits that learning style is not a fixed psychological trait but a dynamic state resulting from synergistic transactions between the person and the environment. This dynamic state arises from an individual's preferential resolution of the dual dialectics of experiencing/conceptualizing and acting/reflecting. Learning styles are, thus, different ways that individuals use the learning cycle. Experiencing, reflecting, thinking, and acting are not separate, independent entities but inextricably related to one another in their dialectic opposition. They are mutually determined and in dynamic flux. For the learning cycle, this means that there is not just one way to go through the learning modes but many different ways that vary for different individuals and their learning tasks. For learning style, this means that an individual's style of learning is not an independent personality trait but a habitual process of learning that emphasizes some learning modes over others. This recognition of a style preference as emphasizing strengths in some learning modes as well as some weaknesses in opposite modes opens development potentialities and the challenge of full-cycle learning to develop the ability to engage all modes of the learning cycle in a holistic and fluid manner.

## **The New Nine Learning Style Typology and Learning Flexibility in the KLSI 4.0**

The latest version of the KLSI (Version 4.0—Kolb & Kolb 2011, 2013) was designed to clarify the dynamic relationship between the learning cycle and learning style through a refined definition of the different kite shapes that portray typical interdependent preferences for the four modes of the learning cycle. In addition, the concept of learning flexibility is introduced, allowing learners to assess their ability to engage all modes of the learning cycle as the situation dictates. The learning style types can be systematically arranged on a two-dimensional learning space defined by the Abstract Conceptualization-Concrete Experience and Active Experimentation-Reflective Observation dimensions of the learning cycle (see Figure 5).



Figure 5. The nine learning styles in the KLSI 4.0



*The Initiating style* is characterized by the ability to initiate action in order to deal with experiences and situations. It involves active experimentation (AE) and concrete experience (CE).

*The Experiencing style* is characterized by the ability to find meaning from deep involvement in experience. It draws on concrete experience (CE) while balancing active experimentation (AE) and reflective observation (RO).

*The Imagining style* is characterized by the ability to imagine possibilities by observing and reflecting on experiences. It combines the learning modes of concrete experience (CE) and reflective observation (RO).

*The Reflecting style* is characterized by the ability to connect experience and ideas through sustained reflection. It draws on reflective observation (RO) while balancing concrete experience (CE) and abstract conceptualization (AC).

*The Analyzing style* is characterized by the ability to integrate and systematize ideas through reflection. It combines reflective observation (RO) and abstract conceptualization (AC).

*The Thinking style* is characterized by the capacity for disciplined involvement in abstract and logical reasoning. It draws on abstract conceptualization (AC) while balancing active experimentation (AE) and reflective observation (RO).

*The Deciding style* is characterized by the ability to use theories and models to decide on problem solutions and courses of action. It combines abstract conceptualization (AC) and active experimentation (AE).

*The Acting style* is characterized by a strong motivation for goal directed action that integrates people and tasks. It draws on active experimentation (AE) while balancing concrete experience (CE) and abstract conceptualization (AC).

*The Balancing style* is characterized by the ability to adapt by weighing the pros and cons of acting versus reflecting and experiencing versus thinking. It balances concrete experience (CE), abstract conceptualization (AC), active experimentation (AE), and reflective observation (RO).

## **Learning Flexibility**

The KLSI 4.0 also includes an assessment of learning flexibility by measuring how individuals change their learning style in response to different situational demands. The learning style types described above portray how one prefers to learn in general. Many individuals feel that their learning style type accurately describes how they learn most of the time. They are consistent in their approach to learning. Others, however, report that they tend to change their learning approach depending on what they are learning or the situation they are in. They may say, for example, that they use one style in the classroom and another at home with their friends and family. These are flexible learners.

Since a specialized learning style represents an individual preference for only one or two of the four modes of the learning cycle, its effectiveness is limited to those learning situations that require these strengths. Learning

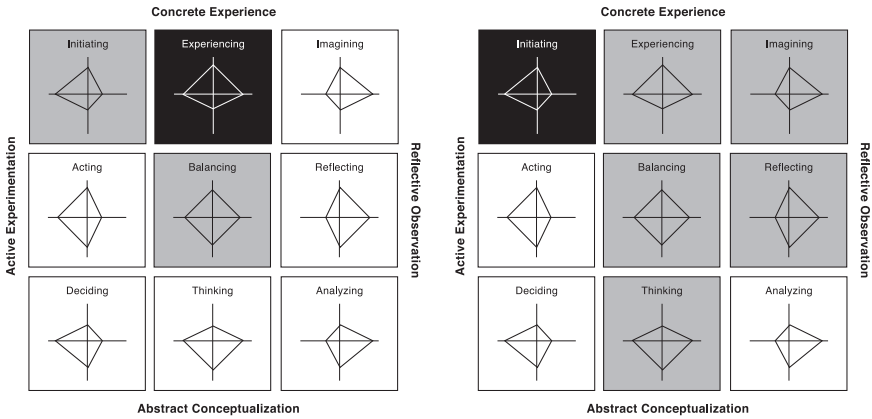
flexibility indicates the development of a more holistic and sophisticated learning process. It is based on the theory that if people show systematic variability in their response to different contextual learning demands, one could infer a higher level of integrative development because systematic variation would imply higher order decision rules or meta-cognitive processes (Kolb & Kolb 2009) for guiding behavior. A number of researchers have found evidence to support this link between learning flexibility and integrative development (Kolb 2015).

Garima Sharma and David A. Kolb (2010) found that individuals with an analyzing learning style tended to be the least flexible, suggesting that it is the orientation toward abstraction and reflection characteristic of the analyzing learning style that leads to inflexibility. Since this is the style that is the most favored and most developed in formal education systems, one might ask if this abstract approach is producing the unintended negative consequence of learning inflexibility. Emphasis on conceptual learning at the expense of contextual learning may lead to dogmatic adherence to ideas without testing them in experience, what Alfred North Whitehead (1997) called “the fallacy of misplaced concreteness.” Contextual learning approaches like experiential learning (Kolb 2015), and situated learning (Lave & Wenger 1991) may help education to nurture integrated learners who are as sensitive to context as they are to abstract concepts.

