

Experiential Learning Theory: A Dynamic, Holistic Approach to Management Learning, Education and Development

Alice Y. Kolb and David A. Kolb

Weatherhead School of Management
Case Western Reserve University

Abstract

Experiential learning theory (ELT) has been widely used in management learning research and practice for over thirty-five years. Building on the foundational works of Kurt Lewin, John Dewey and others, experiential learning theory offers a dynamic theory based on a learning cycle driven by the resolution of the dual dialectics of action/reflection and experience/abstraction. These two dimensions define a holistic learning space wherein learning transactions take place between individuals and the environment. The learning space is multi-level and can describe learning and development in commensurate ways at the level of the individual, the group, and the organization. This approach is illustrated by reviewing current research on individual learning styles and managerial problem solving/decision making, the process of team learning and organizational learning. We describe how ELT can serve as a useful framework to design and implement management education programs in higher education and management training and development.

Not to be reproduced or cited prior to publication. A revised version of this paper will appear in: Armstrong, S. J. & Fukami, C. (Eds.) *Handbook of Management Learning, Education and Development*. London: Sage Publications 2008

Introduction

The organizational behavior and management fields for many years have focused on performance as the primary validation touchstone for their theories and concepts. In the twenty-first century however, we have begun to see a shift in focus away from measures of organizational and managerial performance that are often limited and subject to short term manipulation at the expense of long term sustainability. In the new perspective organizations are seen as learning systems and the management process is viewed as a process of learning. Learning lies at the core of the management process when learning it is defined holistically as the basic process of human adaptation. This broad definition subsumes more specialized managerial processes such as entrepreneurial learning (Corbett 2005, 2007, Poltis 2005), strategy formulation (Ramnarayan & Reddy 1989, Van Der Heijden 1996, Kolb, Lublin, Spoth, & Baker), creativity (Brennan & Dooley 2005), Boyle, Geiger & Pinto 1991, Ogot & Okudan 2006, Potgieter 1999), problem solving and decision making (Donoghue 1994, Jervis 1983, Kolb 1983, Selby et al. 2004) and leadership (Robinson 2005, Kayes, Kayes & Kolb 2005).

For over thirty-five years research based on experiential learning theory (ELT-- Kolb 1984, Kolb and Kolb 2007a & b) has been an advocate for and contributor to this shift in perspective. Experiential learning theory draws on the work of prominent 20th century scholars who gave experience a central role in their theories of human learning and development—notably John Dewey, Kurt Lewin, Jean Piaget, William James, Carl Jung, Paulo Freire, Carl Rogers and others—to develop a dynamic, holistic model of the process of learning from experience and a multi-linear model of adult development. ELT is a dynamic view of learning based on a learning cycle driven by the resolution of the

dual dialectics of action/reflection and experience/abstraction. 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. Research based on ELT has been conducted all around the world supporting the cross-cultural applicability of the model.

Research on experiential learning in management has used ELT to describe the management process as a process of learning by managers, teams and organizations for problem solving and decision making, entrepreneurial opportunity seeking and strategy formulation. It has also had a major influence on the design and conduct of educational programs in management training and development and formal management education. After a review of the basic concepts of experiential learning theory—the cycle of experiential learning, learning style, learning space and the developmental model of learning—we describe how the process of management can be viewed as a learning process. Research on the use of ELT to study managerial behavior, teams, and organizations is reviewed. Next applications to training and development and formal management education are described. The final section includes a summary, evaluation of the theory and future directions for research and application of ELT.

Experiential Learning Theory

ELT integrates the works of the foundational experiential learning scholars around six propositions which they all share:

Learning is best conceived as a process, not in terms of outcomes. To improve learning in higher education, the primary focus should be on engaging students in a process that best enhances their learning – a process that includes feedback on the effectiveness of their learning efforts. “...education must be conceived as a continuing reconstruction of experience: ... the process and goal of education are one and the same thing.” (Dewey 1897: 79)

All learning is re-learning. Learning is best facilitated by a process that draws out the students’ beliefs and ideas about a topic so that they can be examined, tested and integrated with new, more refined ideas.

Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world. Conflict, differences, and disagreement are what drive the learning process. In the process of learning one is called upon to move back and forth between opposing modes of reflection and action and feeling and thinking.

Learning is a holistic process of adaptation. It is not just the result of cognition but involves the integrated functioning of the total person—thinking, feeling, perceiving and behaving. It encompasses other specialized models of adaptation from the scientific method to problems solving, decision making and creativity.

Learning results from synergetic transactions between the person and the environment. Stable and enduring patterns of human learning arise from consistent patterns of transaction between the individual and his or her environment. The way we process the possibilities of each new experience determines the range of choices and decisions we see. The choices and decisions we make to some extent determine the

events we live through, and these events influence our future choices. Thus, people create themselves through the choice of actual occasions they live through.

Learning is the process of creating knowledge. ELT proposes a constructivist theory of learning whereby social knowledge is created and recreated in the personal knowledge of the learner. This stands in contrast to the “transmission” model on which much current educational practice is based where pre-existing fixed ideas are transmitted to the learner.

The Cycle of Experiential Learning

ELT defines learning as “the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience” (Kolb 1984:41). The ELT model portrays two dialectically related modes of grasping experience—Concrete Experience (CE) and Abstract Conceptualization (AC) -- and two dialectically related modes of transforming experience—Reflective Observation (RO) and Active Experimentation (AE). Experiential learning is a process of constructing knowledge that involves a creative tension among the four learning modes that is responsive to contextual demands. This process is portrayed as an idealized learning cycle or spiral where the learner “touches all the bases”—experiencing, reflecting, thinking, and acting—in a recursive process that is responsive to the learning situation and what is being learned. Immediate or concrete experiences are the basis for observations and reflections. These reflections are assimilated and distilled into abstract concepts from which new implications for action can be drawn. These implications can be actively tested and serve as guides in creating new experiences (See Figure 1)

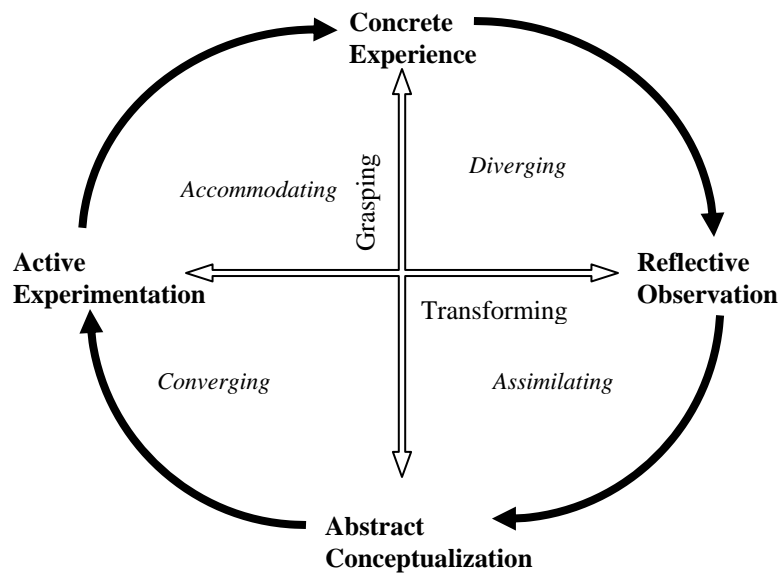


Fig.1 Experiential Learning Cycle

Jung discovered the universal mandala symbol in many cultures and religions throughout time representing this holistic, dynamic cycle of learning. Mandala means circle, an eternal process where endings become beginnings again and again. "The mandala form is that of a flower, cross, or wheel with a distinct tendency toward quadripartite structures." (Jung, 1931, p.100) It often represents dual polarities, the integration of which fuels the endless circular process of knowing. "Psychologically this circulation would be a 'turning in a circle around oneself': whereby all sides of the personality become involved. They cause the poles of light and darkness to rotate..." (p104). In their theories of experiential learning William James and Paulo Freire describe their views about the integration of these of the concrete/abstract and action/reflection dialectics.

William James proposed radical empiricism as a new philosophy reality and mind which resolved the conflicts between 19th century rationalism and empiricism, the

philosophies of idealism and materialism. For James, everything begins and ends in the continuous flux and flow of experience. His philosophy of radical empiricism was based on two co-equal and dialectically related ways of knowing the world - "knowledge of acquaintance" based on direct perception and "knowledge about" based on mediating conception. In radical empiricism, direct perception has primacy since all concepts derive their validity from connection to sense experience. Concepts, however, have priority in controlling human action because they often enable us to predict the future and achieve our desires. James (1977) draws attention to the importance of this co-equal relationship when he says,

We thus see clearly what is gained and what is lost when percepts are translated into concepts. Perception is solely of the here and now; conception is of the like and unlike, of the future, and of the past, and of the far away. But this map of what surrounds the present, like all maps, is only a surface; its features are but abstract signs and symbols of things that in themselves are concrete bits of sensible experience. We have but to weigh extent against content, thickness against spread, and we see that for some purposes the one, for other purposes the other, has the higher value. Who can decide off-hand which is absolutely better to live and to understand life? We must do both alternately, and a man can no more limit himself to either than a pair of scissors can cut with a single one of its blades. (p. 243)

While the conceptualizing/experiencing dialectic described by James is recognized by the Brazilian educator Paulo Freire, by stressing the importance of naming one's own experience in dialogue with others, he and other critical theorists give primary

emphasis to praxis, the transformative dialectic between reflection and action--reflection informed by action and action informed by reflection. He writes powerfully about the dynamics of this dialectic:

As we attempt to analyze dialogue as a human phenomenon... Within the word we find two dimensions, reflection and action, in such radical interaction that if one is sacrificed -even in part -the other immediately suffers.... When a word is deprived of its dimension of action, reflection automatically suffers as well; and the word is changed into idle chatter, into verbalism, into an alienated and alienating 'blah'.... On the other hand, if action is emphasized exclusively, to the detriment of reflection, the word is converted into activism. The latter action for action's sake negates the true praxis and makes dialogue impossible. (1992, pp: 75-78)

In *The art of changing the brain: Enriching teaching by exploring the biology of learning*, James Zull a biologist and founding director of CWRU's University Center for Innovation in Teaching and Education (UCITE) sees a link between ELT and neuroscience research, suggesting that this process of experiential learning is related to the process of brain functioning, "...concrete experiences come through the sensory cortex, reflective observation involves the integrative cortex at the back, creating new abstract concepts occurs in the frontal integrative cortex, and active testing involves the motor brain. In other words, the learning cycle arises from the structure of the brain." (Zull 2002: 18)

Learning Style

The concept of learning style describes individual differences in learning based on the learner's preference for employing different phases of the learning cycle. Because of our hereditary equipment, our particular life experiences, and the demands of our present environment, we develop a preferred way of choosing among the four learning modes. We resolve the conflict between being concrete or abstract and between being active or reflective in patterned, characteristic ways. ELT posits that learning is the major determinant of human development and how individuals learn shapes the course of their personal development. Previous research (Kolb 1984) has shown that learning styles are influenced by personality type, educational specialization, career choice, and current job role and tasks.

