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Experiential learning in teams

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Teamwork is prevalent in organizations, yet it has pitfalls such as social loafing, groupthink, overdependence on a dominant leader, overcommitment to goals, and diffusion of responsibility. Such negative factors can be overcome and team effectiveness improved when teams intentionally focus on learning. This article draws on nearly four decades of research and theory on experiential learning theory in teams. We identify learning as the key component of six aspects of team development: purpose, membership, role leadership, context, process, and action. Teams learn differently in early versus later stages of development. The Kolb Team Learning Experience addresses all six aspects through a structured written simulation. Upon completion of the simulation, the team has knowledge about the functions of teams in general, experience about the functions of its team specifically, and awareness of learning and progress through the learning cycle modes.

KEYWORDS: *experiential learning theory; ELT; experiential learning in teams; learning cycle; Learning Style Inventory; LSI; process; roles; role leadership; team development; teamwork; team effectiveness; team functions*

As teamwork becomes more prevalent in education and the workplace, more emphasis is placed on team learning—the ability of individual team members to learn teamwork skills (Stevens & Campion, 1994) and the capability of the team as a whole to develop the "executive consciousness" necessary to self-organize and manage its work process (Mills, 1967). Experiential learning theory (ELT; Kolb, 1984) provides a framework for understanding and managing the way teams learn from their experience. In this article, we outline the experiential approach to team learning and review research on the experiential perspective on teams. We examine the application of experiential learning principles to six areas of team functioning—purpose, membership, roles, context, process, and action taking—and describe how team effectiveness can be improved by focusing intentional learning effort on them.

Organizations increasingly rely on teams to get work done. Teamwork in organizations takes many forms, "from the shop floor to the executive suite"—ongoing work teams of various types, parallel teams for advice and employee involvement, temporary project teams, and management teams (Cohen & Bailey, 1997). In organizations

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with more than 100 employees, more than 80% use some form of teams (Guzzo & Shea, 1992). A survey of 1,000 *Fortune* 1000 companies in 1993 by the University of Southern California found that 68% of these organizations used self-managing work teams and 91% used some type of team to solve problems (Lawler, Mohrman, & Ledford, 1992, 1995).

The use of teams to promote student learning in education also has become more prevalent (Michaelsen, Bauman Knight, & Fink, 2004). For example, in his study of student learning at Harvard, Richard Light (2001) found student learning teams to be highly effective:

> Specifically, those students who study outside of class in small groups of four to six, even just once a week, benefit enormously. Their meetings are organized around discussions of the homework. And as a result of their study group discussion they are far more engaged and far better prepared, and they learn significantly more. (p. 52)

Learning teams such as this have sometimes been referred to as collaborative learning (Davidson, 1990; Johnson & Johnson, 1994), yet many who work in teams are not happy about it. Work team members often complain about wasting time in meetings that did not result in any action. Students complain about being forced to work in teams with other students who do not pull their weight when their grade is dependent on their team's performance (Chen, Donahue, & Klimoski, 2004; Hall, 1996). Small group research has identified a number of factors that negatively affect team performance and member satisfaction. These include phenomena such as overdependence on a dominant leader (Bion, 1959; Edmondson, Bohmer, & Pisano, 2001), the tendency to conform known as "groupthink" (Janis, 1972), overcommitment to goals (Staw, 1982), diffusion of responsibility (Wallach, Kogan, & Bem, 1964), a tendency to make risky or more conservative decisions than individuals acting alone (Clarke, 1971), social loafing (Latané, Williams, & Harkins, 1979), and the Abeline paradox (Harvey, 1988), in which groups take action that most members disagree with because they fail to express their true feelings.

In this article, we argue that these and other negative factors associated with team-work can be overcome when teams become able to learn from experience. Teams can increase their effectiveness and team members can develop team skills when a team intentionally focuses on learning. This article is made up of three main sections. In the first section, we explore the theoretical foundation of ELT and its application to teams. We trace the roots of an experiential learning approach to teams to Kurt Lewin in 1946 and then identify three key components of an experiential approach to team learning: conversation space, role leadership, and team development. This section is followed by a review of the contemporary research on experiential learning and teams. We identify learning as the key component of six aspects of team development: purpose, membership, role leadership, context, process, and action. Specifically, we identify how teams learn in early versus later stages of development across each of these six team development aspects. This section links experiential learning to key aspects of team functioning. In the third and final section, we show the implications of the experiential

learning approach to simulation and training through the Kolb Team Learning Experience (KTLE).

Research on experiential learning in teams

Historical origins

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 frame the experiential approach to team learning as it has evolved over the years: (a) the pivotal role of reflective conversation, (b) the theory of functional role leadership, and (c) 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 (cited in Kolb, 1984), 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. (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 becomes the 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 this shared self-image, 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 to grow and improve (Baker, Jensen, & Kolb, 2002).

As a team develops from a group of individuals into an effective learning system, members share the functional tasks 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. Although 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. Whereas 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). Later in the article, we provide a taxonomy of 12 team roles based on ELT.

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.