Learning flexibility is the ability to use each of the four learning modes to move freely around the learning cycle and to modify one’s approach to learning based on the learning situation. Experiencing, reflecting, thinking, and acting each provide valuable perspectives on the learning task in a way that deepens and enriches knowledge. When one can engage all learning styles in their learning process, they are using the most powerful form of learning that we call *full cycle learning*. Learning flexibility broadens the learning comfort zone and allows us to operate comfortably and effectively in more regions of the learning space, promoting deep learning and development.

In addition to providing a measure of how flexible one is in their approach to learning, the KLSI 4.0 also provides an indication of which learning space they move to in different learning contexts—their backup learning styles. Figure 6 shows the backup styles of Initiating and Balancing for an Experiencing type with a low flexibility score and the backup styles of Experiencing, Imagining, Balancing, Reflecting and Thinking for an Initiating learning style with a high flexibility score. High flexibility individuals tend to

Figure 6. Backup Learning Styles for a Low and a High Flexibility Learner



show more backup styles and hence a greater ability to move around the learning cycle.

## Learning Style Applications in Higher Education

Matthew Perini and Harvey Silver have succinctly summarized the educational value of learning style assessments:

In our experience, learning-style assessments have proven to be wonderful tools for promoting conversations about learning, building teachers' and students' metacognitive capacities, increasing student engagement, and helping teachers find hooks into content for struggling students. We've also found benefits for differentiation: teachers who assess their own and students' styles are typically more willing and able to implement a wide variety of instructional strategies in their classrooms... Along with Bernice McCarthy and David Kolb, and supported by Robert Sternberg's research, we've long argued that teaching to the full range of styles is far better and more consistently leads to higher achievement across grade and content levels than confining students to a single style of instruction. (Cited in Varlas 2010, 2)

Educators in higher education have used ELT learning style information to increase teaching effectiveness and maximize student learning in a number of different ways (see Kolb & Kolb 2006). Studies have investigated the relationship between student learning styles and the learning environment of

their academic field, examining the implications for academic and professional development. Other work has examined student and faculty learning style differences and how this information can be used to implement curricula and instructional methods appropriate to individual's style of learning. A third body of work has examined relationships between specific learning styles and academic performance and skill development.

For learners, knowledge of their learning style is a useful tool for developing meta-cognitive learning skills (Kolb & Kolb 2009). This information can help learners better understand the learning process themselves as learners and the appropriate use of learning strategies based on the learning task and environment. When individuals engage in the process of learning by reflective monitoring of the learning process they are going through, they can begin to understand important aspects of learning: how they move through each stage of the learning cycle, the way their unique learning style fits with how they are being taught, and the learning demands of what is being taught. This comparison can result in strategies for action that can be applied in their ongoing learning process. For example, John and Tanya Reese (1998) created "Connecting with the Professor" workshops to help law students bridge the differences between the learning spaces created by law school professors and their own learning space preferences resulting from their individual learning style. Recognizing that law school professors were unlikely to change their course and learning style, they worked with students to develop the learning skills needed to succeed in the learning spaces created by their professors. Another strategy was to supplement the learning space that is given with other spaces that suit the student's style. For example, a person who learns best by imagining may want to form a group of classmates to talk about the material in the course, or a thinking style person may want to prepare in advance by reading about material to be covered in the course.

The latest learning style research in virtual learning spaces is adaptive learning systems that integrate learning style information with online learning programs. Early adaptive learning systems used learning style questionnaires to assess a student's style and then presented instruction information in a way that matched that style. More recent research on automatic detection of learning styles gathers information from the students' interaction with the educational system on an ongoing basis, allowing the system to adapt to student learning style changes in real time. Automatic detection of learning style is harder to implement, requiring determination of observable behaviors

to track in order to get reliable information to build a model of the student's learning style. Juan Feldman, Ariel Monteserin, and Analia Amandi (2015), however, report several studies where the automatic detection system achieved 70% to 90% accuracy when compared to learning style questionnaire responses.

Studies of these automatic learning style systems have discovered that a substantial number of learners do not have a stable, consistent learning style but show learning style flexibility, adapting their learning approach in different contexts and times. For example, Mario Soflano, Thomas M. Connolly, and Thomas Hainey (2015), in an adaptive game-based learning activity, found that while participants generally adopt the same learning style in the game as that recorded in the pre-assessment questionnaire, a substantial number change their learning style as the game progresses, usually in response to mistakes made. This learning style flexibility has also been shown in other studies. A study by Carol Griffiths and Görsev Inceçay (2016) of Turkish students found that performance on an English proficiency exam was related to what they called "style stretching," with high performers using a more eclectic range of styles. Other studies have shown that students change their learning style depending of the course they are in. Cheryl Jones, Kouider Mokhtari, and Carla Reichard (2003) examined the extent to which community college students' learning style preferences vary as a function of discipline. They found significant differences in students' learning style preference across four different subject-area disciplines: English, math, science, and social studies. The results indicate that 83% of the students switched learning styles for two or more disciplines, suggesting that students are capable of flexing their learning strategies to respond to the discipline-specific learning requirements. Similarly, Quintana Clark, James L. Mohler and Alejandra J. Magana (2015) studied engineering students and found that 36% of the students used a different learning style studying mathematics and English.