A recent study (Joy & Kolb 2007) has shown relationships between learning style and culture of birth and residence. Analysis of country ratings on individual cultural dimensions suggests that individuals tend to have reflective learning styles in countries that are high in uncertainty avoidance and active learning styles in countries that are high in in-group collectivism. Individuals tend to have abstract learning styles in countries that are high in uncertainty avoidance, future orientation, performance orientation and institutional collectivism. Yamazaki (2004, 2005) has identified learning style cultural influences as well..

Much of the research on ELT has focused on the concept of learning style using the Learning Style Inventory (KLSI) to assess individual learning styles (Kolb 1971, 1985, 1999). While individuals tested on the KLSI show many different patterns of scores, previous research with the instrument has identified four learning styles that are

associated with different approaches to learning —Diverging, Assimilating, Converging, and Accommodating. The following summary of the four basic learning styles is based on both research and clinical observation of these patterns of KLSI scores (Kolb, 1984, 1999a).

An individual with diverging style has CE and RO as dominant learning abilities. People with this learning style are best at viewing concrete situations from many different points of view. It is labeled “Diverging” because a person with it performs better in situations that call for generation of ideas, such as a “brainstorming” session. People with a Diverging learning style have broad cultural interests and like to gather information. They are interested in people, tend to be imaginative and emotional, have broad cultural interests, and tend to specialize in the arts. In formal learning situations, people with the Diverging style prefer to work in groups, listening with an open mind and receiving personalized feedback.

An individual with an assimilating style has AC and RO as dominant learning abilities. People with this learning style are best at understanding a wide range of information and putting into concise, logical form. Individuals with an Assimilating style are less focused on people and more interested in ideas and abstract concepts. Generally, people with this style find it more important that a theory have logical soundness than practical value. The Assimilating learning style is important for effectiveness in information and science careers. In formal learning situations, people with this style prefer readings, lectures, exploring analytical models, and having time to think things through.

An individual with a converging style has AC and AE as dominant learning abilities. People with this learning style are best at finding practical uses for ideas and theories. They have the ability to solve problems and make decisions based on finding solutions to questions or problems. Individuals with a Converging learning style prefer to deal with technical tasks and problems rather than with social issues and interpersonal issues. These learning skills are important for effectiveness in specialist and technology careers. In formal learning situations, people with this style prefer to experiment with new ideas, simulations, laboratory assignments, and practical applications.

An individual with an accommodating style has CE and AE as dominant learning abilities. People with this learning style have the ability to learn from primarily “hands-on” experience. They enjoy carrying out plans and involving themselves in new and challenging experiences. Their tendency may be to act on “gut” feelings rather than on logical analysis. In solving problems, individuals with an Accommodating learning style rely more heavily on people for information than on their own technical analysis. This learning style is important for effectiveness in action-oriented careers such as marketing or sales. In formal learning situations, people with the Accommodating learning style prefer to work with others to get assignments done, to set goals, to do field work, and to test out different approaches to completing a project.

Recent theoretical and empirical work shows that the original four learning styles types can be refined to show nine distinct style types (Eickmann, Kolb & Kolb 2004, Kolb & Kolb 2005a, Boyatzis & Mainemelis 2000). David Hunt and his associates (Abby, Hunt and Weiser 1985, Hunt 1987) identified four additional learning styles which they identified as Northerner, Easterner, Southerner, and Westerner. In addition a

Balancing learning style has been identified by Mainemelis, Boyatzis and Kolb (2002) that integrates AC and CE and AE and RO.

Learning Spaces

The concept of learning space elaborates further the holistic, dynamic nature of learning style and its formation through transactions between the person and environment. The idea of learning space builds on Kurt Lewin's field theory and his concept of life space. For Lewin, person and 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 and the life space is the total psychological environment which the person experiences subjectively. Lewin introduced a number of concepts for analysis of the life space and a person's relationship to it that are applicable to the study of learning spaces, including position, region, locomotion, equilibrium of forces, positive and negative valence, barriers in the person and the world, conflict, and goal.

Three other theoretical frameworks inform the ELT concept of learning space. Urie Bronfenbrenner's (1977, 1979) work on the ecology of human development has made significant sociological contributions to Lewin's life space concept. He defines the ecology of learning/development spaces as a topologically nested arrangement of structures each contained within the next. The learner's immediate setting such as a course or classroom is called the *microsystem*, while other concurrent settings in the person's life such as other courses, the dorm or family are referred to as the *mesosystem*. The *exosystem* encompasses the formal and informal social structures that influence the person's immediate environment, such as institutional policies and procedures and

campus culture. Finally, the *macrosystem* refers to the overarching institutional patterns and values of the wider culture, such as cultural values favoring abstract knowledge over practical knowledge, that influence actors in the person's immediate microsystem and mesosystem. This theory provides a framework for analysis of the social system factors that influence learners' experience of their learning spaces.

Another important contribution to the learning space concept is situated learning theory (Lave and Wenger 1991). Like ELT situated learning theory draws on Vygotsky's (1978) activity theory of social cognition for a conception of social knowledge that conceives of learning as a transaction between the person and the social environment. Situations in situated learning theory like life space and learning space are not necessarily physical places but constructs of the person's experience in the social environment. These situations are embedded in communities of practice that have a history, norms, tools, and traditions of practice. Knowledge resides, not in the individual's head, but in communities of practice. Learning is thus a process of becoming a member of a community of practice through legitimate peripheral participation (e.g. apprenticeship). Situated learning theory enriches the learning space concept by reminding us that learning spaces extend beyond the teacher and the classroom. They include socialization into a wider community of practice that involves membership, identity formation, transitioning from novice to expert through mentorship and experience in the activities of the practice, as well as the reproduction and development of the community of practice itself as newcomers replace old-timers.

Finally, in their theory of knowledge creation, Nonaka and Konno (1998) introduce the Japanese concept of "ba", a "context that harbors meaning", which is a

shared space that is the foundation for knowledge creation. “Knowledge is embedded in *ba*, where it is then acquired through one’s own experience or reflections on the experiences of others.” (Nonaka and Konno 1998:40) Knowledge embedded in *ba* is tacit and can only be made explicit through sharing of feelings, thoughts and experiences of persons in the space. For this to happen, the *ba* space requires that individuals remove barriers between one another in a climate that emphasizes “care, love, trust, and commitment”. Learning spaces similarly require norms of psychological safety, serious purpose, and respect to promote learning.

In ELT the experiential learning space is defined by the attracting and repelling forces (positive and negative valences) of the two poles of the dual dialectics of action/reflection and experiencing/conceptualizing, creating a two dimensional map of the regions of the learning space. An individual’s learning style positions them in one of these regions depending on the equilibrium of forces among action, reflection, experiencing and conceptualizing. As with the concept of life space, this position is determined by a combination of individual disposition and characteristics of the learning environment. The LSI measures an individual’s preference for a particular region of the learning space, their home region so to speak. The regions of the ELT learning space offer a typology of the different types of learning based on the extent to which they require action vs. reflection, experiencing vs. thinking thereby emphasizing some stages of the learning cycle over others.

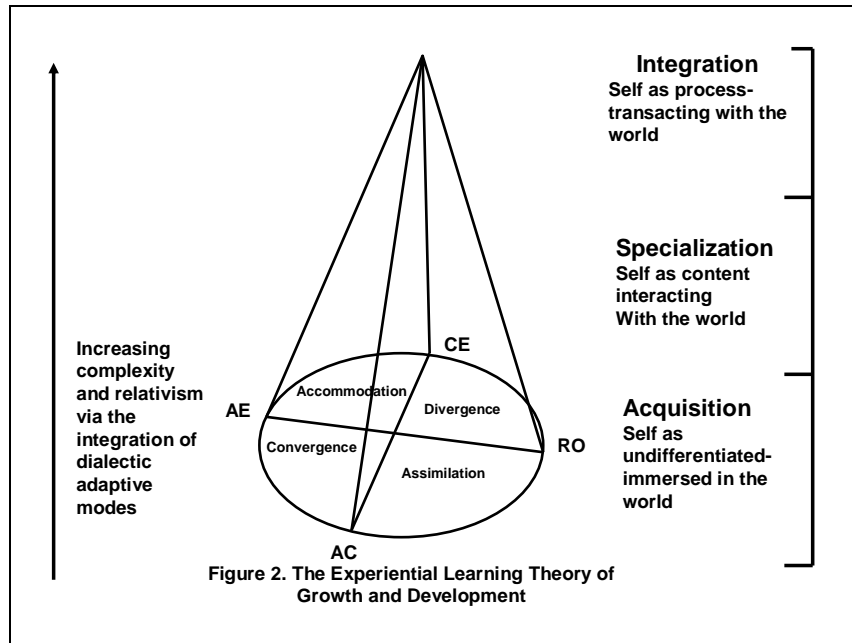
The ELT learning space concept emphasizes that learning is not one universal process but a map of learning territories, a frame of reference within which many different ways of learning can flourish and interrelate. It is a holistic framework that

orients the many different ways of learning to one another. The process of experiential learning can be viewed as a process of locomotion through the learning regions that is influenced by a person's position in the learning space. One's position in the learning space defines their experience and thus defines their "reality".

Development and Deep Learning

The ELT developmental model (Kolb, 1984) defines three stages: (1) *acquisition*, from birth to adolescence where basic abilities and cognitive structures develop; (2) *specialization*, from formal schooling through the early work and personal experiences of adulthood where social, educational, and organizational socialization forces shape the development of a particular, specialized learning style; and (3) *integration* in mid-career and later life where non-dominant modes of learning are expressed in work and personal life. Development through these stages is characterized by increasing complexity and relativism in adapting to the world and by increased integration of the dialectic conflicts between AC and CE and AE and RO. Development is conceived as multi-linear based on an individual's particular learning style and life path—development of CE increases affective complexity, of RO increases perceptual complexity, of AC increases symbolic complexity, and of AE increases behavioral complexity (See Figure 2).