This training model has been developed into a more general theory of learning in ELT. 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, p. 41). The ELT model portrays two dialectically related modes of grasping experience, concrete experience and abstract conceptualization, and two dialectically related modes of transforming experience, reflective observation and active experimentation. According to the four-stage learning cycle, immediate or concrete experiences are the basis for observations and reflections. These reflections are assimilated and distilled into abstract concepts, from
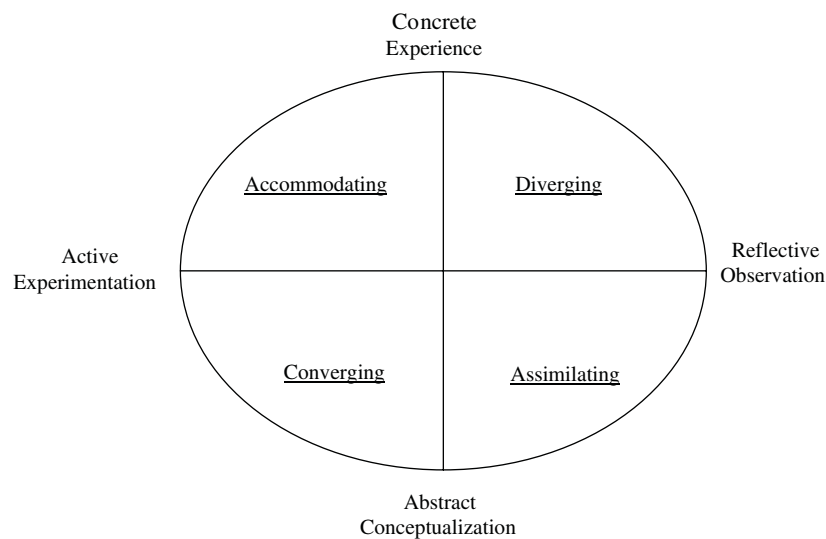
FIGURE 1:   The Experiential Learning Cycle and Basic Learning Styles

which new implications for action can be drawn. These implications can be actively tested and serve as guides in creating new experiences.

A closer examination of the ELT model suggests that learning requires abilities that are polar opposites. In grasping experience, some of us perceive new information through experiencing the tangible qualities of the world, relying on our senses and immersing ourselves in concrete reality. Others tend to perceive, grasp, or take hold of new information through symbolic representation or abstract conceptualization— thinking about, analyzing, or systematically planning, rather than using sensation as a guide. Similarly, in transforming or processing experience, some of us tend to carefully watch others who are involved in the experience and reflect on what happens, whereas others choose to jump right in and start doing things. The watchers favor reflective observation, whereas the doers favor active experimentation. Each dimension of the learning process presents us with a choice. Because it is virtually impossible, for example, to simultaneously drive a car (concrete experience) and analyze a driver's manual about the car's functioning (abstract conceptualization), we resolve the conflict by choosing. Because of our hereditary equipment, our life experiences, and the demands of our environment, we develop a preferred way. We resolve the conflict between concrete or abstract and between active or reflective in patterned, characteristic ways, called "learning styles."

The Learning Style Inventory (LSI; Kolb, 1999a, 1999b) was created to assess individual learning styles. Whereas individuals tested on the LSI show many different patterns of scores, research on the instrument has identified four prevalent learning styles: diverging, assimilating, converging, and accommodating (see Figure 1). The following summary of the four basic learning styles is based on both research and clinical observation (Kolb, 1984, 1999a, 1999b).

Diverging. The diverging style's dominant learning abilities are concrete experience and reflective observation. People with this learning style are best at viewing concrete situations from many different points of view. The style is labeled "diverging" because it facilitates generation of ideas, such as a brainstorming session. People with a diverging learning style like to gather information. Research shows that 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.

Assimilating. The assimilating style's dominant learning abilities are abstract conceptualization and reflective observation. People with this learning style are best at understanding a wide range of information and putting it 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.

Converging. The converging style's dominant learning abilities are abstract conceptualization and active experimentation. People with this learning style are best at finding practical uses for ideas and theories. Individuals with a converging learning style prefer to deal with technical tasks and problems rather than with social 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.

Accommodating. The accommodating style's dominant learning abilities are concrete experience and active experimentation. People with this learning style learn primarily from "hands-on" experience. They enjoy carrying out plans and involving themselves in new and challenging experiences. They tend to act on "gut" feelings rather than on logical analysis. In solving problems, individuals with an accommodating learning style rely on people for information more 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 different approaches to completing a project.

To learn from its experience, a team must have members who can be involved and committed to the team and its purpose (concrete experience), who can engage in reflection and conversation about the team's experiences (reflective observation), who can engage in critical thinking about the team's work (abstract conceptualization), and who can make decisions and take action (active experimentation). Teams develop

through a creative tension among the four learning modes. In an idealized learning cycle or spiral, the team and its members "touch all the bases"—experiencing, reflecting, thinking, and acting—in a recursive process that is responsive to the learning situation. Team development is thus a process in which a team creates itself by learning from its experience.

Current research

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 learns from experience and emphasizes all four learning modes. Summarized below are studies of team member learning style, team roles, and team norms.

Team member learning style. In the first experimental study of the effect of learning styles on team performance, Wolfe (1977) examined how homogeneous three-person teams of accommodators, divergers, assimilators, or convergers performed on a complex computer business simulation compared with heterogeneous teams. The four groups of homogeneous teams had similar performance results. However, the teams that had members with diverse learning styles performed significantly better, earning nearly twice the amount of money of the homogeneous learning style teams. Similarly, Kayes (2001) found that teams made up of members whose learning styles were balanced among the four learning modes performed at a higher level on a critical thinking task than teams whose members had specialized learning styles.