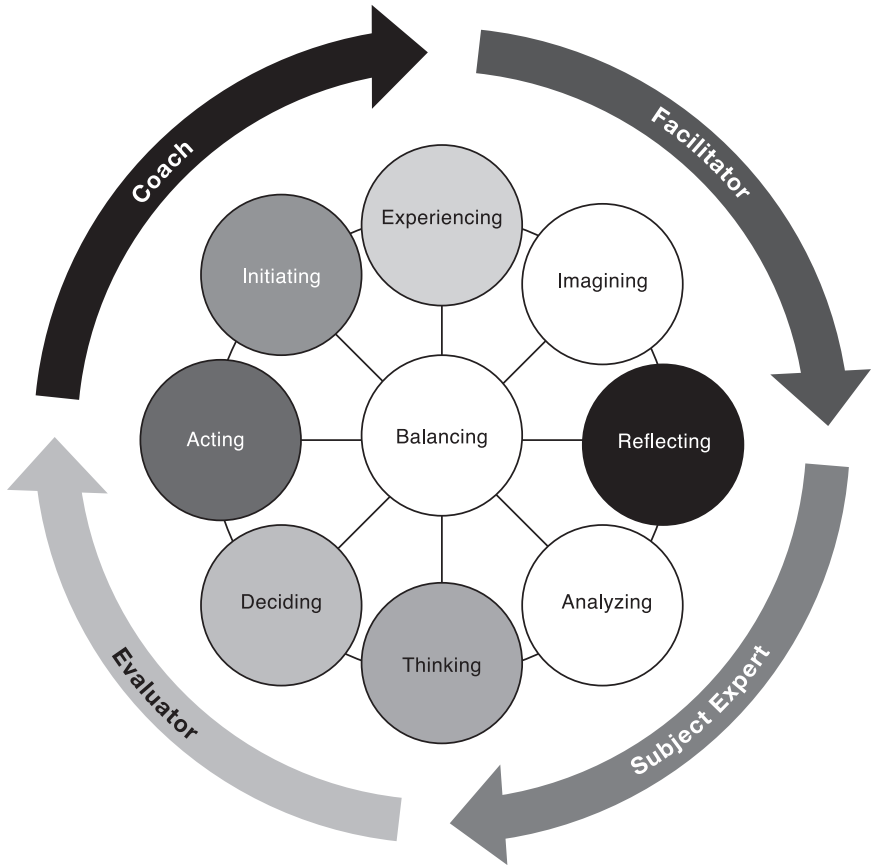
A drawback of many of the adaptive learning system approaches is their reliance on the questionable approach of matching learning style and instructional method, as opposed to teaching around the learning cycle to develop all styles. An exemplary study from Finland, where experiential learning has a long history in higher education, created a learning style module that was integrated into the multimedia platform course management system used to teach a Master of Information Technology degree program (Hakala & Laine 2016). The learning style module was available to both the student and

the educator and designed not to change the students' learning environment to match their learning styles but to make it more diversified and versatile to expand learning style capabilities. Since the instructor has learning style information for all students, and students have their own scores, it is possible to have conversations requesting more attention to "my style," and the student can work to deliberately expand his or her style capabilities by practicing a less preferred learning approach.

The ELT dynamic matching model of teaching around the cycle offers the experiential educator a more complex but more realistic model for guiding educational practice than do simple prescriptions to match teaching and learning style. In addition to considering the relationship between educator and learner, one must also consider the match of learning approach with the subject matter. Daniel T. Willingham (2005), in fact, considers this more important than matching learning and teaching style. All of this must be determined in the light of the multiple performance, learning, and development objectives of most educational activities. Professions with precise performance requirements such as surgery or software development may make the standard-setter/evaluator role paramount and require development of thinking, deciding, and acting learning styles. Art education, on the other hand, may make the facilitator role paramount and require development of experiencing, imagining, and reflecting learning styles (Eickmann, Kolb & Kolb 2003). In addition to specialized academic training, teachers often have objectives concerning the growth and creativity of their students. In making students more "well-rounded," the aim is to develop the weaknesses in the students' learning styles to stimulate growth in their ability to learn from a variety of learning perspectives.

Figure 7 shows the nine-style experiential learning cycle and the corresponding educator roles that match them; for example, the coach role is the most appropriate for the experiencing, initiating, and acting styles, while the facilitator role connects with the experiencing, imagining, reflecting styles.

Figure 7. Dynamic Matching of Educator Roles and Learning Style



The dynamic matching model suggests that matching style with role is important to connect with and engage learners. Michael Raschick, Donald E. Maypole, and Priscilla Day (1998) find that social work students whose learning styles were similar to their field supervisors along the active experimentation-reflective observation continuum would rate their field experience with them higher. We suggest that the finding is most relevant for the supervisors at the beginning point of the learning cycle, when matching their teaching techniques to learners' preferences offers encouragement to move through the rest of the learning cycle. Individual learning styles can be an entry point through which learners enter a particular learning space,



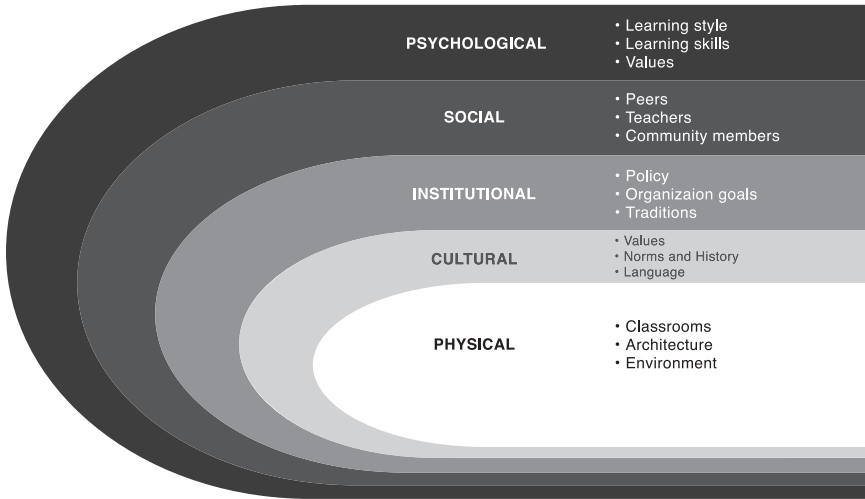
but most learning requires that they continue to actively move around the learning cycle using other learning styles to acquire increasingly complex knowledge and skills and capacity to adapt to the wider demands of a given learning environment. While Figure 7 depicts an idealized sequential progression through the educator roles and learning styles, in most cases, a curriculum design will be based on a sequence of activities and instructional techniques that fits the subject matter and learning objectives that may or may not fit such an orderly progression. In considering a design, it is useful to consider for each segment the teaching role to adopt, the learning style that you want to engage, and the choice of instructional technique best suited to the learning style and role. The dynamic matching model recognizes that not only educators have individual role preferences, and learners have preferred learning styles, but also that both can develop the capacity to adapt their respective roles and styles to one another and the learning situation at hand.