Figure 2



A study by Clarke (1977) of the accounting and marketing professions illustrates the ELT developmental model. The study compared the learning styles of cross-sectional samples of accounting and marketing students and professionals in school and at lower, middle and senior level career stages. The learning styles of marketing and accounting students were similar, being fairly balanced on the four learning modes. Lower level accountants had convergent, abstract and active learning styles, and this convergent emphasis was even more pronounced in middle-level accountants, reflecting a highly technical specialization. The senior level accountants, however became more accommodative in learning style integrating their non-dominant concrete learning orientation. Clark found a similar pattern of development in the marketing profession. Gypen (1981) found the same move from specialization to integration in his study of the learning styles of a cross-sectional sample of social work and engineering alumni from

early to late career. “As engineers move up from the bench to management positions, they complement their initial strengths in abstraction and action with the previously non-dominant orientations of experience and reflection. As social workers move from direct service into administrative positions they move in the opposite direction of the engineers.” (1981: ii)

In ELT the concept of deep learning is introduced to describe the developmental process learning that fully integrates the four modes of the experiential learning cycle—experiencing, reflecting, thinking and acting (Jensen and Kolb 1994, Border 2007). Deep learning refers to the kind of learning that leads to development in the ELT developmental model. ELT suggests that the basic learning styles represent specialized and limited ways of learning. Following Jung's theory that adult development moves from a specialized way of adapting toward a holistic integrated way, deep learning is seen as moving from specialization to integration. Integrated deep learning is a process involving a creative tension among the four learning modes that is responsive to contextual demands. This is portrayed as an idealized learning cycle or spiral where the learner "touches all the bases"--experiencing, reflecting, thinking, and acting--in a recursive process that is responsive to the learning situation and what is being learned.

Development toward deep learning is divided into three levels. In the first level learning is registrative and performance oriented emphasizing the two learning modes of the specialized learning styles. The second level is interpretative and learning oriented involving three learning modes, and the third level is integrative and development oriented involving all four learning modes in a holistic learning process. In his foundational work, *Learning from Experience toward Consciousness*, William Torbert

(1972) described these levels of learning as a three-tiered system of feedback loops; work that has been extended by Chris Argyris, Donald Schön, Peter Senge and others in the concepts of single and double loop learning.

The traditional lecture course, for example, emphasizes first level, registrative learning emphasizing the learning modes of reflection and abstraction involving little action (often multiple choice tests that assess registration of concepts in memory) and little relation to personal experience. Adding more extensive learning assessments that involve practical application of concepts covered can create second level learning involving the three learning modes where reflection supplemented by action serve to further deepen conceptual understanding. Further addition of learning experiences that involve personal experience such as internships or field projects create the potential for third level integrative learning (cf. Kolb `1984, Chapter 6). As a counter example, an internship emphasizes registrative learning via the modes action and experience. Deeper interpretative learning can be enhanced by the addition of activities to stimulate reflection such as team conversation about the internship experience and/or student journals. Linking these to the conceptual material related to the experience adds the fourth learning mode, abstraction and integration though completion of the learning spiral.

Management as a Learning Process

ELT offers a way to study management as a learning process that is dynamic and holistic, operating at the level of the individual, the team and the organization. When learning is defined holistically as the basic process of human adaptation, it subsumes more specialized managerial processes such as entrepreneurial learning, strategy formulation, creativity, problem solving and decision making and leadership. In ELT

these specialized management processes tend to emphasize particular phases of the learning cycle. Entrepreneurial learning tends to emphasize the accommodating phases of the learning cycle while strategy formulation tends to emphasize the assimilating phases. Creativity emphasizes the diverging phases while problem solving and decision-making emphasize converging. Leadership style tends to be related to learning style but is most effective when it moves through the learning cycle and is adaptive to task demands (Robinson 2005, Carlsson, Keane & Martin 1976). All of these processes are enhanced when the full cycle of learning is followed. For example Corbett (2007) found that in the opportunity identification phase of the entrepreneurial process an abstract orientation is helpful in addition to an active orientation. We begin with research describing individual managerial learning as a process of problem management. Next research on experiential learning in teams is reviewed followed by the ELT approach to organizational learning.

Managerial Problem Solving and Decision Making.

Kilmann has argued that problem solving is central to the managerial role: “One might even define the essence of management as problem-defining and problem-solving, whether the problems are well-structured, ill-structured, technical, human, or even environmental. Managers of organizations would then be viewed as problem managers, regardless of the types of products and services they help their organizations provide” (1979: 214). As we have noted, the experiential learning cycle is a holistic model of adaptation that encompasses more specialized models of the adaptive process. Numerous studies have examined the relationship between learning styles and problem solving behavior (Armstrong & McDaniel 1986, Donoghue 1994, Grochow 1974, Hendrick 1979, Jervis 1983, Katz 1990, McCormick 1987, Sanley 1987, Selby et. al. 2004, Wessel

et al.1999, Yonutas 2001). One example is Stabell's (1972) study of portfolio managers in the trust department of a large Midwestern bank. One aim of his study was to discover how the learning styles of investment portfolio managers affected their problem solving and decision making in the management of the assets in their portfolios. He found a strong correspondence between the type of decisions these managers faced and their learning styles. More specifically, he found that nearly all of the managers in the investment advisory section of the department, a high-risk, high-pressure job (as indicated by a large percentage of discretionary accounts, and a high performance and risk orientation on the part of clients) had accommodative learning styles (scoring very high on the AE and CE LSI scales). On the other hand, the managers in the personal trust section, where risk and performance orientations were low and there were few discretionary accounts and fewer holdings in common stock, scored highest on reflective observation. He was also able to identify differences, on the basis of their KLSI scores, in the way managers went about making investment decisions. He focused his research on differences between managers with concrete (CE) learning styles and abstract (AC) learning styles. He asked these managers to evaluate the importance of the information sources they used in making decisions and found several interesting differences. First, concrete managers cited more people as important sources (colleagues, brokers, and traders), while the abstract managers listed more analytically oriented printed material as sources (economic analysis, industry and company reviews. In addition, concrete managers sought services that would give them a specific recommendation that they could accept or reject, while the abstract managers sought information they could analyze themselves in order to choose an investment. This analytic orientation of the abstract

managers is further illustrated by the fact that they tended to use more information sources in their decisions than the concrete managers.

These studies of learning style and problem solving along with other problem solving research have been integrated into an idealized problem-solving process model that describes the fully functioning person in optimal circumstances (Kolb 1983, see Figure 3). Ineffective problem solving deviates from the ideal because of personal habits and style as well as situational constraints such as time pressure. The model has four stages that correspond to the four stages of the learning cycle—Situation Analysis (CE), Problem Analysis (RO), Solution Analysis (AC), and Implementation Analysis (AE). Each stage of the model has an opening “green mode” and closing “red mode” phase. This two phase process of divergent opening and convergent closing has been shown to operate in studies of the learning and problem solving process (McCarthy 1987, Lingham 2005, Jules 2007).

In Situation Analysis where the immediate situational context is examined to determine the right problem to work on the green mode is Valuing and the red mode is Priority Setting. People who are strong in this stage emphasize feeling over thinking and are good at relating to others; they are often good intuitive decision-makers and function well in unstructured situations; they have an open-minded approach to life.

In Problem Analysis, the stage where the problem is defined in terms of the essential variables or factors that influence it, the green mode is Information Gathering and the red mode is Problem Definition. Managers who are effective in this stage emphasize understanding as opposed to practical application, a concern with what is true or how things happen as opposed to what is practical, an emphasis on reflection as

opposed to action. They like to rely on their own thoughts and feelings to form opinions. People with this orientation value patience, impartiality, and thoughtful judgment.

In Solution Analysis, the stage where possible solutions are generated and their feasibility for solving the problem is examined against the criteria defined in the previous stage, the green mode is Idea Getting and the red mode is Decision Making. People who are strong in this stage emphasize thinking as opposed to feeling, a concern with building general theories as opposed to intuitively understanding facts. They enjoy and are good at systematic planning, manipulation of abstract symbols and quantitative analysis; they value precision, the rigor and discipline of analyzing ideas, and the aesthetic quality of a neat, conceptual system;

In Implementation Analysis, the stage where tasks essential for implementing the solution must be identified and organized into a coherent plan with appropriate time deadlines and follow-up evaluations the green mode is Participation and the red mode is Planning. Managers who are strong in this stage actively influence others and change situations. They are more interested in practical applications than they are in understanding; that is they are more interested in doing things than in observing. People with an active experimentation orientation enjoy and are good at getting things accomplished. They are willing to take some risk to achieve their objectives; they also value having an impact and influence on the environment around them and like to see results.

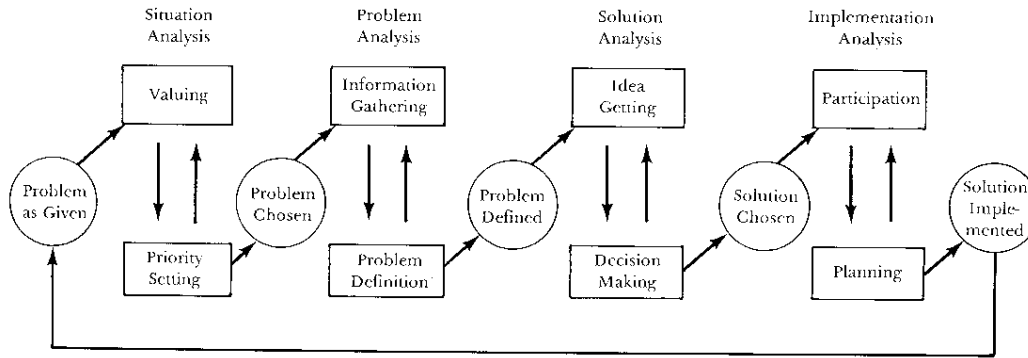


Figure 3. The ELT Problem Management Model

Team Learning.

The experiential approach to learning in teams has a long and rich history dating back to the 1940s and Kurt Lewin's research on group dynamics. Lewin's discovery of the T-group is worth examining. From this work emerged three key insights that have framed research on the experiential approach to team learning as it has evolved over the years: 1) the pivotal role of reflective conversation; 2) the theory of functional role leadership; and 3) the experiential learning process as the key to team development.

To learn from their experience, teams must create a conversational space where members can reflect on and talk about their experience together. In the summer of 1946, Lewin and his colleagues designed a new approach to leadership and group dynamics training for the Connecticut State Interracial Commission. The 2-week training program began with an experiential emphasis encouraging group discussion and decision making in an atmosphere where staff and participants were peers. The research and training staff gathered extensive notes and recordings of the group's activities. They met each evening to analyze the data collected during the day's meetings. Although it was the scientific norm to analyze research objectively without the subjective involvement of the

participants; Lewin was receptive when a small group of participants asked to join these discussions. One of the staff members in attendance was Ronald Lippitt, who described what happened in a discussion attended by three trainees:

Sometime during the evening, an observer made some remarks about the behavior of one of the three persons who were sitting in—a woman trainee. She broke in to disagree with the observation and described it from her point of view. For a while there was quite an active dialogue between the research observer, the trainer, and the trainee about the interpretation of the event, with Kurt an active questioner, obviously enjoying this different source of data that had to be coped with and integrated....