Sandmire and Boyce (2004) investigated the performance of two-person collaborative problem-solving teams in an allied health education anatomy, physiology, and pathology course. They compared a group of high abstract/high concrete student pairs with a group of abstract pairs and a group of concrete pairs. The abstract/concrete pairs performed significantly better on a simulated clinical case than the abstract pairs and slightly better than the concrete pairs, indicating the value of integrating the abstract and concrete dialectics of the learning cycle. However, a similar study by Sandmire, Vroman, and Sanders (2000) investigating pairs formed on the action/reflection dialectic showed no significant performance differences.

Halstead and Martin (2002) found that engineering student teams that were formed randomly to include all learning styles performed better that self-selected teams. Furthermore, in her studies of engineering students, Sharp (2001) stated, "Classroom experience shows that students can improve teamwork skills with Kolb theory by recognizing and capitalizing on their strengths, respecting all styles, sending messages in various ways, and analyzing style differences to resolve conflict and communicate effectively with team members" (quoted from Session F2C-2). In his study of a 6-week teambuilding program, Hall (1996) reported difficulty with self-selected teams that tended to group on the basis of friendship. He advocated random team assignment, concluding, "If we had taken this approach there would have been more

disagreement to work through, personality clashes to cope with and conflict to resolve. The stress would have been greater, but the *learning* probably more profound" (p. 30).

Using another approach, 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's average score was higher than that of the losing team. Jackson (2002) 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. (p. 11)

Team roles. 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.

McMurray (1998) organized his English as a foreign language classroom using ELT principles. He divided his Japanese students into four-person teams with maximally diverse learning styles. Students were assigned to one of four roles that matched their strongest learning mode: leader (concrete experience), artist (reflective observation), writer (abstract conceptualization), and speaker (active experimentation). The leader's role was to direct classmates in completing assignments; the artist's, to create ideas for presentations; and the writer's, to compose messages for speakers to read. Class lessons were organized to include all four stages of the learning cycle. Classroom observations supported the idea that students benefited from the team role assignment and from accounting for learning style in the course design.

Gardner and Korth (1999) used ELT, learning styles, and the learning cycle to develop a course for human resource development graduate students that focused on learning to work in teams. They found strong relationships between learning styles and preference for learning methods—assimilators preferred lectures, reading, writing, and individual work, whereas accommodators and often divergers and convergers preferred partner and group work. They advocated providing different student roles during team learning activities to develop appreciation for, and skill in, all learning styles:

> Part of the class could actively participate in a role play (accommodating), while a second group observes and provides feedback to the participants (diverging), a third group develops a model/theory from what they have seen and shares it with the class (assimilating) and the fourth group develops a plan for applying what they have seen to a new situation and shares it with the class (converging). (p. 32)
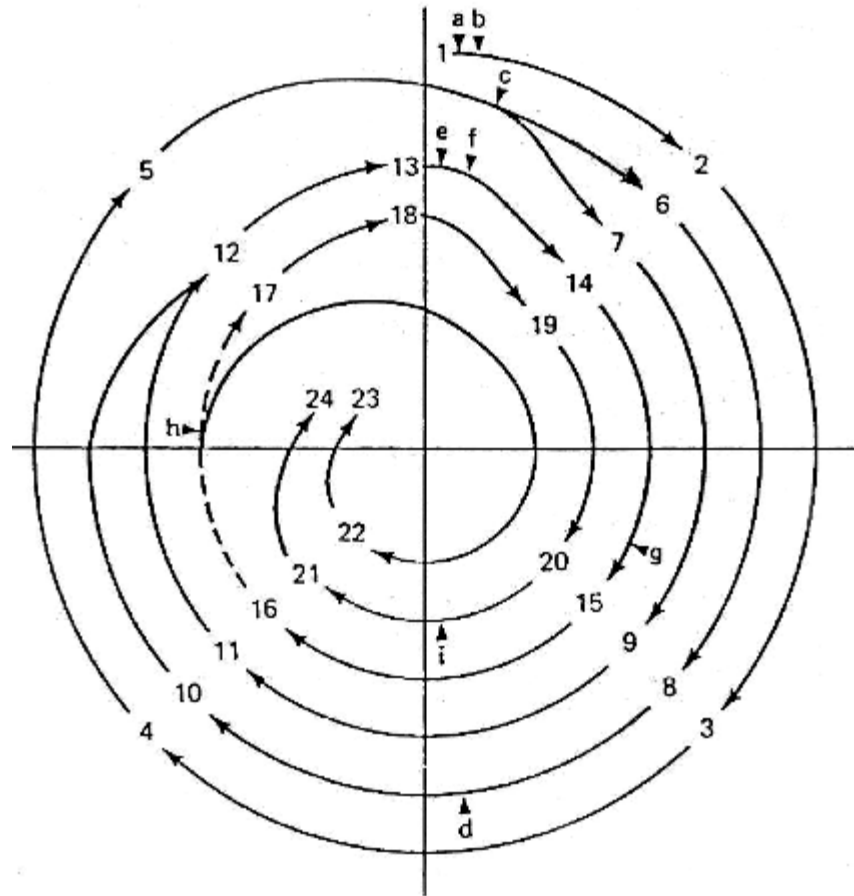
FIGURE 2:   Project History in Terms of the Learning Model

Team norms. Carlsson, Keane, and Martin (1976) 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. Figure 2 shows the portrait of one such team's progress through the learning cycle over time; letters on the diagram indicate management inputs, and numbers indicate project team activities. For example, #1 is considering what businesses the division should be in, #2 is generating nine alternatives, #3 is establishing selection criteria with marketing, #4 is evaluating the alternatives against the criteria, and #5 is assigning staff to activate three projects. Projects that deviated from this work process by skipping stages or being stuck in a stage "indicated problems deserving of management attention" (p. 38).