Experiential education is a complex relational process that involves balancing attention to the learner and to the subject matter while also balancing reflection on the deep meaning of ideas with the skill of applying them. The dynamic matching model for “teaching around the learning cycle” describes four roles that educators can adopt to do so: facilitator, subject expert, standard-setter/evaluator, and coach. Using the Educator Role Profile, we find that to some extent educators do tend to teach the way they learn, finding that those with concrete learning styles are more learner-centered, preferring the facilitator role, while those with abstract learning styles are more subject-centered, preferring the expert and evaluator roles (Kolb et al. 2014). However, with practice, both learners and educators can develop the flexibility to use all roles and styles to create a more powerful and effective process of teaching and learning.

## Learning Spaces

Many factors contribute to the creation of a learning space. A learning space can be either facilitative to learning or a hindrance: the physical space, the constraints of time, the learner’s psychological state, institutional constraints and policies and so on. The ELT dimensions of learning space include physical, cultural, institutional, social and psychological aspects and they come together in the experience of the learner (Figure 8).

Figure 8. Dimensions of Learning Space



This concept of learning space builds on Kurt Lewin's field theory and his concept of life space (1951). For Lewin, the person and the environment are interdependent variables, a concept Lewin translated into a mathematical formula,  $B=f(p,e)$ , where behavior is a function of person and environment. As Alfred J. Marrow puts it, "the life space is the total psychological environment which the person experiences subjectively" (1969, 35). Teachers objectively create learning spaces by the information and activities they offer in their course, but this space is also interpreted in the students' subjective experience through the lens of their learning style, attitudes, beliefs, and life experiences. One's position in a learning space defines their experience and thus defines their "reality." Lewin stresses the importance for education of defining the learning space in terms of the learner's experience, "in the way that it exists for that person at that time.... A teacher will never succeed in giving proper guidance to a child if he does not learn to understand the psychological world in which that child lives.... To substitute for that world of the individual the world of the teacher, of the physicist, or of anybody else is to be, not objective, but wrong" (quoted in Cartwright 1951, 62).

In our recent research we have focused on the characteristics of learning spaces that maximize learning from experience and have developed principles

for creating them (Kolb & Kolb 2005). For a learner to engage fully in the learning cycle, a space must be provided to engage in the four modes of the cycle—feeling, reflection, thinking, and action. It needs to be a hospitable, welcoming space that is characterized by respect for all. The space should welcome genuine conversation among equals. It needs to be safe and supportive, but also challenging. It must allow learners to be in charge of their own learning and allow time for the repetitive practice that develops expertise.

## **Learning Space Applications in Higher Education**

Engagement in learning is inevitably fraught with emotions of hope and fear. The hope is for mastery and understanding and the empowerment it brings. The fear has many faces: to make a mistake, to fail, to look stupid, to be embarrassed and humiliated in front of others, even to question one's personal identity and self-worth. No one is immune from the tugs and pulls of hope and fear. The young child on the first day of school and the executive beginning a coaching relationship both experience this paradoxical blend of feelings about the unknown that lies ahead. While the child may be scarcely able to hide his terror, the mature executive is probably able to mask or even deny his fear. For both, however, not knowing is the doorway to knowing, and to open the door is an act of courage.

As educators, our challenge is to recognize the hopes and fears of learners and to create a learning space that respects, supports, and empowers them to overcome fear and take courageous action toward mastery. In defining our approach to the socio-emotional factors in the creation of learning spaces (Baker, Jensen, & Kolb 2002), we have been inspired by the concept of hospitality as articulated by Henri Nouwen (1975) and Parker Palmer (1983, 1998). Calling on numerous biblical stories that emphasize welcoming the stranger, they describe this challenging and supportive learning space as one that welcomes the stranger in a spirit of hospitality where “students and teachers can enter into a fearless communication with each other and allow their respective life experiences to be their primary and most valuable source of growth and maturation” (Nouwen 60).

As an educator who embodies this spirit of hospitality, Samuel DeVries, the Associate Dean of Mathematics and Technology at Cuyahoga Community College, created an experiential “learning to learn” course focused on

transforming students' math learning identity from one of anxious inferiority ("I don't do math") to one of confident self-efficacy ("I can totally do math") as well as improving students' math learning performance in developmental mathematics courses (Hutt 2007).

It is estimated that over 60% of the general population suffers from performance-inhibiting anxiety related to math. Students in postsecondary education are failing college developmental math courses at an alarming rate, often exceeding 50%, leading to a shortage of people with the requisite level of math credits to complete a two-year college degree. The degree completion rate among the twenty thousand-plus students in one community college was reported as low as 9% over a six-year period.