The evening session from then on became the significant learning experience of the day, with the focus on actual behavioral events and with active dialogue about differences of interpretation and observation of the events by those who had participated in them (Lippitt in Kolb, 1984, p. 9).

By creating a conversational space where staff in analytic, objective roles could integrate their ideas with the experiences and observations of active group participants, Lewin and his colleagues discovered the self-analytic group and with it a powerful force for team learning and development.

A team can develop a composite image of itself by developing the capacity to reflect on its experience through conversations that examine and integrate differences in members' experiences on the team. This shared image, which Mills (1967) calls executive consciousness, becomes a guiding light that enables the team to learn and shape itself to respond effectively to the challenges of its mission and environment. A team that

cannot see itself accurately is ultimately flying blind. To develop executive consciousness a team needs to create a hospitable conversational space. Members need to respect and be receptive to differing points of view; to take time to reflect on consequences of action and the big picture; and to desire growth and development (Baker, Jensen, & Kolb, 2002).

As a team develops from a group of individuals into an effective learning system, members share the functional roles necessary for team effectiveness. In 1948, Kenneth Benne and Paul Sheats described a new concept of team roles and team leadership based on the first National Training Laboratory in Group Development. In contrast to the then-prevailing idea that leadership was a characteristic of the person and that teams should be led by a single leader, Benne and Sheats discovered that mature groups shared leadership. While initially group members were oriented to individual roles focused on satisfying their personal needs; they later came to share responsibility for team leadership by organizing themselves into team roles. Some roles focused on task accomplishment, such as initiator-contributor, information seeker, coordinator, and evaluator-critic; other roles focused on group building and maintenance, such as encourager, compromiser, standard setter, and group-observer. While members tended to choose roles based on their personality dispositions, they also were able to adopt more unfamiliar roles for the good of the group (Benne & Sheats, 1948).

Teams develop by following the experiential learning cycle. The laboratories in group development, or T-groups as they came to be known, were based on a model of learning from experience known as the laboratory method. This model was typically introduced by the group trainer as follows: “Our goal here is to learn from our experience

as a group and thereby create the group we want to be. We will do this by sharing experiences together and reflecting on the meaning of these experiences for each of us. We will use these observations and reflections to create a collective understanding of our group, which will serve to guide us in acting to create the kind of group experience that we desire.” In ELT, “the process of learning from experience . . . shapes and actualizes developmental potentialities” (Kolb, 1984, p. 133).

Theodore Mills (1967) describes team development as successive stages in the sophistication of a team’s ability to learn. At the higher stages of his model, a team develops a system of executive consciousness. “Consciousness is gained through adding to the function of acting the functions of observing and comprehending the system that is acting” (p. 19). At this level, team members take on an executive role following the experiential learning cycle: “He [sic] experiences, observes, and assesses the realities of the momentary situation. He acts and assesses the consequences of his action upon the group’s capability of coping with immediate demands and future exigencies” (p. 90). All team members can take the executive role, forming what Mills calls the executive system, “the group’s center for assessment of itself and its situations, for arrangement and rearrangement of its internal and external relations, for decision making and for learning, and for ‘learning how to learn’ through acting and assessing the consequences of action” (p. 93). Thus, experiential learning and engagement in the learning cycle provide the mechanisms by which teams can transition from lower to higher developmental stages.

Current research, involving different methodologies and different educational and workplace populations, has shown that ELT is useful in understanding team learning and performance. Studies support the proposition that a team is more effective if it follows

the learning cycle in its work process and emphasizes all four learning modes.

Summarized below are studies of team member learning style, team roles, and team norms.

Team member learning style. There have been numerous studies that have investigated the impact of team member learning style diversity on team effectiveness. Most find that teams whose members have different learning styles are more effective than homogenous learning style teams (Hall 1996, Halstead and Martin 2002, Kayes 2001, Jackson Sandmire, Vroman, and Sanders 2000, Sandmire and Boyce 2004, Wolfe 1977). For example, Jackson studied the learning styles of ongoing workgroup team members who participated in a paired team competition. The exercise was designed to require teamwork skills. Results showed that teams with balanced learning styles performed better. In 17 of the 18 team pairs, the winning team average score was higher than that of the losing team. Jackson concluded, “Designing teams that reflect the dynamic nature of team activities has great appeal in that it gives all team members a more equal opportunity to contribute and a more equal opportunity to be valued. . . . The process model advocates that different team members lead in different team activities or learning situations (2002, p. 11).

A recent study by Jules (2007) examined the influence of both learning style diversity and experiential learning team norms on team performance in a survey of 33 work teams from 6 different industries. Overall both team member learning style diversity and experiential learning work norms were positively related to a team’s ability to make decisions, to achieve its goals and to overall team performance. However, learning style diversity was not related to team experiential learning norms suggesting

that other factors than member composition such as team leadership, team task or organization culture influence team norms. This was supported by the fact that learning style diversity was positively related to performance in teams with routine tasks and unrelated to performance in teams with non-routine tasks and experiential team norms were more strongly related to performance in teams with non-routine tasks.

Team roles. A number of studies have examined the theory of functional role leadership using the ELT framework (Fernandez 1986, 1988, McMurray 1998, Gardner and Korth 1999). Park and Bang (2002) studied the performance of 52 Korean industrial work teams using the Belbin team role model, which is conceptually linked to ELT (Jackson, 2002). They found that the best-performing teams were those whose members adopted at a high level all nine of Belbin's roles covering all stages of the learning cycle. They also found that teams with roles that matched the particular stage of a team's work/learning process performed best. Lingham (2005) in a study of the conversational space norms of 49 educational and work teams found that teams performed more poorly with members who were less satisfied and who felt more psychologically unsafe when the team had a single leader as opposed to sharing leadership.

Team norms. Carlsson, Keane, and Martin used the ELT learning cycle framework to analyze the bi-weekly reports of research and development project teams in a large consumer products corporation. Successful project teams had work process norms that supported a recursive cycling through the experiential learning cycle. Projects that deviated from this work process by skipping stages or being stuck in a stage "indicated problems deserving of management attention" (1976, p. 38).

Two studies have explicitly examined team conversational learning spaces with norms that support the experiential learning cycle. Wyss-Flamm (2002) selected from a management assessment and development course three multicultural student teams who rated themselves as high in psychological safety, defined as the ability of the team to bring up and talk about difficult or potentially psychologically uncomfortable issues. Three of the teams rated themselves as low in psychological safety. Through intensive individual and team interviews, she analyzed the teams' semester-long experience. In teams with high psychological safety, the conversations followed a recursive experiential learning cycle: differences were experienced among team members, examined through reflective juxtaposition that articulated learning, and culminated in either an integration of the differences or an affirmation of the contrast. Teams with low psychological safety tended to have early disturbing incidents that limited conversation and made the conversational flow more turbulent and conflict filled. Lingham (2005) found that the more the teams supported the experiential learning cycle through norms that focused their conversation on interpersonal diverging (concrete experience and reflective observation) and task-oriented converging (abstract conceptualization and active experimentation), the better they performed, the more satisfied they were with their membership on the team, and the more they felt psychologically safe to take risks on the team.

Other studies of educational teams (Gardner and Korth 1997, Pauleen, Marshall, & Ergort 2004) have found that interventions aimed at the introduction of experiential learning norms facilitated learning and transfer of learning.

Education for team learning. Kayes, Kayes & Kolb (2005a) have integrated the above research and other group theories into a theory of experiential learning in teams

that focuses on six aspects of team functioning—purpose, membership, roles, context, process and action. Based on this theory the Kolb Team Learning Experience (KTLE-- Kayes, Kayes, Kolb & Kolb 2004) was created as a structured written simulation through which team members learn about team functions while engaging in the processes of knowledge creation, reflection, critical thinking, and action taking. Thus, team members learn how to learn as the team progresses through activities and problems in the team-learning workbook. The team is encouraged to experience all stages of the learning cycle multiple times and reflect on its ability to continually experience these stages. As the team learns, it increases its ability to operate at higher developmental stages within its functional aspects of purpose, membership, roles, context, process, and action taking (Kayes, Kayes & Kolb 2005b).

Organizational Learning.

Since its first formulation (Kolb 1976) the ELT approach to organizational learning has been elaborated by a number of scholars (Dixon 1999, Hayes & Allinson 1998, Huczynski & Boddy, D 1979), Kay & Bawden 1996, Kim 1993, Lahteenmaki, Ramnarayan & Reddy 1989, Toivonen & Mattila 2001, Leroy & Ramanantsoa 1997, Mumford 1991, Popper & Lipshitz 2000, Simonin 1997, Thomas 2002, Zhang, Macpherson & Jones 2006). Easterby-Smith (1997) in his typology of contemporary organizational learning theories classifies the ELT approach as a human development, psychological and organization development approach along with the theories of Nonaka (1994), Argyris (1992), Dixon (1999), Kim (1993, Mumford (1991) and Revans (1971,1980). True to its Lewinian social psychology origins, organization learning in

ELT is seen as a transactional process between individuals and their environment and between the organization and its environment.

A central issue for most organizational learning scholars is the relationship between individual learning and organizational learning. In *The Organizational Learning Cycle* Nancy Dixon translates the individual learning cycle of experiential learning to the organizational level by introducing the concept of dialogue (Dixon 1996) or conversational learning (Baker, Jensen, and Kolb 2002) in the reflection and conceptualization phases of the individual learning cycle describing organizational learning as a cycle where employee direct experiences and mental maps (CE, Nonaka's tacit knowledge) are shared in dialogue (RO), interpreted collectively to create collectively shared meaning (AC, explicit knowledge) as the basis for responsible action (AE). Thus the team learning from experience process described in the previous section becomes a pivotal linking pin between individual and organizational learning.

At the individual level, learning from experience leads to a "match" between the individual and their immediate organizational environment, i. e. their work and functional work setting. Through learning from previous experiences that leads to choice of and/or placement into jobs and on the job learning to meet job demands, managers achieve a fit between their skills and their job demands that produces effective performance (Sims 1981, 1983). The Learning Skills Profile (Boyatzis and Kolb 1991, 1995, 1997) was developed as a holistic typology of learning skills associated with the phases of the experiential learning cycle to assess skills and job demands in commensurate terms. These job demand/learning skill profiles have been used to assess skill development

needs for management training and development programs. (Kolb, et. al. 1986, Smith 1990, Rainey et. al. 1993).

At the organizational level, learning is a process of differentiation and integration focused on mastery of the organizational environment. The organization differentiates itself into specialized units charged with dealing with one aspect of the organizational environment; marketing deals with the market and customers, R&D with the academic and technological community, etc. This creates a corresponding internal need to integrate and coordinate the specialized units.