Gardner and Korth (1997) used ELT to design a course in group dynamics, group development, and group effectiveness. They taught student learning teams to use the experiential learning cycle to improve the transfer of learning. They concluded, "The use of learning groups in conjunction with the experiential learning model enhances the learning process, reinforces the link between theory and practice, and facilitates the transfer of learning to the workplace" (p. 51).

Pauleen, Marshall, and Egort (2004) used ELT to construct and implement Web-based team learning assignments in a graduate-level course in knowledge management. Students worked on projects in virtual teams. Follow-up student evaluations indicated that 75% "agreed or strongly agreed that experiential learning was a valuable way of experiencing and learning about a variety of communication channels in a team environment" (p. 95); 99% found experiential learning to be more valuable than simply reading about something.

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 (2004) developed an instrument called the Conversational Space Inventory to assess the norms of conversational space as experienced by team members in a sample of 49 educational and work teams. Team members rated their experience of the "real" conversational space in their team and described their desired ideal for the team conversational space. One of his findings was 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.

Team learning and team development

In ELT, "the process of learning from experience . . . shapes and actualizes developmental potentialities" (Kolb, 1984, p. 133). Theodore Mills (1967) described team learning as a reconfiguring of a group's purpose to achieve a continually greater and more complex purpose. Developmental progression occurs as the group learns to deal

with the increasingly complex demands of achieving its purpose. He described five
levels of team development:

1. Immediate gratification. In the first stage, members of the group seek to fulfill individual
    needs or desires. They come together simply to meet some immediate individual need,
    such as attending a concert to enjoy music. There is no sustained effort at gratification.
2. Sustained conditions for gratification. In the second stage, individuals come together for
    gratification but develop ways to sustain the gratification. One example is a group that
    decides to attend concerts regularly or follow a musical group to various venues to recre-
    ate the experience. The effort to sustain gratification requires individual learning because
    it involves developing informal strategies and implementing mechanisms to maintain the
    gratification over time.
3. Pursuit of a collective goal. The third-order purpose focuses on developing a collective
    goal. In this stage, a group becomes a team. This stage requires development of more for-
    mal strategies and structures to meet the group purpose. Here, the members of the group
    must transform from individual learning to group learning, develop methods of coordina-
    tion, develop adaptation mechanisms, and respond to changing external demands. For
    example, an informal group may decide to create its own musical group and perform at
    various venues.
4. Self-determination. In the fourth order, the group no longer simply adapts to changes in
    the environment but makes self-directed changes directed by its stated desires. Although
    external constraints are not completely eliminated, the group develops the freedom to set
    and pursue its own goals. An example is a musical group that sets its own progressive
    agenda and makes music that is seen as groundbreaking.
5. Growth. A group working at the fifth level can follow multiple goals, create high levels of
    innovation, manage diverse and conflicting types of innovation, and influence a number
    of different domains. For example, a well-established musical group may influence sev-
    eral types of music, as the musical group the Beatles were able to do, by creating rock,
    easy-listening, classical, and popular music. In addition, members have been able to
    advance various causes, contribute to the development of new groups, and engage in
    other artistic endeavors such as painting and drawing.

Mills (1967) described the role of intentional experiential learning in the following
way:

Although accomplishment of a given order of purpose tends to increase the group's
potential for advancing to the next higher order, that advance is not automatic or predeter-
mined, but instead depends on the initiative of a member, or members, in conceiving the
new purpose, formulating it, conveying it, acting according to it and having it generally
accepted by others in the group. . . . *Seeing* the new possibility and then *acting* on it are
relevant, important and indeed critical to group growth. (p. 114)

In fact, Mills's (1967) theory describes 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 add-
ing 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 reali-
ties 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 transition from lower to higher developmental stages.

Although teams transition from lower to higher developmental stages, this developmental process occurs along several dimensions. For example, teams may develop in their ability to create roles (e.g., Benne & Sheats, 1948) or in their ability to create and pursue a common purpose (Mills, 1967). In the next section, we look at six aspects of group functioning—purpose, membership, roles, context, process, and action taking—and examine how team learning fosters development in each of these aspects of team functioning. We address two issues related to the functional aspects of team learning: how teams learn about each aspect during higher and lower developmental phases and the specific issues that may affect the capacity to learn.

Functional aspects of team learning

Research and theory have established the essential elements necessary for the functioning of a social system. These functional aspects of teams are (a) a shared purpose that provides direction for members of the group; (b) roles or a basic division of labor; (c) a context that establishes the external constraints faced by the system, most notably the nature of the task and the resources available to the system; (d) a well-established process for achieving the system's purpose; (e) the composition or membership of the group, particularly as it applies to diversity; and finally, (f) actions to achieve the purpose, involve members, respond to context, and manage the team's process. In concert with Mills's developmental stages, we conclude that team learning and growth are dependent on the team's ability to learn in each of these six functional aspects. In each stage of development, teams engage in a process of experiential learning that propels them into higher stages of team functioning, which in turn allows the teams to achieve even higher levels of learning and growth. The combination of ELT with Mills's developmental stages of teams results in an integrative, holistic approach to team learning based on ELT. The following sections describe this process of learning and development for each area of team functioning.

Learning about purpose

Purpose is a critical aspect of team functioning. In fact, a shared sense of purpose makes a group a team as opposed to a collection of individuals. When individuals come together, their personal needs and goals predominate. Even though the group may have been assigned a purpose by a course instructor or work supervisor,

individuals' understanding and ownership of the assignment may be minimal com-
pared with their personal agendas.