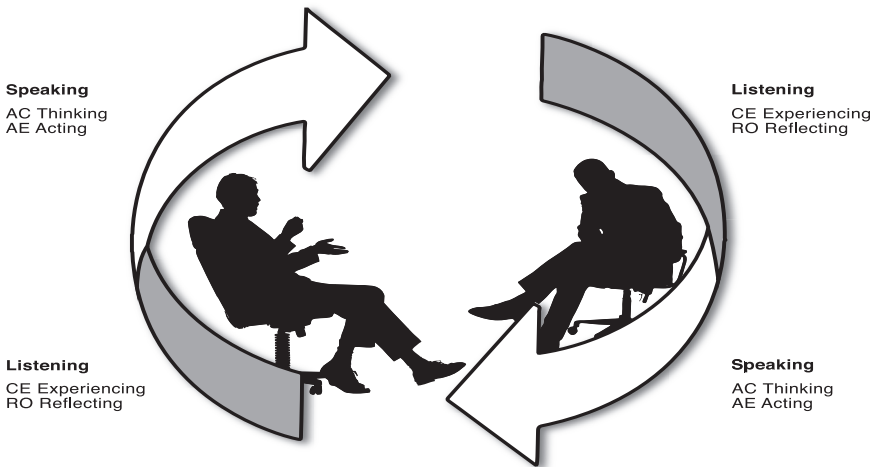
This staggering math failure statistic did not deter DeVries from creating a trusting learning space that was safe and inviting enough for his students to take risks and abandon habitual behaviors, and negative feelings and perceptions related to math anxieties. He created a conversational learning group where students were encouraged to actively engage in self-reflection about their learning practices and beliefs about themselves. The teachers modeled transformation leadership behavior, involving students in the learning space by being authentically present themselves. Through self-directed learning, students began to use inquiry, self-disclosure, conversation, and reflection to discover things about themselves as learners. Self-examination allowed students to learn to manage the motivation and volition necessary to persist through difficult courses. Self-directed learning behaviors (such as follow-through) or self-defeating behaviors (such as procrastination or the acting out of struggles with authority) were all topics of the inquiry, with the students themselves being the subjects of their discoveries.

Results from DeVries's research (Hutt 2007) showed that the experiential course content, teachers' conscious attention to students' learning processes and students' reflections on their learning experiences had a positive impact on learning. Students' mathematics anxiety was reduced, and they felt safer, more confident, and efficacious about themselves as learners. Students in the "learning to learn" course performed a letter grade better than controls in their developmental math course. Students' learning style preferences played an interesting role in the findings. Typically in mathematics courses, students with an abstract "thinking" learning style preference, which tends to match that of their instructor's teaching style, perform better than students with other learning styles. This learning style difference was erased for students in

the experiential course where students of all learning style preferences earned better grades than controls. DeVries maintained that to effect such change in students' belief about themselves as learners, teachers need to create a safe learning space characterized by unconditional positive regard toward the students (Rogers 1951).

Equally important is the creation of learning spaces that stimulate inquiry, open minds, and create good learning conversations, enabling participants to move from the experience to deep reflection, conceptualization, and action. Conversation is the most ubiquitous and common form of experiential learning. Indeed, one could say that the purpose of conversation is learning. In conversation, individual cycles of learning merge in a mutual exchange of speaking and listening. In listening, we experience the other and reflect on what they are saying. In speaking, we think and formulate intentions about how to respond and act to express them. David E. Hunt (1987) suggests that this is a learning spiral shared between individuals in human interaction. People relate to one another in a pattern of alternating “reading” and “flexing” that mirrors the experiential learning process. When one person is reading—receiving feedback (CE) and formulating perceptions (RO)—the other person is flexing—creating intentions based on those perceptions (AC) and acting on them (AE). As the exchange continues, both parties alternate between reading and flexing (see Figure 9).

Figure 9. The Conversational Learning Cycle



Making space for conversation can take many forms: making physical space, such as when a manager moves from behind his or her desk to join colleagues around a table; making temporal space, such as when a family sets aside weekly time for family conversation; or making emotional space through receptive listening. It is easy to become so focused on the conversation itself, on what is said, and how speech flows from one participant to another, that one fails to notice the bounded space that holds and shapes the conversation. Conversation cannot exist without a receptive space to hold it. A conversational learning space has two faces—boundaries that define and protect a conversational space and the internal processes such as group composition, rituals and norms that shape the conversational interaction. As conversations progress, these processes shape the conversation and at the same time define boundaries that define the space. These processes determine what can be said and not said, what and who is heard and not heard, who has voice and who does not have voice in the conversation. At the same time, the processes create boundaries that define who is in and who is out of the conversation. There is a paradoxical quality to conversational boundaries. Conversation across boundaries is difficult, and boundaries can block conversation, yet the space created inside the boundaries can create enough safety for the open exploration of differences across various dialectical continua. “From this perspective, boundaries are not confines but ‘shape-givers’ that can provide us with healthy space to grow.... [B]oundaries are not prisons, rather, they serve an essential function to make our existence more alive and vibrant” (Wyss-Flamm 2002, 315).

In *Conversational Learning* (Baker, Jensen & Kolb 2002), we described the conversational learning space as defined by five dialectic dimensions. Good conversation is more likely to occur in spaces that integrate thinking and feeling, talking and listening, leadership and solidarity, recognition of individuality and relatedness, and discursive and recursive processes. When the conversational space is dominated by one extreme of these dimensions (for example, talking without listening), conversational learning is diminished. Dialectical inquiry aspires to holism through the embracing of differences and contradictions. It begins with contradictions, or literally “opposing speeches.” By taking the most opposite imaginable point of view, one increases the chance of encompassing the whole situation. The dialectical dimensions of the conversational space can open a conversational process where opposing ideas can be explored, resolved, or embraced.

As an example of application of conversational learning in the educational practice, we cite the institution-wide introduction of an experiential seminar-based curriculum for undergraduates at Case Western Reserve University. Introduced as a pilot program in 2002, the program known as SAGES (Seminar Approach to General Education and Scholarship) was an ambitious undergraduate reform initiative based on the philosophy of experiential learning. The reform was not a radical change, but, for better or worse, was introduced within the confines of the traditional block scheduled course/credit-hour curricular system. Like most major curricular reform projects, it initially was met with resistance from various stakeholders of the university; that is, the expanded general education requirements of the SAGES Program cut into credit hours that professional schools and departmental majors wanted to keep in their control for their programs. The change process required major negotiation and compromise to gain approval but was eventually fully implemented to the university-wide undergraduate education curriculum at Case in the fall of 2005. Thanks to an inclusive and respectful planning process that stayed squarely focused on the SAGES vision, the curriculum has continued to evolve from the specifics of the pilot program and it continues in its basic outlines to this day.