Because specialized units need to relate to different aspects of the environment they develop characteristic ways of working together, different styles of learning, problem solving and decision making. In fact, Lawrence and Lorsch define organizational differentiation as “the difference in cognitive and emotional orientation among managers in different functional departments (1974: 11). From a learning perspective these represent differences in learning style. Previous research has shown that educational specialization is a primary determinant of learning style (Kolb 1984, Kolb & Kolb 2005b, Joy & Kolb 2007). Interestingly, in these studies business majors tend to on the average end up the middle of the learning style grid with no particular specialized style. However, research on the relationship between learning style and business functional specialty has shown consistent patterns of differentiation (Loo 2002a & b, Bibereman and Buchanan 1986, Jervis 1983, Novin et. al. 2003, Rowe & Waters 1992). Results from these and other studies suggest that the accommodating learning style is characteristic of people in sales and of general managers while the assimilating style is characteristic of those in the planning, research and development and finance specialties.

Accountants, production managers and engineers tend to be converging in their learning style while people in marketing, human resources and organization development tend to have diverging styles. These associations are of course not perfect; every function tends to have managers with different styles in it. This is important both for learning within the functional team and for integration and communication with other functions. For example, Kolb (1976) found that those managers in marketing who deviated from the dominant accommodating style by having an assimilating style communicated better with the assimilative R &D department. The reverse was also true of accommodating managers in R & D.

Organizations have numerous ways of achieving integration such as strategic management, vision, leadership, organization culture and cross-functional teams. All of these mechanisms are designed to resolve conflicts between specialized units and achieve a coherent direction for the organization. Too often this integration is achieved through domination of one functional mentality in the organization culture. An example is the case of an electronics firm started by a group of entrepreneurial engineers who invented a unique product (Osland et. al. 2007). For a number of years they had no competition and when some competition appeared in the market they continued to dominate because of their superior engineering quality. It became a different story when stiff competition appeared and their very success created new problems when the management approaches of a small intimate company didn't work in a large organization with operations all over the world. The engineering mentality of the organization made specialists in marketing, finance and human resources who were brought in to help the organization feel like second class citizens. The organization's strength, its engineering expertise, had become

its greatest weakness. Jervis (1983) provides other similar case examples from his studies of U. K. management teams. For example, in a senior manufacturing management team with managers who had accommodating learning styles, the group was seen as pursuing a “butterfly” strategy” which concentrated on idea generation and action and lacked systematic convergent evaluation of projects.

From the ELT perspective organizational learning requires that the opposing perspectives of action/reflection and concrete involvement/analytical detachment are valued and integrated into a process that follows the whole learning cycle and is adaptive to changing environmental challenges (Ramnarayan and Reddy 1989).

Experiential Learning in Management Education

There is a long history of experiential learning methods in management training and education dating back to the popularity of Lewin’s laboratory training methods for teaching group dynamics in the 1960’s. Although the traditional “T-Group” is now seldom used, training programs and courses based on the experiential learning cycle are widespread and commonplace. The first management textbook based on experiential learning was published in 1971 (Kolb, Rubin and McIntyre) and is now in its 8th Edition (Osland, Kolb, Rubin and Turner 2007). The workbook resulted from testing the feasibility of Lewin’s experiential learning methods for teaching organizational behavior. This workbook provides simulations, role plays, and exercises (concrete experiences) that focus on central concepts in organizational behavior, providing a common experiential starting point for participants and faculty to explore the relevance of behavioral concepts for their work. Each chapter is organized around the learning cycle providing the

experience, structured reflection and conversation exercises, conceptual material and personal application assignments.

Research on learning styles has shown that managers on the whole are distinguished by strong active experimentation skills and weaker reflective observation skills. Business faculty members (and professors in general) usually have the reverse profile. In traditional management education methods, the conflict between scholar and practitioner learning styles is exaggerated because the material to be taught is filtered through the learning style of faculty in their lectures or presentation and analysis of cases. Students are “one down” in their own analysis because the data are secondhand and already biased. In the experiential learning approach, this filtering process is reduced because teacher and students alike are observers of immediate experiences that they both interpret according to their own learning style. In this approach to learning, the teachers’ role is that of facilitators of a learning process that is basically self-directed. They help students to experience in a personal and immediate way the phenomena in their field of specialization. They stand ready with alternative theories and concepts as students attempt to assimilate their observations into their own conception of reality. They assist in deducing the implications of the students’ concepts and in designing new “experiments” to test these implications through practical, real-world experience.

To bridge the gap in learning styles, the management educator must respond to pragmatic demands for relevance and the application of knowledge, while encouraging the reflective examination of experience that is necessary to refine old theories and to build new ones. In encouraging reflective observation, the teacher often is seen as an interrupter of action – as a passive “ivory tower” thinker. This is, however, a critical role

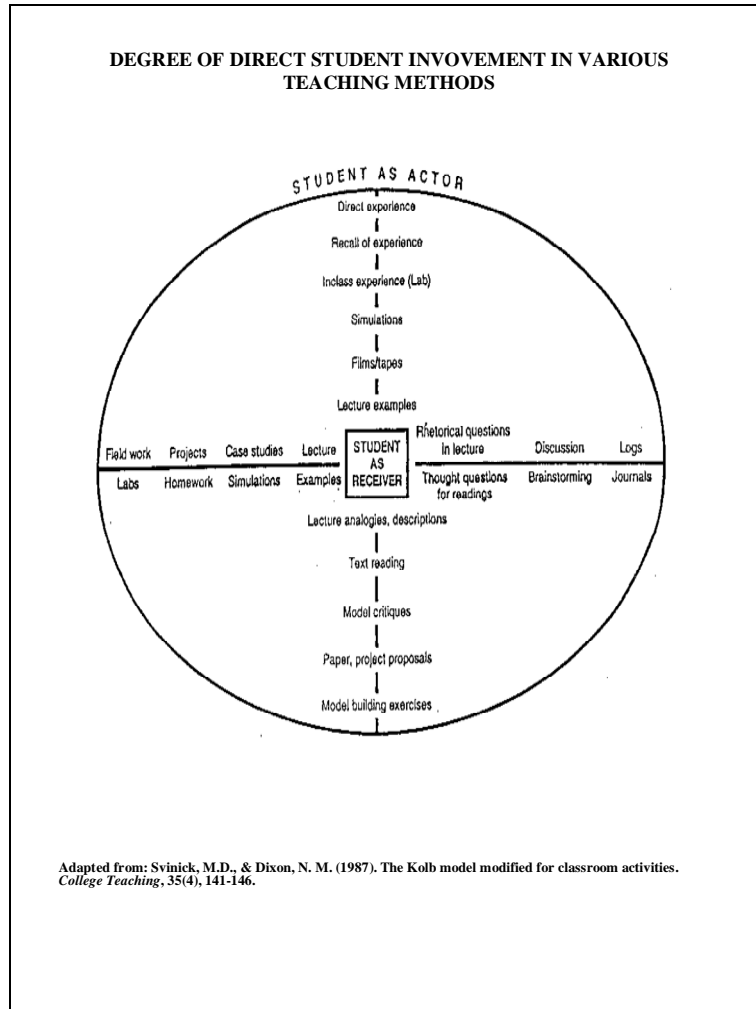
in the learning process. If the reflective observer role is not internalized by the learners themselves, the learning process can degenerate into a value conflict between teacher and the student, each maintaining that theirs is the right perspective for learning. The diverse learning style composition of students in any given learning environment suggests a need for an equally diverse learning processes and strategies. Understanding individual learning style can be considered as the entry point through which learners enter a particular learning space and continue to actively move around the space to acquire complex knowledge and skills.

There are two goals in the experiential learning process. One is to learn the specifics of a particular subject, and the other is to learn about one's own learning process. These goals present challenges associated with adoption and implementation of experiential methods in classrooms. Most frequently encountered challenges are associated with the integration of experiential learning methods into the instructors' current teaching preferences and practices (Hickcox, 2002). Experiential learning methods place equal emphasis on content and process involved in the acquisition of knowledge and skills. As a consequence, in comparison to a more traditional course format, experiential learning methods require a considerable amount of time and commitment in preparation of courses. They may also require smaller class sizes in order to accommodate various experiential activities, and they call for a holistic assessment methods that adequately evaluates all facets of student learning (Mellor, 1991; Sprau & Keig, 2001).

In 1987, Svinicki and Dixon published an influential paper describing a comprehensive instructional model to deal with the constraints and challenges instructors

and students encounter in the face of adopting experiential learning as the instructional design framework. The model offers an instructional design approach that incorporates a broad range of classroom activities that leads students through the full cycle of learning, thus giving instructors a rich array of instructional choices as well as the benefit of offering students a more complete learning experience gained from multiple perspectives. Additionally, it offers a useful model that responds to the one of the key challenges of the experiential methods; adapting teaching strategies to student readiness to engage in experiential learning. As the model in figure 4 suggests, instructors are able to design their classroom activities based upon how much student involvement would be appropriate. Activities at the outer rim of the learning cycle allows for a greater student involvement, while those close to the center involve limited student participation.

Figure 4



The following studies conducted in the fields of accounting, business and management, and marketing describe examples of the current state of the art in the use of ELT in course design.

Siegel, Khursheed, and Agrawal (1997) conducted a controlled field experiment to test the effectiveness of video simulation as a way to integrate experiential learning theory in the teaching of auditing in their accounting course. The videotape used in the experiment followed the principles of experiential learning in the teaching the

fundamental steps in auditing. The results of the experiment indicated significantly higher examination scores for the experimental groups supporting the value of experiential learning for improving effectiveness in teaching auditing.

Specht (1991) examined the effect of an experiential learning method in student learning in an undergraduate accounting course compared to another class conducted using a traditional lecture method. The results revealed no significant differences in short-term learning between the two course formats; however the experiential class demonstrated retention of knowledge over a 6-week period whereas a significant decrease in the scores of the lecture class was observed. The authors concluded students in the experiential learning classroom may have formed a better understanding of the concepts thus successfully retaining knowledge better than students in the lecture class.

In applying experiential learning in his accounting course Umaphy (1985) underscores the importance of the role of the experiential instructor for a successful adoption and implementation of experiential learning curricula. Experiential exercises have proven to be effective in generating considerable student involvement and participation in the learning process with increased student capacity to retain knowledge for a longer period of time.

Certo designed series of experiential training activities for an undergraduate management course based on the four dimensions of the learning cycle. In conducting those activities, the instructor assumed the role of an experiential facilitator by “encouraging high levels of student participation; creating a learning environment conducive to learn new behaviors; providing theoretical clarification; and emphasizing both content and process” (1976: 22). In a later study he further articulates the value of

experiential learning as a methodology of education that focuses on the whole person and emphasizes the critical role of the facilitator as an active experiential instructor who blends with a proper balance experience, reflection, conceptualization, and action in the classroom activities (Certo 1977).