Mills's model is useful in defining the issues about purpose and goals that are
important as a team develops from a group of individuals into a highly effective team.
Early in development, teams focus primarily on their individual concerns and goals.
Somewhat later, group members become a team and focus on a collective purpose.
However, the collective purpose is often given to the group, and this stage is marked by
little autonomy. The team adapts to what is given to them. In the later stages, the team
emerges as an autonomous, self-directed system capable of redefining its purpose and
refining its goals to meet environmental challenges. Its dynamic purpose becomes a
focal point for replacing and recruiting members and sharing its knowledge with other
groups.

In the early stages, team learning issues about purpose are focused on members
understanding one another. Early on, when members meet as individuals with little
common experience, individual needs and goals are unknown and there may be little
sense of a team purpose. The tasks for learning about purpose at this point include the
following:

- Getting to know one another and understanding individual member needs and goals—
  where team members are coming from.
- Gaining a shared clarity and consensus about the team's purpose.
- Achieving alignment between individual goals and team purpose.

In later stages of the team's development, learning issues for the team move to a focus
on the following:

- Developing specific goals to achieve the team purpose.
- Redefining and refining goals to respond to the team's environmental context.
- Aligning the team purpose with an inspiring larger vision that empowers team members
  and attracts new members and outside constituencies.

These team learning issues are best addressed by creating a conversational space
that allows team members to develop and refine the team's purpose by following the
experiential learning process. In the early stages of team formation, for example, it is
essential to develop a climate of trust and safety that encourages members to converse
openly about their experience on the team, including their personal goals and their per-
ception of the team's purpose (concrete experience). Only then can the team reflect
and talk through these issues together (reflective observation), synthesize them into a
shared consensus that aligns individual and team goals (abstract conceptualiza-
tion), and then coordinate action to define and implement specific goals (active
experimentation).

If a team learns together about its purpose and goals, it can avoid some of the dys-
functional team behaviors mentioned earlier. The root cause of social loafing, for
example, often lies with team members who are privately pursuing their individ-
ual goals and have little commitment to the team purpose. At the other extreme,

overcommitment can result, particularly in highly motivated voluntary teams. A mountain-climbing team, for example, can become so focused on its goal to reach the top that it neglects the individual survival goals of members to get safely down again (Kayes, 2004). A political action group can become so focused on having its candidate win that it ignores other goals such as honesty and fairness.

Learning about membership

A team is made up of individuals who bring different experiences, skills, styles, and knowledge to the team. The team membership area of functioning includes team composition—team size, expertise, learning style, and the ability to manage differences and similarities among team members—and psychological membership issues such as trust, safety, and inclusion (Edmondson, 1999; Schutz, 1958).

Team size. Teams should be large enough to accomplish their goals but small enough to ensure coordination of their tasks. The most effective size, Hackman (2002) argues, is between four and six members, but this is still somewhat dependent on the purpose of the team. He illustrates this by stating that it takes only two members to fly a commercial airplane but many more for an orchestra to perform. The difficulty in coordinating tasks increases as the team size increases (e.g., Hackman, 1987; Sundstrom, 1999). However, two recent studies (Cohen & Bailey, 1997) suggest that teams with as many as 30 to 40 members can still be effective. Small teams may encounter specific types of problems. This is evident in three-member teams, in which two members tend to work well together and the third person is left out of important decisions. Early in a team's development, it may not actively manage its size. As the team develops, it gains the ability to actively adapt its size to the nature and complexity of the goals. Well-developed teams may find it possible to recruit additional members with the necessary skills (even if only on an ad hoc basis) to work on a set of tasks or to help develop the skills of existing team members.

Diversity and compatibility on teams. An important consideration for team membership is whether members are similar (homogeneous) or different (heterogeneous). For compatibility, members who are different from one another must get along. Team members who are very similar tend to be more compatible; however, such homogeneity does not always lead to effective team outcomes. Teams with less similar members are often more innovative, but members need to work to value others who are different. The pay-off when a team can value members' differences is tremendous. Whereas research on diversity in demographic characteristics such as age, gender, and ethnicity shows mixed results depending in part on the role of subgrouping (Gibson & Vermeulen, 2003; Gladstein, 1984; Hackman, 1987), the research on diversity of learning style reviewed earlier has found that heterogeneous teams perform better than homogeneous teams. Learning style of team members is influenced by a variety of factors such as personality, education, special skills, and member background. Thus,

learning style is an important variable for understanding team members' differences and similarities.

Cohesion. Cohesion describes the degree of camaraderie or "esprit de corps" among group members. The degree of cohesion in a group may be a factor of team size and compatibility. Smaller teams with members who have similar attitudes tend to be more cohesive than other teams. However, teams with too much cohesion are liable to suffer from groupthink, a flawed decision process in which members jump to action without adequately considering different types of data. Teams that learn to be aware of issues associated with cohesion and in turn actively manage their cohesion can avoid dysfunctional behavior like groupthink. Well-developed teams, for instance, are more likely to be open to more data during decision-making sessions. Thus, a developed team is less likely to experience groupthink, even with high degrees of cohesion.

Trust and psychological safety. Trust is the feeling that team members can depend on one another and contributions are valued. Psychological safety is the feeling that it is safe to make mistakes or to express views that differ from majority opinion. In climates of low trust and safety, members may be concerned about repercussions from other teammates.