CWRU President Hundert, in his address to the SAGES faculty in 2005, summarized the educational vision and philosophy embraced by core SAGES faculty reformers and their rationale for embracing an experiential learning approach to seminar education:

Achieving higher-order intellectual skills is not easy to do alone or even in peer groups, whether in science or the humanities. Students need support and confidence-building to master and apply abstract concepts, to question familiar ideas, and to solve complex problems. Too often, traditional university teaching encourages students to “borrow” understanding from the professor or textbook long enough to pass an exam. At Case, we want the students to build understandings and cultivate skills that they will retain for the rest of their lives. This kind of knowledge cannot be acquired passively, by listening to lectures.

Students create knowledge for themselves by building on what they already know. They each have their own personal ecology of learning, their individual toolkit of learning skills. But their continuing development as learners and thinkers requires active engagement in a supportive social setting; hence the seminar format. For most students, the traditional lecture format supplies answers

too readily, short-circuiting their need to coordinate their own performance and cognition. Although students welcome it, traditional, authoritative, “professorial” intervention unwittingly undermines most students’ efforts to develop the patience, self-confidence, and persistence they need to create complex representations and abstractions. (Kolb et al. 2005)

From the very beginning, SAGES instructors aspired to create an opportunity where all seminar participants worked together to produce a collective team product through conversation. For such a teamwork experience to emerge, it required significant time and effort from all the seminar participants to engage in discussions with openness to diversity of views and willingness to critically re-examine their previously held world views. As the SAGES pilot case exemplifies, the ideal SAGES seminar learning space was kept alive and sustained by continuous back-and-forth movement of the principles of conversational learning as students and instructors committed themselves to creating knowledge together by building on each other’s ideas and perspectives.

Seminar sections that reported high levels of satisfaction at the end of the semester shared a common trait: students could point to the specific learning outcomes derived from their participation in the seminars. Those outcomes were broadly of three distinct levels: first, they became able to look at the world at large or at a particular phenomenon from different perspectives; second, the seminar experience helped them discover their own interests and feel inspired to pursue their line of inquiry on their own or continue to explore the topic in conversation with others; and third, learning was collective in nature and it was achieved when the entire class worked collaboratively to create knowledge together.

From the students’ perspective, the specific actions and behaviors instructors demonstrated in the seminars significantly contributed to the students’ positive learning experience. What follows are the summary of six critical actions seminar instructors exhibited in the seminars.

*Not at the center of class.* Participants reported having a positive experience in the seminars where instructors were not at the center of the class. Effective instructors were fully present in the class, skillfully deflected attention from themselves, and focused on opening and freeing the space for students’ expression of ideas and opinions.



*The instructor treats us as equals.* In an engaging seminar, instructors maintained an egalitarian stance toward students. In students' perception, equality was related to the degree to which their opinions and points of view were respected and valued on various decision-making processes of the course, such as defining the readings and assignments. Instructors who treated students as equals expressed genuine interest in students' personal lives and ideas.

*Challenging and supportive.* During the seminar sessions, it was very common for students to withdraw their first attempt to introduce a controversial idea or diverging opinion. In an engaging seminar, students reported that the instructor challenged them and held them accountable for their statements or questions in a supportive manner. The challenge and support were expressed as question, demand, or encouragement for the students to dig deeper into an idea or think through their line of arguments.

*The instructor knows me.* A typical undergraduate class is conducted in large lecture halls. Such a learning environment makes it virtually impossible for the instructors and students to engage in a one-on-one interaction. In contrast, the small size SAGES seminars provided opportunities for instructors and students to relate in a much closer and intimate manner. Such a close instructor-student relationship was further enhanced by the intense advising process built into the SAGES curriculum. SAGES instructors not only could identify their students by their names, but they also came to know their students' personal lives and aspirations at a much deeper level.

*The instructor is knowledgeable.* It mattered a lot to students that their teachers be knowledgeable. While the seminar format did not require instructors to give lectures or to deliver specific content on a regular basis, students greatly valued instructors' command of areas of expertise that enhanced the quality of discussions.

*Sustaining the seminar.* It is not an easy task to maintain a high level of student engagement for a prolonged period of time in a seminar. Students' energy level, interests, and attention span naturally tend to fluctuate over the life of the seminar. Seminar instructors played a fundamental role in sustaining a lively seminar atmosphere by providing a basic structure, guiding and sustaining students' attention and focus by punctuating their experience, and finally by modeling an ideal seminar behavior.

## Conclusion

We have described how experiential educators from many disciplines in higher education use core concepts of Experiential Learning Theory—the cycle of learning from experience, learning style, and learning space—to enhance their teaching effectiveness and increase student engagement and learning. Beyond these applications, we encourage educators to revisit the works of the foundational scholars of experiential learning described in Figure 1. You will find that, far from being outdated relics of the last century, their insights offer great wisdom about all of the many problems that trouble higher education today. As for the future, we believe that experiential learning will play a central role in transforming higher education in the face of the “creative destruction” of educational technology, providing a learning platform to rebuild the educational system to empower individual learners and build learning communities.

## References

- Arbaugh, J. B. and Alvin Hwang. 2015. “What Are the 100 Most Cited Articles in Business and Management Education Research, and What Do They Tell Us?” *Organization Management Journal* 12, no. 3: 154–75.
- Arbaugh, J. B., Sarah DeArmond, and Barbara L. Rau. 2013. “New Uses for Existing Tools? A Call to Study Online Management Instruction and Instructors.” *Academy of Management Learning & Education* 12, no. 4: 635–55.
- Baker, Ann C., Patricia J. Jensen, and David A. Kolb. 2002. *Conversational Learning: An Experiential Approach to Knowledge Creation*. Westport, CT: Quorum Books.
- Bethell, Sally, and Kevin Morgan. 2011. “Problem-based and Experiential Learning: Engaging Students in an Undergraduate Physical Education Module.” *Journal of Hospitality, Leisure, Sport and Tourism Education* 10, no. 1: 128–34.
- Bielefeldt, Angela R., Bruce W. Berdainer, Kevin M. Caves, Mandar M. Dewoolkar, and Kurtis G. Paterson. 2011. “Diverse Models for Incorporating Service Projects into Engineering Capstone Design Courses.” *International Journal of Engineering Education* 27, no. 6: 1206–20.
- Brower, Holly H. 2011. “Sustainable Development through Service-learning: A Pedagogical Framework and Case Example in a Third World Context.” *Academy of Management Learning and Education* 10, no. 1: 58–76.
- Boyatzis, Richard E., Scott S. Cowen, and David A. Kolb, eds. 1995. *Innovation in Professional Education: Steps on a Journey from Teaching to Learning*. San Francisco: Jossey-Bass.