In order to respond to mounting criticism of the inadequacy of business education Sims & Sauser (1985) proposed experiential learning model as a theoretical basis to design management curricula intended to develop managerial competencies in business students. The authors offer seven core principles that need to be in place if such curricula are to be successfully implemented: 1. Ability to face new situation and problems; 2. emphasis on both theory and practice; 3. opportunity to have a direct managerial experience; 4. relevant and reliable assessment methods; 5. effective feedback; 6. increased self-knowledge; and 7. reflection and integration as a key final step in the acquisition of competency.

In his organizational behavior course McMullan & Cahoon applied Kolb's experience based learning evaluation instrument. The Personal Application Memo (PAM) was designed to raise student awareness of the distinct learning process involved at each step of the learning cycle. For example, students often have difficulty in differentiating objective experiences from personal reactions to those experiences. Similarly, individual's tendency to focus only on personally useful concepts make it difficult for students to discriminate between abstract conceptualization and active experimentation in a given situation. By discriminating between the abstract conceptualizing and the active experimentation students will be forced to clarify the implicit assumptions and values that guide their actions. The Personal Application Memo requires students to rigorously

evaluate their own learning process and encourage behavioral patterns that lead to meaningful and purposeful actions. Such rigorous examination of one's learning process was foreign to most of the students and consequently frustrating to many. PAM activities made the familiar and obvious way of learning uncertain and problematic for most of them. As the authors suggest, "such a situation is ripe for learning, challenging students to move beyond the safety of their predictable and familiar ways of learning." (1979: 457).

Gopinah & Sawyer (1999) developed a computer-based enterprise simulation based on experiential learning in a business course to bridge the gap between knowledge and its application in the business world. The results of the simulation show that the recursive nature of experiential learning promotes strategic decision-making and group behavior consistent with long term strategy.

Lengnick-Hall and Sanders (1997) designed a learning system in the graduate and undergraduate level management courses structured around the learning cycle to give students 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 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 variety of options in learning methods thus creating opportunities for student behavioral, emotional, and intellectual transformation of a lasting impact.

Dissatisfied with the application of experiential methods in the business classrooms, Dyer & Schumann developed an experiential learning laboratory classroom applied to their marketing course:

We believe that, to date, the application of experiential methods in the business classroom has frequently been incomplete and has therefore diluted the promise of experiential process. Educators have spent their time “parroting” the instructional approaches of other teachers rather than “partnering” experience and knowledge as intended by experiential learning models and the traditional laboratory method. (1993: 32)

In order to create a true laboratory experience in marketing classrooms, the authors developed the Knowledge/Experience Integration Learning Model in the senior-level marketing advertising/promotion class. In this class, 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 level of critical thinking abilities and capacity to apply and connect theoretical knowledge with real-life business application.

From the above research and the ELT concept of learning space we have created the following principles for the promotion of experiential learning in education (Kolb & Kolb 2005):

Respect for Learners and their Experience--We refer to this as the Cheers/Jeers continuum. At one end learners feel that they are members of a learning community who are known and respected by faculty and colleagues and whose experience is taken seriously, a space “where everybody knows your name”. At the other extreme are learning environments where learners feel alienated, alone, unrecognized and devalued.

Begin Learning with the Learner’s Experience of the Subject Matter--The cognitive constructivist theories of Piaget and Vygotsky emphasize that people construct new knowledge and understanding from what they already know and believe based on their previous experience.

Creating and Holding a Hospitable Space for Learning--To learn requires facing and embracing differences; be they differences between skilled expert performance and one’s novice status, differences between deeply held ideas and beliefs and new ideas or differences in the life experience and values of others. These differences can be challenging and threatening, requiring a learning space that encourages the expression of differences and the psychological safety to support the learner in facing them.

Making Space for Conversational Learning--Human beings naturally make meaning from their experiences through conversation. Yet genuine conversation in the traditional lecture classroom can be extremely restricted or nonexistent. Making space for good conversation as part of the educational process provides the opportunity for

reflection on and meaning making about experiences that improves the effectiveness of experiential learning.

Making Spaces for Acting and Reflecting--Learning is like breathing; it involves a taking in and processing of experience and a putting out or expression of what is learned. Yet many programs in higher education are much more focused on impressing information on the mind of the learner than on opportunities for the learners to express and test in action what they have learned.

Making Spaces for Feeling and Thinking—Current brain research offers convincing research evidence that reason and emotion are inextricably related in their influence on learning and memory. Indeed it appears that feelings and emotions have primacy in determining whether and what we learn. Negative emotions such as fear and anxiety can block learning, while positive feelings of attraction and interest may be essential for learning. To learn something that one is not interested in is extremely difficult.

Making Space for Inside-out Learning--Linking educational experiences to the learner's interests kindles intrinsic motivation and increases learning effectiveness. Learning spaces that emphasize extrinsic reward can drive out intrinsically motivated learning.

Making Space for Development of Expertise--Research on expert learners shows that effective learning requires not only factual knowledge, but the organization of these facts and ideas in a conceptual framework and the ability to retrieve knowledge for application and transfer to different contexts. Such deep learning is facilitated by deliberate, recursive practice on areas that are related to the learner's goals.

Making Space for Learners to Take Charge of their own Learning--Many students enter higher education conditioned by their previous educational experiences to be passive recipients of what they are taught. Making space for students to take control of and responsibility for their learning can greatly enhance their ability to learn from experience.

Evaluation of ELT Research

ELT was developed following Lewin's plan for the creation of scientific knowledge by conceptualizing phenomena through formal, explicit, testable theory. In his approach "before a system can be fully useful the concepts in it have to be defined in a way that (1) permits the treatment of both the qualitative and quantitative aspects of phenomena in a single system, (2) adequately represents the conditional-genetic (or causal) attributes of phenomena, (3) facilitates the measurement (or operational definition) of these attributes, and (4) allows both generalization to universal laws and concrete treatment of the individual case." (Cartwright 1951: ix) A theory developed by this process can be a powerful instrument for stimulating and focusing scholarly research conversation.

Since its first statement in 1971 (Kolb, 1971; Kolb, Rubin & McIntyre, 1971), there have been many studies using ELT to advance the theory and practice of experiential learning. 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. An analysis of the 1004 entries in the 1999 bibliography (Kolb, Boyatzis, and

Mainemelis 2001) shows 207 studies in management, 430 in education, 104 in information science, 101 in psychology, 72 in medicine, 63 in nursing, 22 in accounting and 5 in law. About 55% of this research has appeared in refereed journal articles, 20% in doctoral dissertations, 10% in books and book chapters, and 15 % in conference proceedings, research reports, and others. Since 2000 ELT research in these fields around the world has more than doubled. The current experiential learning theory bibliographies (Kolb & Kolb, 2007a & b) include over 2500 entries.

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. These studies support the cross-cultural validity of ELT and the KLSI and also support practical applicability across cultures. The KLSI has been translated into many languages including, English, Spanish, French, Portuguese, Arabic, Russian, Dutch, German, Swedish, Chinese, Romanian, Persian, Thai and Japanese. The value of the holistic ELT framework for understanding cultural differences has been show in a number of studies on cross-cultural management (Kayes, Kayes, & Yamazaki 2005; Kayes, Kayes, & Yamazaki 2006; Yamazaki, & Kayes 2004; Yamazaki & Kayes 2007).

There have been two comprehensive reviews of the ELT literature, one qualitative and one quantitative. In 1991 Hickox extensively reviewed the theoretical origins of ELT and qualitatively analyzed 81 studies that focused on the application of the ELT model as well as on the application of the concept of learning style in accounting and business education, helping professions, medical professions, post-secondary education and teacher education. She concluded that overall 61.7% of the studies supported ELT,

16.1% showed mixed support, and 22.2% did not support ELT. In 1994 Iliff conducted a meta-analysis of 101 quantitative LSI studies culled from 275 dissertations and 624 articles that were qualitative, theoretical, and quantitative studies of ELT and the Kolb Learning Style Inventory (LSI, Kolb 1971, 1985, 1999a, 2005). Using Hickox's evaluation format he found that 49 studies showed strong support for the LSI, 40 showed mixed support and 12 studies showed no support. About half of the 101 studies reported sufficient data on the LSI scales to compute effect sizes via meta-analysis. Most studies reported correlations that fell in the .2 to .5 range for the LSI scales. In conclusion Iliff suggested that the magnitude of these statistics is not sufficient to meet standards of predictive validity, while noting that the LSI was not intended to be a predictive psychological test like IQ, GRE or GMAT. The LSI was originally developed as a self-assessment exercise and a means for construct validation of ELT. Judged by the standards of construct validity ELT has been widely accepted as a useful framework for learning centered educational innovation, including instructional design, curriculum development, and life-long learning. Academic field and job classification studies viewed as a whole also show a pattern of results consistent with the ELT structure of knowledge theory.

Most of the debate and critique in the ELT/LSI literature has centered on the psychometric properties of the LSI. Results from this research have been of great value in revising the LSI in 1985, in 1999 and again in 2005 (Kolb and Kolb 2005b). Recent critique has been more focused on the theory than the instrument examining the intellectual origins and underlying assumptions of ELT from what might be called a critical theory perspective where the theory is seen as individualistic, cognitivist, and technological (e.g. Vince, 1998; Holman, 1997; Hopkins, 1993). Kayes (2002) has

reviewed these and other critics of ELT and offered his own critique of the critics. He suggests that critics have overlooked the role of Vygotsky's social constructivist learning theory in the ELT theory of development and the role of personal knowledge and social knowledge in experiential learning. He proposes an extension of ELT based on Lacan's poststructuralist analysis that elaborates the fracture between personal and social knowledge and the role that language plays in shaping experience.

Summary

The key concepts from ELT—the learning cycle, learning style, learning space, deep learning and development—can be used to examine management as a learning process at the level of the individual, the team and the organization. They can also serve as useful tools to design and implement management education programs in higher education and management training and development. Research on ELT has today reached a level of maturity around the world such that the key challenges ahead lie in the application and institutionalization of these practices in order to improve management education, learning and development.