In the early stages of a team's development, individuals do not have a high degree of trust or interdependence. When a team is first formed, the climate is established as either being safe or unsafe to express differences. When people do not feel safe sharing their experiences, they cannot learn. As teams learn by sharing their experiences through good conversation, the team is able to manage issues of size, compatibility, and cohesion. These issues all hinge on learning from experience and the climate for conversation that is created. Teams that have moved to higher stages have actively managed their team climate to build trust and ensure that differences are safe to express. As the team learns, members gain the ability to value and leverage these differences, even on teams that are extremely heterogeneous. Learning teams continue to progress into higher levels of functioning.

Teams that have developed are not limited by issues of size, compatibility, cohesion, and psychological safety. Team members operating in later stages have learned to (a) manage the size of the team relative to its task, (b) interrelate by building on strengths, (c) engage in performance without high degrees of cohesion, and (d) trust each other and maintain a sustainable climate of psychological safety.

Inclusion. Teams work best when all members feel included in the group's process. Schutz (1958) emphasized that for team members to feel included, they must be in a team that provides structure, connection, and shared beliefs. Structure is addressed by roles and norms on a team. Connections and shared beliefs are formed by communicating about experiences. Teams in lower stages of development often have team members that are left out of the team's process, specifically in conversation and decision making. Teams in later stages of development have mastered including all team

members by providing structures where everyone can share experiences through conversation.

Learning about roles and role leadership

As we have seen, a group of individuals becomes a team through learning about the team's purpose and learning about other team members. In this evolution, a team begins to organize itself as a system that can adapt to and ultimately master its context. The team accomplishes this through the development of role leadership. Initially, leadership is often centered on one individual, who by virtue of formal position, expertise, or personality has the most power and influence over the group's activities; group members play individualistic roles focused primarily on their personal needs. As a team develops and learns about its purpose and members, it can begin to share power and influence more widely among group members as they play roles crucial to the team's mission.

Role leadership in teams is thus a dynamic process where roles played by team members are shaped by the overall team context. A team member's role is determined by personal characteristics such as personality, preferences, skill, and expertise and by environmental demands such as the expectations of other team members and task requirements. The power to lead the team may shift as it moves through different phases of its work. In the early idea-generating phase, for example, members who can play opportunity-identifying and problem-defining roles may assume leadership, whereas in the implementation phase, those with problem-solving and action skills may take over.

This dynamic role leadership is key to avoiding the dysfunctional inefficiencies of teamwork and maximizing the potential synergies to be gained by full utilization of team member skills. For example, in their study of 52 industrial work teams from six South Korean companies, Park and Bang (2002) found that when team member roles were matched to the demands of different stages of the work, performance was significantly greater. In his study of 49 educational and work teams, Lingham (2004) found that teams with high dependence on a single leader had lower performance, less member satisfaction, and a decreased climate of psychological safety.

ELT offers a refined taxonomy of 12 team roles based on learning skills. These are divided into four categories—interpersonal roles, information roles, analytic roles, and action roles (see Figure 3) (Boyatzis & Kolb, 1991, 1995, 1997; Kayes, Kayes, Kolb, & Kolb, 2004):

A. Interpersonal roles deal with building relationships, working with others, or maintaining good working relationships on the team.
 1. Leading: inspiring and motivating others, selling ideas, negotiating, and building team spirit.
 2. Relationship building: establishing trusting relationships with others, facilitating communication and cooperation, and working with individuals inside and outside the team.

    3. Helping: being sensitive to others, helping others gain opportunities to grow, being self-aware.
  B. Information roles involve managing large amounts of new and complex information.
    4. Sense-making: adapting, changing, dealing with new situations, and defining new strategies and solutions.
    5. Information gathering: showing sensitivity to and awareness of organizational events, listening with an open mind, and developing and using various sources for receiving and sharing information.
    6. Analyzing information: assimilating information from various sources, making meaning, and translating specialized information for general communication and use.
  C. Analytical roles involve creating theories or models from the available information and creating frameworks for future action.
    7. Theory building: adopting a larger perspective, integrating ideas into systems or theories, and using models or theories to forecast trends.
    8. Working with quantitative data: using quantitative tools to analyze and solve problems and finding meaningful patterns in quantitative reports.
    9. Using technology: using technology and networks to analyze data, organizing information, and building models and simulations using technology.
  D. Behavioral roles include deciding, taking action, completing the tasks, and carrying out the goals of the team.
    10. Goal-setting: establishing standards to monitor and evaluate progress toward goals and making decisions based on cost-benefits.
    11. Action-taking: committing to objectives, meeting deadlines, being persistent and efficient, managing time and stress, organizing day-to-day activities, and making decisions under time pressure and with limited resources.
    12. Taking initiative: seeking out and taking advantage of opportunities, taking risks, being personally involved and responsible, and making things happen.

This taxonomy provides a framework for aligning member roles with contextual task demands as different tasks take priority in the team's purpose. Fernandez (1988) validated the ELT 12-role taxonomy in a study of the role sets of 110 project team leaders in a high-tech software organization. He showed matches between role priorities and role expectation ratings by the supervisor and team members. In another study, Fernandez (1986) showed that technical supervisors with abstract learning styles did not give priority to the people management roles expected by team members and supervisors, instead focusing on "fire-fighting" (problem solving) and technical expert roles preferred by those with abstract learning styles.

The team role taxonomy also serves as the foundation to understand the nature of team context. The next section describes how teams learn about context as well as the relationship between context and task.