- Cartwright, Dorwin. 1951. *Field Theory in Social Science: Selected Theoretical Papers*. Chicago: University of Chicago Press.
- Clark, Quintana, James L. Mohler, and Alejandra J. Magana. 2015. "Learning Style Dynamics." Presentation at the American Society for Engineering Education Conference, Seattle, WA.
- Cuevas, Joshua. 2015. "Is Learning Styles-based Instruction Effective? A Comprehensive Analysis of Recent Research on Learning Styles." *Theory and Research in Education* 13, no. 3: 308–33.
- Dewey, John. 1938. *Experience and Education*. New York: Simon and Schuster.
- . 1933. *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process*. New York: D.C. Heath.
- Dweck, Carol S. 2007. "The Perils and Promises of Praise." *Educational Leadership* 65, no. 2: 34–39.
- Dyer, Barbara, and David W. Schumann. 1993. "Partnering Knowledge and Experience: The Business Classroom as Laboratory." *Marketing Education Review* 3: 32–39.
- Eickmann, Paul, Alice Kolb, and David A. Kolb. 2003. "Designing Learning." In *Managing as Designing: Creating a New Vocabulary for Management Education and Research*, edited by Richard J. Boland and Fred Collopy, 241–247. Stanford, CA: Stanford University Press.
- Feldman, Juan, Ariel Monteserin, and Analia Amandi. 2015. "Automatic Detection of Learning Styles: State of the Art." *Artificial Intelligence Review* 44, no. 2: 157–86.
- Foy, Nancy. 1977. "Action Learning Comes to Industry." *Harvard Business Review* 55, no. 5: 158–68.
- Fuller, Ian C. 2012. "Taking Students Outdoors to Learn in High Places." *Area* 44, no. 1: 7–13.
- Griffiths, Carol, and Görsev İnceçay. 2016. "Styles and Style-Stretching: How are They Related to Successful Learning?" *Journal of Psycholinguistic Research* 45, no. 3: 1–15.
- Gurpinar, Erol, Hilal Bati, and Cihat Tetik. 2011. "Learning Styles of Medical Students Change in Relation to Time." *Advances in Physiology Education* 35, no. 3: 307–11.
- Hakala, Ismo, and Sanna Laine. 2016. "Learning Styles Module as a Part of a Virtual Campus." Conference paper, Kokkola Finland University.
- Harb, John Naim, and Terry, R.E. 1995. *Teaching through the Cycle: Application of Learning Style Theory to Engineering Education*. Provo: Brigham Young University Press.
- Hunt, David E. 1987. *Beginning with Ourselves in Practice, Theory and Human Affairs*. Cambridge, MA: Brookline Books.

- Hutt, Guy K. 2007. "Experiential Learning Spaces: Hermetic Transformational Leadership for Psychological Safety, Consciousness Development and Math Anxiety Related Inferiority Complex Depotentiation." Ph.D. dissertation, Department of Organizational Behavior, Case Western Reserve University.
- James, William. 1987. "Does 'Consciousness' Exist?" *Writings 1902–1910*. New York: Library of America. 1141–58.
- Jones, Cheryl, Kouider Mokhtari, and Carla Reichard. 2002. "Are Students' Learning Styles Discipline Specific?" *Community College Journal of Research and Practice* 27, no. 5: 363–75.
- Keeton, Morris T., and Pamela J. Tate. 1978. *Learning by Experience: What, Why, How?* San Francisco: Jossey-Bass.
- Keys, Louise. 1994. "Action Learning: Executive Development of Choice for the 1990s." *Journal of Management Development* 13, no. 8: 50.
- Kolb, Alice Y., and David A. Kolb. 2016. *Experiential Learning Theory Bibliography: Volume 1-5 (1971–2016)*. Cleveland, OH: Experience Based Learning Systems, Inc. <http://www.learningfromexperience.com>
- . 2013. *The Kolb Learning Style Inventory 4.0: A Comprehensive Guide to the Theory, Psychometrics, Research on Validity and Educational Applications*. Boston: Hay Resources Direct. <http://www.haygroup.com/leadershipandtalentondemand>
- . 2011. *Learning Style Inventory Version 4.0*. Boston: Hay Resources Direct.
- . 2009. "The Learning Way: Meta-Cognitive Aspects of Experiential Learning." *Simulation and Gaming* 40, no. 3: 297–327.
- . 2006. "Learning Styles and Learning Spaces: A Review of the Multi-disciplinary Application of Experiential Learning in Higher Education." In *Learning Styles and Learning: A Key to Meeting the Accountability Demands in Education*, edited by Ronald R. Sims and Serbrenia J. Sims, 45–91. New York: Nova Publishers.
- . 2005. "Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education." *Academy of Management Learning and Education* 4, no. 2: 193–212.
- Kolb, Alice Y., David A. Kolb, Angela Passarelli, and Garima Sharma. 2014. "On Becoming an Experiential Educator: The Educator Role Profile." *Simulation and Gaming* 45, no. 2: 204–34.
- Kolb, Alice Y., et al. 2005. *Leading a SAGES Seminar: An Instructor's Guide*. Unpublished document, Case Western Reserve University.
- Kolb, David A. 2015. *Experiential Learning: Experience as the Source of Learning and Development*. Upper Saddle River, NJ: Pearson Education.
- Kolb, David A., Irwin M. Rubin, and James M. McIntyre, eds. 1971. *Organizational Psychology: An Experiential Approach*. Englewood Cliffs, NJ: Prentice Hall.
- Lave, Jean, and Etienne Wenger. 1991. *Situated Learning: Legitimate Peripheral*