References

- Abbey, D. S., Hunt, D. E., & Weiser, J. C. (1985). Variations on a theme by Kolb: A new perspective for understanding counseling and supervision. *The Counseling Psychologist*, 13(3), 477-501.
- Argyris, C. (1992). *On organizational learning*. Oxford: Blackwell
- Armstrong, P., & McDaniel, E. (1986). Relationships between learning styles and performance on problem-solving tasks. *Psychological Reports*, 59, 1135-1138.
- Baker, A., Jensen, P., & Kolb, D. A. (2002). *Conversational Learning: An experiential approach to knowledge creation*. Westport, Connecticut: Quorum Books.
- Benne, K. D., & Sheats, P. (1948). Functional roles of group members. *Journal of Social Issues*, IV, 2.
- Biberman, N. J., & Buchanan, J. (1986). Learning style and study skills differences across business and other academic majors. *Journal of Education Business*, 61(7), 303-307.
- Border, L. L. B. (2007). Understanding learning styles: The key to unlocking deep learning and in-depth teaching. *NEA Higher Education Advocate*. 24 (5):5-8*
- Boyatzis, R. E., & Kolb, D. A. (1993). Adaptive Style Inventory: Self scored inventory and interpretation booklet. TRG Hay/McBer, Training Resources Group. 116 Huntington Avenue, Boston, MA 02116, trg_mcber@haygroup.com.
- Boyatzis, R. E., & Kolb, D. A. (1991). Learning Skills Profile. TRG Hay/McBer, Training Resources Group. 116 Huntington Avenue, Boston, MA 02116, trg_mcber@haygroup.com.
- Boyatzis, R. E. & Kolb, D. A. (1995, March-April). From learning styles to learning skills: The Executive Skills Profile. *Journal of Managerial Psychology*, 10(5), 3-17.
- Boyatzis, R. E. & Kolb, D. A. (1997). Assessing individuality in learning: The Learning Skills Profile. *Educational Psychology*, 11(3-4), 279-295.
- Boyatzis, R. E., Cowen, S. S., & Kolb, D. A. (Eds., 1995). Innovation in professional education: Steps in a journey from teaching to learning. San Francisco: Jossey-Bass.
- Boyatzis, R. E., & Mainemelis, C. (2000). *An empirical study of pluralism of learning and adaptive styles in a MBA Program*. (Working paper). Department of Organizational Behavior, Case Western Reserve University, Cleveland, OH.
- Boyle, E. J., Geiger, M. A., & Pinto, J. K. (1991). Empirical note on creativity as a

covariate of learning style preference. *Perceptual and Motor Skills*, 73, 265-266.

Brennan, A. & Dooley, L. (2005). Networked creativity: A structured management framework for stimulating management innovation. *Technovation*. 25: 1388-1399

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*. July:513-530

Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.

Cartwright, D. (Ed.) (1951). *Field theory in social science: Selected theoretical papers by Kurt Lewin*. New York: Harper Torchbooks.

Certo, S. C. (1976). The experiential exercise situation: A comment on instructional role and pedagogy evaluation. *The Academy of Management Review*, 1(3), 113-116.

Certo, S. C. (1977). *Stages of the Kolb-Rubin-McIntire experiential learning model and perceived trainee learning: A preliminary investigation*. Paper presented at the Academy of Management Proceedings.

Clarke, D. (1977). *A study of the adequacy of the learning environment for business students in Hawaii in the fields of accounting and marketing* (Unpublished manuscript). University of Hawaii-Manoa.

Corbett, A. C. (2005). Experiential learning within the process of opportunity identification and exploitation. *Entrepreneurship Theory and Practice*. 29 (4): 473-491

Corbett, A. C. (2007). Learning asymmetries and the discovery of entrepreneurial opportunities. *Journal of Business Venturing* 22: 97-118*

Dewey, J. (1897). My pedagogic creed. *The school journal*. LIV(3):77-80.

Dixon, N. M. (1996). *Perspectives on dialogue : Making talk developmental for individuals and organizations*. Center for Creative Leadership.

Dixon, N. M. (1999). *The organizational learning cycle. How we can learn collectively*. (third ed.). London: McGraw-Hill.

Donoghue, M. L. (1994). *Problem solving effectiveness: The relationship of divergent and convergent thinking*. Unpublished doctoral dissertation, University of Massachusetts.

- Druskat, V. U., & Kayes, D. C. (2000). Learning versus performance in short term project teams. *Small Groups Research*, 31(3), 328–353.
- Dyer, B., and Schumann, D. W. (1993). Partnering knowledge and exercise: The business classroom a laboratory. *Marketing Education Review*, 3(Summer), 32-3.
- Easterby, & Smith, M. (1997). Disciplines of organizational learning: Contributions and critiques. *Human Relations*, 50(9), 1085-1113.
- Eickmann, P., Kolb, A., & Kolb, D. A. (2004). Designing Learning. In R. Boland, F. Calopy (eds), *Managing as Designing: Creating a new vocabulary for management education and research*. Stanford University Press.
- Freire, P. (1992). Pedagogy of the Oppressed. New York: Continuum.
- Gopinah, C., and Sawyer, J. E. (1999). Exploring the learning from an enterprise simulation. *Journal of Management Development*, 18(5), 477-489.
- Grochow, J. (1974). *Cognitive style as a factor in the use of interactive computer systems for decision support*. Unpublished doctoral dissertation, Massachusetts Institute of Technology, Cambridge, MA.
- Gypen, J. L. M. (1981). *Learning style adaptation in professional careers: The case of engineers and social workers*. Unpublished doctoral dissertation, Case Western Reserve University, Cleveland, OH.
- Hayes, J., & Allinson, C. W. (1998). Cognitive style and the theory and practice of individual and collective learning in organizations. *Human Relations*, 51(7), 847-871.
- Hendrick, H. W. (1979). Differences in group problem solving behavior and effectiveness as a function of abstractness. *Journal of Applied Psychology*, 65, 518-525.
- Hickcox, L.K. (1990). An historical review of Kolb's formulation of experiential learning theory. Unpublished Doctoral dissertation, University of Oregon, Corvallis.
- Hickox, L. K. (2002). Personalizing teaching through experiential learning. *College Teaching*, 50(4), 123-128.
- Holman, D., Pavlica, K., & Thorpe, R. (1997). Rethinking Kolb's theory of experiential learning in management education: The contribution of social constructionism and activity theory. *Management Learning*, 28(2), 135-148.

- Hopkins, R. (1993). David Kolb's experiential learning-machine. *Journal of Phenomenological Psychology*, 24(1), 46-62.
- Huczynski, A., & Boddy, D. (1979). The learning organization: An approach to management education and development. *Studies in Higher Education*, *4*(2), 211-222.
- Hunt, D. E. (1987). Beginning with ourselves in interpersonal relations. In D. E. Hunt (Ed.), *Beginning with ourselves*. Cambridge, MA: Brookline Press.
- Hunt, D. E. (1991). *The Renewal of Personal Energy*. Toronto: Ontario Institute for Studies in Education.
- Iiff, C. H. (1994). Kolb's Learning Style Inventory: A meta-analysis. Unpublished Doctoral dissertation, Boston University, Boston, MA.
- Jackson, C. J. (2002). Predicting team performance from a learning process model. *Journal of Managerial Psychology*, *17*(1), 6-13.
- James, W. (1977). Percept and concept: the import of concepts. In J. McDermott (Ed.), The writings of William James. Chicago: University of Chicago Press.
- Jervis, P. (1983). Analyzing decision behavior: Learning models and learning styles as diagnostic aids. *Personnel Review*, *12*, 26-38.
- Joy, S. & Kolb, D. A. (2007). Are There Cultural Differences in Learning Style? Working paper. Department of Organizational Behavior Case Western Reserve University
- Jules, Claudy (2007). *Diversity of member composition and team learning in organizations*. Unpublished Ph.D. Dissertation Case Western Reserve University.
- Jung, C. G. (1931). Forward and commentary. In R. Wilhelm (Trans.), The secret of the golden flower. NY: Harcourt Brace & World.
- Katz, N. (1990). Problem-solving and time: Functions of learning styles and teaching methods. *Occupational Therapy Journal Research*, *10* (4), 221-236.
- Kay, R., & Bawden, R. (1996). Learning to be systematic: some reflections from a learning organization. *The Learning Organization*, *3*(5), 18-25.
- Kayes, D. C. (2001). *Experiential learning in teams: A study in learning style, group process and integrative complexity in ad hoc groups*. Unpublished doctoral dissertation, Case Western Reserve University, Cleveland, OH.

Kayes, D. C. (2002). Experiential learning and its critics: Preserving the role of experience in management education. *Academy of Management Learning and Education* 1(2): 137-149

Kayes, A. B. , Kayes, D. C. , & Yamazaki, Y. 2006. Transferring knowledge across cultures: A learning competencies approach. *Performance Improvement Quarterly*, 18, 4, 87-100.

Kayes, D.C. , Kayes, A. B. , & Yamazaki, Y. 2005. Essential competencies for cross-cultural knowledge absorption. *Journal of Managerial Psychology*, 20, 7, 578-589.

Kayes, A. A., Kayes, D. C., Kolb, A. Y., & Kolb, D. A. (2004). *The Kolb team learning experience: Improving team effectiveness through structured learning experiences*. Boston: Hay Resources Direct.

Kayes, A. B., Kayes D. C. & Kolb, D. A. (2005a). Experiential learning in teams. *Simulation and Gaming*. 36 (3): 330-354

Kayes, A. B., Kayes D. C. & Kolb, D. A. (2005a). Developing teams using the Kolb team learning experience. *Simulation and Gaming*. 36 (3): 355-363

Kilmann, R. (1979). Problem management: A behavioral science approach. *Management Principles for Non-Profit Agencies and Organizations*. Ed. by G. Zaltman. American Management Association

Kim, D. H. (1993). The link between individual and organizational learning. *Sloan Management Review* , Fall: 37-50.

Kolb, A. Y. & Kolb, D. A. (2007a). *Experiential Learning Theory Bibliography: 1971-2005*. www.learningfromexperience.com

Kolb, A. Y. & Kolb, D. A. (2007b). *Experiential Learning Theory Bibliography: Recent Research 2005-2007*. www.learningfromexperience.com

Kolb, A. Y. & Kolb, D. A. (2006). A review of Multidisciplinary application of experiential learning theory in higher education. In Sims, R., and Sims, S. (Eds.). *Learning styles and learning: A key to meeting the accountability demands in education*. Hauppauge, NY: Nova Publishers.

Kolb, A. Y. & Kolb, D. A. (2005a). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning and Education*. 4(2): 193-212

Kolb, A. Y. & Kolb, D. A. (2005b). *The Kolb learning style inventory—version 3.1: 2005 Technical Specifications*. Boston, MA: Hay Resources Direct

Kolb, D. A. (1983). Problem management: Learning from experience. In S. Srivastva (Ed.), *The Executive Mind* . San Francisco: Jossey-Bass.

Kolb, D. A. (2005). *The Kolb learning style inventory—version 3.1: self scoring and interpretation booklet*. Boston, MA: Hay Resources Direct

Kolb, D. A. (1981). Disciplinary inquiry norms and student learning styles: Diverse pathways for growth. In A. Chickering (Ed.), *The modern American College*. San Francisco: Jossey-Bass.