Learning about context

Context is the environment where a team's work is applied. Team context includes many things, such as the resources it has available, the individuals outside the immediate team who work directly with the team, formal and informal coaches, and managers. An important consideration in determining a team's context is its task (see Druskat & Kayes, 2000). Team task can be described as the way the team goes about dealing
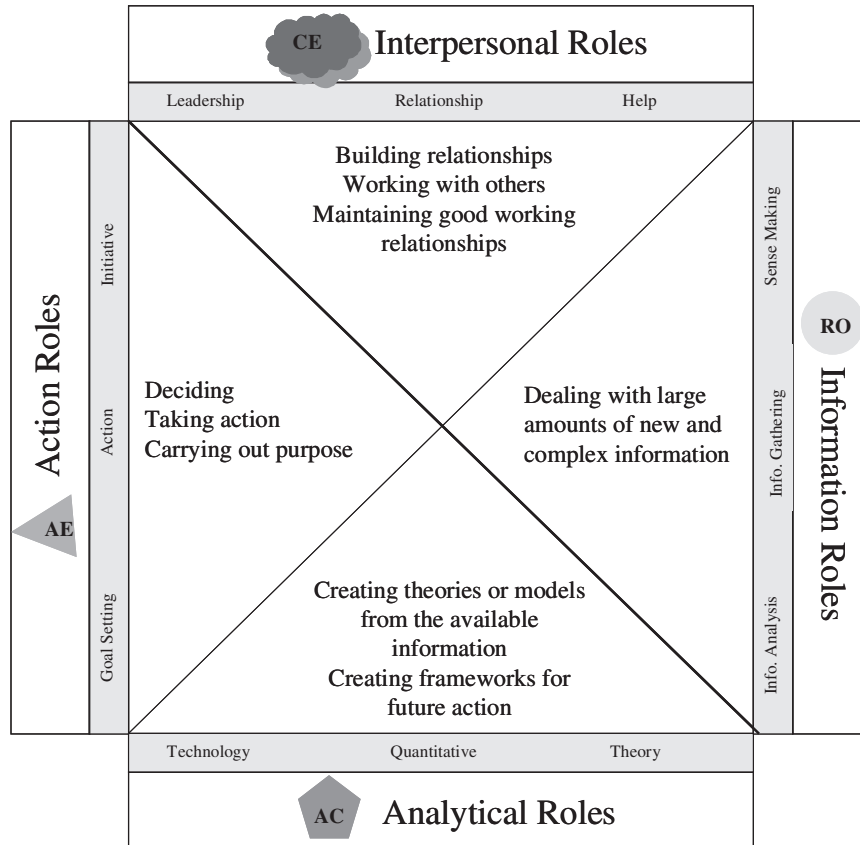
FIGURE 3:   Team Learning Role Taxonomy

with its environment. How a team goes about its task and the team's context will change as the team learns and develops. One way that a team can manage its task is by matching the role preferences of team members with the context demands faced by the team. This process allows members to take on responsibilities that draw on their skills or abilities or provide new opportunities for learning.

As a team progresses through the learning cycle, it becomes more skilled at managing its environmental context. Even though a group may have little control over its environment, the team can exercise discretion on how it manages and interacts with its environment (Ancona & Caldwell, 1992). In the early stages of team development, teams are likely to be subject to the vicissitudes and immediate demands of its environment. Over time, however, a team will learn to manage environmental demands.

The environmental context demands faced by teams can be organized into four overarching dimensions:

- Interpersonal demands: aspects of the task that require working together with members of the team and with other individuals and teams that affect its purpose.
- Information demands: the information and knowledge essential for achieving the team's purpose.
- Analytic demands: the ability of the team to analyze, synthesize, and form a coherent picture of what the team faces and the information it has available.
- Action demands: identifying the skills, deadlines, and tasks that must be completed by the team.

As a part of the team-development process, teams learn what elements of its environment can be changed and what cannot. Early in a team's development, it will need to focus on the following:

- Identifying its available resources and determining the adequacy of those resources.
- Identifying individuals who will have an influence on the team.
- Understanding the nature of the various demands placed on the team.

Later in the group's development, it will focus on the following:

- Identifying team members best suited to dealing with each context demand.
- Managing the multiple demands of its environment while maintaining a focus on its goals.
- Aligning the environment and its purpose through its task.

When considering the match between individual roles and team tasks, it is important to remember that team learning is based on adaptation. Roles are not static, and neither are the specific tasks that individuals will carry out. Individual team members must learn to adapt to a changing context by learning new roles, taking on new responsibilities, and assisting others with these transitions.

If a team can effectively learn from its environment, it can overcome some of the dysfunctional effects of teams. Groupthink, or the drive for internal consensus and cohesion within a team at the expense of effective decision making, may be overcome by effectively interacting with the environment. One reason groupthink arises is that teams cut themselves off too severely from their environment and fail to manage adequately the multiple demands that present themselves in their environment. By actively engaging with the environment and identifying resources that are essential for achieving the team purpose, teams can learn to overcome excessive cohesion.