- Participation*. Cambridge: Cambridge University Press.
- Lengnick-Hall, Cynthia A., and Martha M. Sanders. 1997. "Designing Effective Learning Systems for Management Education: Student Roles, Requisite Variety, and Practicing What We Preach." *Academy of Management Journal* 40, no. 6: 1334–68.
- Lewin, Kurt. 1951. *Field Theory in Social Sciences*. New York: Harper & Row.
- March, James. 2010. *The Ambiguities of Experience*. Ithaca: Cornell University Press.
- Marrow, Alfred Jay. 1969. *The Practical Theorist: The Life and Work of Kurt Lewin*. New York: Basic Books.
- Mentkowski, Marcia. 2000. *Learning that Lasts: Integrating Learning, Development, and Performance in College and Beyond*. San Francisco: Jossey-Bass.
- Nouwen, Henri J. M. 1975. *Reaching Out: The Three Movements of the Spiritual Life*. Garden City: Image Books.
- Osland, Joyce S., David A. Kolb, Irwin M. Rubin, and Marlene E. Turner. 2007. *Organizational Behavior: An Experiential Approach*. 8th ed. Upper Saddle River: Pearson Prentice-Hall.
- Palmer, Parker J. 1998. *The Courage to Teach: Exploring the Inner Landscape of a Teacher's Life*. San Francisco: Jossey-Bass.
- . 1983. *To Know as We Are Known: Education as a Spiritual Journey*. San Francisco: Harper & Row.
- Pashler, Harold, Mark McDaniel, Doug Rohrer, and Robert Bjork. 2008. "Learning Styles: Concepts and Evidence." *Psychological Science in the Public Interest* 9, no. 3: 106–19.
- Prince, Michael J., and Richard M. Felder. 2006. "Inductive Teaching and Learning Methods: Definitions, Comparisons, and Research Bases." *Journal of Engineering Education* 95, no. 2: 123–38.
- Raschick, Michael, Donald E. Maypole and Priscilla Day. 1998. "Improving Field Education through Kolb Learning Theory." *Journal of Social Work Education* 34, no. 1: 31–43.
- Reese, John H. and Tanya Reese. 1998. *Enhancing Law Students' Performance: Learning Style Interventions*. Saratoga Springs, NY: The National Center on Adult Learning, Empire State College.
- Revans, Reginald W. 1980. *Action Learning: New Techniques for Management*. London: Blond & Briggs.
- Rogers, Carl. 1951. *Client-centered Therapy: Its Current Practice, Implications and Theory*. London: Constable.
- Schaefer, John J., Allison Vanderbilt, Carolyn L. Cason, and Deborah Navedo. 2011. "Literature Review: Instructional Design and Pedagogy Science in Healthcare Simulation." *Simulation in Healthcare* 6, no. 7: S30–S41.
- Scott, Catherine. 2010. "The Enduring Appeal of 'Learning Styles.'" *Australian*

- Journal of Education* 54, no. 1: 5–17.
- Selingo, Jeffrey J. 2016. *There Is Life After College: What Parents and Students Should Know About Navigating School to Prepare for the Jobs of Tomorrow*. New York: HarperCollins. Kindle edition.
- Sharma, Garima, and David A. Kolb. 2011. “The Learning Flexibility Index: Assessing Contextual Flexibility in Learning Style.” In *Style Differences in Cognition, Learning and Management: Theory, Research and Practice*, edited by Stephen Rayner and Eva Cools, 60–77. New York: Routledge.
- Shields, Stephanie A., Matthew J. Zawadzki, and R. Neill Johnson. 2011. “The Impact of Workshop Activity for Gender Equity Simulation in the Academy (WAGES-Academic) in Demonstrating Cumulative Effects of Gender Bias.” *Journal of Diversity in Higher Education* 4, no. 2: 120–29.
- Simosko, Susan A. 1988. *Assessing Learning: A CAEL Handbook for Faculty*. Chicago: Council for Adult & Experiential Learning.
- Slavich, George M., and Philip G. Zimbardo. 2012. “Transformational Teaching: Theoretical Underpinnings, Basic Principles, and Core Methods.” *Educational Psychology Review* 24, no. 4: 569–608.
- Soflano, Mario, Thomas M. Connolly, and Thomas Hainey. 2015. “An Application of Adaptive Games-based Learning Based on Learning Style to Teach SQL.” *Computers & Education* 86: 192–211.
- Taylor, Anna-Sofia Alklind, Per Backlund, and Lars Niklasson. 2012. “The Coaching Cycle: A Coaching-by-Gaming Approach in Serious Games.” *Simulation and Gaming* 43, no. 5: 648–72.
- Timken, Gay L., and Jeff McNamee. 2012. “New Perspectives for Teaching Physical Education: Preservice Teachers’ Reflections on Outdoor and Adventure Education.” *Journal of Teaching in Physical Education* 31, no. 1: 21–38.
- Varlas, Laura. 2010. “Responding to the Research: Harvey Silver and Matthew Perini Address Learning Styles.” *Education Update* 52, no. 5: 1–3.
- Whitehead, Alfred North. 1997. *Science and the Modern World*. New York: Simon & Schuster.
- Willingham, Daniel T. 2005. “Do Visual, Auditory, and Kinesthetic Learners Need Visual, Auditory, and Kinesthetic Instruction?” *American Educator* 29, no. 2: 31–35.
- Wyss-Flamm, Esther Dorothea. 2002. “Conversational Learning and Psychological Safety in Multicultural Teams.” Ph.D. dissertation, Department of Organizational Behavior, Case Western Reserve University.

Copyright of Experiential Learning & Teaching in Higher Education (ELTHE): A Journal for Engaged Educators is the property of Southern Utah University Press and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.