Kolb, D. A. (1984). *Experiential Learning: Experience as the source of learning and development*. Englewood Cliffs, N. J.: Prentice-Hall.

Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2001). Experiential learning theory: Previous research and new directions. In R. Sternberg and L. Zhang (Eds.) *Perspectives on cognitive learning, and thinking styles*. Mahwah, NJ: Lawrence Erlbaum Associates.

Kolb, D. A., Lublin, S., Spoth, J., & Baker, R. (1986). Strategic management development: Using experiential learning theory to assess and develop managerial competence. *The Journal of Management Development*, 5(3), 13-24.

Kolb, D.A., Rubin, I.M., & McIntyre, J. (Eds., 1971). *Organizational psychology: An experiential approach*. Englewood Cliffs, N.J.: Prentice Hall.

Lahteenmaki, S., Toivonen, J., & Mattila, M. (2001). Critical aspects of organizational learning research and proposals for its measurement. *British Journal of Management*, 12 (2), 113-129.

Lave, J. and Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press

Lengnick-Hall, C. A., and Sanders, M. M. (1997). Designing effective learning systems for management education: Student roles, requisite variety, and practicing what we teach. *Academy of Management Journal*, 40(6), 1334-1368.

Leroy, F., & Ramanantsoa, B. (1997). The cognitive and behavioral dimensions of organizational learning in a merger: An empirical study. *Journal of Management Studies*, 34(6), 871-894.

Loo, R. (2002). A meta-analytic examination of Kolb's learning style preferences among business majors. *Journal of Education for Business*, 77(5), 25-50.

Loo, R. (2002). The distribution of learning styles and types for hard and soft business majors. *Educational Psychology*. 22 (3): 349-360

Mainemelis, C., Boyatzis, R., and Kolb, D. A. (2002). Learning styles and adaptive flexibility: Testing experiential learning theory. *Management Learning*, 33(1), 5-33.

- McCarthy, B. (1987). *The 4-Mat System: Teaching to learning styles with right/left mode techniques*. Barrington, IL: Excel, Inc.
- McCormick, S. Y. (1987). *Nurse education and nursing student learning style match and its effect on the problem solving ability of the nursing student*. Unpublished doctoral dissertation, North State Texas University.
- McMullan, W. E., and Cahoon, A. (1979). Integrating abstract conceptualizing with experiential learning. *The Academy of Management Review*, 4(3), 453-458.
- Mellor, A. (1991). Experiential learning through integrated project work: An example from soil science. *Geography in Higher Education*, 15(2), 135-149.
- Mills, T. (1967). *The sociology of small groups*. Englewood Cliffs, NJ: Prentice Hall.
- Mumford, A. (1991). Individual and organizational learning: Balance in the pursuit of change. *Studies in Continuing Education*, 13(2), 115-125.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organizational Science*. 5(1): 14-37
- Nonaka, I. and Konno, N. (1998). The concept of “ba”: Building a foundation for knowledge creation. *California Management Review*. 40(3):40-54
- Novin, A. M., Arjomand, L. H., & Jourdan, L. (2003). An investigation into the preferred learning styles of accounting, management, marketing and general business majors. *Teaching and Learning*. 18(1): 24-31
- Ogot, M. & Okudan, G. E. (2006). Systematic creativity methods in engineering education: A learning styles perspective. *International Journal of Engineering Education*. 22 (3): 566-576.
- Osland, J. S., Turner, M. E., Kolb, D. A. and Rubin, I. M. (2007). *Organizational behavior: An experiential approach*. 8th Edition. Upper Saddle River, N. J.: Pearson Prentice Hall.
- Park, W., & Bang, H. (2002, March 26–27). *Team role balance and team performance*. Paper presented at the Belbin Biennial Conference, “Changing Role of Management in the 21st Century,” Clare College, Cambridge .
- Pauleen, D. J., Marshall, S., & Egort, I. (2004). ICT-supported team-based experiential learning: Classroom perspectives. *Education + Training*, 46(2), 90–99.
- Poltis, D. (2005). The process of entrepreneurial learning: A conceptual framework. *Entrepreneurship Theory and Practice*. 29 (4): 399-424

- Popper, M., & Lipshitz, R. (2000). Organizational learning - Mechanisms, culture, and feasibility. *Management Learning*, 31(2), 181-196.
- Potgieter, E. (1999). Relationship between the Whole-Brain Creativity Model and Kolb's Experiential Learning Model. *Curationis*, 22(4), 9-14.
- Rainey, M. A., Hekelman, F., Galazka, S.F., & Kolb, D. A. (1993, February). Job demands and personal skills in family medicine: Implications for faculty development. *Family Medicine*, 25, 100-3.
- Ramnarayan, S., & Reddy, N. M. (1989). Institutional learning: The essence of strategic management. *Vikalpa*. 14 (1): 21-33
- Revans, R. W. (1971). *Developing effective managers: A new approach to management education*. London: Blond and Briggs
- Revans, R. W. (1980). *Action learning : A new approach for managers*. London: Blond and Briggs
- Robinson, J. (2005). *Individual learning styles and their relationship to leadership styles*. Unpublished Ph.D. Dissertation Claremont Graduate School.*
- Rowe, F.A., & Waters, M.L. (1992). Can personality-type instruments profile majors in management programs? *Journal of Education for Business*, 68(1), 10-15.
- Sandmire, D. A., & Boyce, P. F. (2004). Pairing of opposite learning styles among allied health students: Effects on collaborative performance. *Journal of Allied Health*, 33(2), 156-163.
- Sandmire, D. A., Vroman, K. G., & Sanders, R. (2000). The influence of learning styles on collaborative performances of allied health students in a clinical exercise. *Journal of Allied Health*, 29(3), 143-149.
- Sanley, J. D. (1987). *An examination of student learning styles and learning modalities on problem solving success*. Paper presented at the Annual Meeting of the National Science Teacher's Association, Washington, D.C.
- Selby, E. C., Treffinger, D. J. Isakson, S. G. et. al. (2004). Defining and assessing problem solving style: Design and development of a new tool. *Journal of Creative Behavior*. 38 (4): 221-243
- Sharp, J. E. (2001, October 10-13). *Teaching teamwork communication with Kolb learning style theory* [session F2C1]. Presented at the 31st ASEE/IEEE Frontiers in Education Conference, Reno, NV.

Siegel, P. H., Khursheed, O., and Agraval, S. P. (1997). Video simulation of an audit: An experiment in experiential learning theory. *Accounting Education*, 6(3), 217-230.

Simonin, B. L. (1997). The importance of collaborative know-how: An empirical test of the learning organization. *Academy of Management Journal*, 40(5), 1150-1174.

Sims, R. R. (1981). *Assessing competencies in experiential learning: A person-job congruence model of effectiveness in professional careers*. Unpublished doctoral dissertation, Case Western Reserve University, Cleveland, OH.

Sims, R. R. (1983). Kolb's experiential learning theory: A framework for assessing person-job interaction. *Academy of Management Review*, 8(2), 501-508.

Sims, R. R., and Sauser Jr., W. I. (1985). Guiding principles for the development of competency-based curricula. *The Journal of Management Development*, 4(5), 51-65.

Smith, D. (1990). Physician managerial skills: Assessing the critical competencies of the physician executive. *Unpublished doctoral dissertation*, Department of Organizational Behavior, Weatherhead School of Management, Case Western Reserve University, Cleveland, OH.

Specht, L. B. (1991). The differential effects of experiential learning activities and traditional lecture class in accounting. *Simulation and Gaming*, 22(2), 196-210.

*Sprau, R., and Keig, L. (2001). I saw it in the movies: Suggestions for incorporating film and experiential learning in the college survey history course. *College Student Journal*, 35(1), 101-112.

Stabell, C. B. (1972). Project on the impact of conversational computer systems. Cognitive style in portfolio management. *Unpublished paper*, Sloan School of Management.

Svinick, M. D., and Dixon, N. M. (1987). The Kolb model modified for classroom activities. *College Teaching*, 35(4), 141-146.

Thomas, G. F. (2002). Individual and organizational learning: A developmental perspective on Gilsdorf, Rymer and ABC. *The Journal of Business Communication*, (39) 3, 379-387.

Umaphy, S. (1985). Teaching behavioral aspects of performance evaluation: An experiential approach. *The Accounting Review*, 60(1), 97-108.

Van Der Heijden, K. (1996). *Scenarios. The art of strategic conversation*: John Wiley & Sons.

Vince, R. (1998). Behind and beyond Kolb's learning cycle. *Journal of Management Education*, *22*(3), 304-319.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Edited by M. Cole, V. John-Steiner, S. Scribner and E. Soubberman. Cambridge, MA: Harvard University Press.

Wessel, J., Loomis, J., Pennie, S., Brook, P., Hoddinott, J., & Aherne, M. (1999). Learning Styles and Perceived Problem-Solving Ability of Students in a Baccalaureate Physiotherapy Programme. *Physiotherapy Theory and Practice*, *15*(1), 17-23.

Wolfe, J. (1977). *Learning styles rewarded in a complex simulation with implications for business policy and organizational behavior research*. Paper presented at the Academy of Management, University of Illinois.

Wyss-Flamm, E. D. (2002). *Conversational learning and psychological safety in multicultural teams*. Unpublished doctoral dissertation, Department of Organizational Behavior, Case Western Reserve University, Cleveland, OH.

Yamazaki, Y. (2005). Learning styles and typologies of cultural differences: A theoretical and empirical comparison. *International Journal of Intercultural Relations*. *29* (5): 521-548

Yamazaki, Y. (2004). An experiential approach to cross-cultural adaptation: a study of Japanese expatriates' learning styles, learning skills, and job satisfaction in the United States. *Unpublished doctoral dissertation*. Department of Organizational Behavior, Case Western Reserve University, Cleveland, OH.

Yamazaki, Y., & Kayes, D. C. 2007. Expatriate learning: Exploring how Japanese managers adapt in the United States. *The International Journal of Human Resource Management*, *18*, 8, 1373 – 1395.

Yamazaki, Y., & Kayes, D. C. 2004. An experiential approach to cross-cultural learning: A review and integration of success factors in expatriate adaptation. *Academy of Management Learning Education*, *3*, 4, 354-379

Yonutas, D.N. (2001). *Impact of Analogical Versus Logical Representations of Theoretical Concepts on Recall and Problem-Solving Performances of Concrete and Abstract Thinkers*. Doctoral Dissertation, University of Florida, 131pp.

Zhang, M., Macpherson, A., & Jones, O. (2006). Conceptualizing the learning process in SME's: Improving innovation through external orientation. *International Small Business Journal*. *24* (3): 299-323*

Zull, J. E. (2002). *The art of changing the brain: Enriching teaching by exploring the biology of learning*. Sterling, VA: Stylus.