Learning about process

The process aspect of team learning can be understood by using the experiential learning model. Teams learn from experience as shown in a study of teams engaged in research and development activities at a major U.S. consumer products company (Carlsson et al., 1976). Research and development teams provide an important example of team learning because the main product or outcome of such teams is knowledge, and learning is the process that creates this new knowledge. The study found that the

learning cycle provided an accurate and useful description of the team learning process. Three important findings related to the team learning process emerged from these teams:

- The most effective teams, as measured by supervisors and anonymous observers of the teams, progressed through each of the four stages of the learning cycle a number of times during the project life cycle. This is an important point: Teams do not cycle through the learning process once but complete the loop of learning several times.
- The less-effective teams became stifled in their development in several ways. They often failed to cycle through all four stages of learning. The strengths and weakness of each group were directly related to the stage the team ignored. For example, some teams spent too much time creating new ideas but failed to properly explore the practical aspects of their ideas. Other teams lacked creative ideas but developed great implementation strategies.
- Teams that were assisted by a trained facilitator or that had team members who could facilitate were able to improve the learning process by moving the team through each stage of the cycle in sequence. Although the cycle of learning may seem like a natural progression for teams, teams are not expected to go through the four-stage process without some form of intervention or knowledge about team process functioning. In other words, although the learning cycle is somewhat intuitive, teams do not necessarily engage in the cycle. This is a particularly important point for those who are interested in simulations and experiential education. Often, intervention by a skilled coach or trained team facilitator can be helpful.

When teams successfully navigate the learning process, they are likely to avoid some of the dysfunctional aspects of group life. One such dysfunctional process is the Abilene paradox (Harvey, 1988). This paradox occurs when individuals do not express inner needs and feelings and then act in ways that run counter to the stated purpose of the team. As groups engage in the multiple phases of learning, they become more likely to express multiple viewpoints, explore problems from multiple angles, and engage the diverse experiences of the team members. Overcoming this tendency to agree prematurely facilitates the expression of multiple viewpoints and ideas.

Learning about action

Action taking is the process of achieving the team's purpose (Kolb, 1984). Action results from the decision-making process as the team executes its plans to assign tasks, ensure responsibility and accountability, and achieve goals. Feedback is critical; it can prevent the team from action that is mindless. It is de-motivating for teams when they fail to act, and it is equally de-motivating for teams when they act mindlessly and without forethought.

A well-developed team will create feedback mechanisms that allow it to alter its course of action. The extent to which a team effectively integrates and operates on these feedback mechanisms will determine its growth and the learning level of the team's development. Lewin (1948) pinpointed the lack of adequate feedback as the most salient determinant of ineffective team action. Feedback during action taking

gives the team an opportunity to reflect on its process, develop new approaches, and then refine actions. Action taking is an iterative cycle of acting and getting feedback.

One of the tools teams typically use to chart the action process visually is an action-planning worksheet. This worksheet allows the team to directly integrate feedback into its actions so that it can change goals, better match team members with team tasks, improve processes, and reanalyze its context, all based on feedback. The action-planning worksheet enables the team to chart their iterative process. The team can balance feedback and action without getting stuck in either process.

The action processes a team enlists are based on the level of development in which the team operates. Early on in a team's development, it is likely to perform actions disconnected from feedback. Responsibility is shared as team members begin to work collectively rather than individually. In essence, lower stages of development are marked by the team's response to goals or circumstances without seeking feedback. In later stages, the team works together to change current goals and act on them as the situation demands. The team is able to make independent, well-thought-out decisions based on feedback with involvement from everyone on the team. In these later stages, the team designs new feedback systems to integrate increasingly complex data from the environment. The team takes responsibility for its actions based on this feedback. By the time the team reaches the highest stages, it has learned to seek and integrate feedback continually into higher order, purposeful actions. These actions will be adapted as needed by changing goals, skills, and contexts. The team has learned that purposeful actions are based on continual learning and adaptation.

We have outlined how learning drives individual teams to develop higher level functioning in each of the six aspects of team functioning. In the final section, we outline the implications of this model of team learning for educational interventions and introduce a structured method to guide teams through this process.

Educational interventions in teams

Because teams do not often naturally develop or learn, a programmed team learning experience can provide a structured way to move through the developmental process for each aspect of team functioning. Understanding how teams learn is the first step in designing a simulation that encourages learning. Teams learn from experience by having members who are

- involved and committed to the team and its purpose and who are creating new knowledge and identifying challenges (concrete experience).
- engaging in reflection and conversation about the team's experiences and making observations to ensure that all available knowledge has been addressed (reflective observation).
- thinking critically about how the team works and coming up with new theories, devising plans or models, and placing abstract events into coherent and simple explanations (abstract conceptualization).
- making decisions, taking action, and experimenting with various approaches and strategies for problem solving (active experimentation).

A team can progress in its development through several popular educational interventions. One such intervention, the KTLE, emphasizes development of the aspects of team functioning described above, including the internal organization of the team and management of the team's environment. Its structured experiences enhance team effectiveness through learning. In its step-by-step simulation, members of new or ongoing teams learn to manage the six aspects of team functioning. This learning is focused on the real work of the team to accomplish its purpose.

The KTLE is a structured written simulation (in the form of a team workbook) in 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. Upon completion of the simulation, the team has knowledge about the functions of teams in general, experience about the functions of its team specifically, and awareness of learning and progress through the learning cycle modes. This knowledge, experience, and learning can be continually leveraged as the team continues to work together to accomplish its goals.

The KTLE helps teams work toward higher development through seven distinct simulation modules, each lasting about an hour in length. The modules are as follows:

1. Team learning overview: Teams engage in an introductory exercise that encourages teamwork and requires the team to move through the learning cycle by engaging in a simulated product development and marketing exercise. Teams then analyze their process and acquire their first exposure to the team-level learning cycle.
2. Team purpose: This module helps a team set its general direction by identifying individual purpose and how it relates to the team's overall purpose.
3. Team membership: Teams map the learning styles of individual members onto a specially designed learning space. They then develop a snapshot of team members' learning styles and can begin to see how the team as a whole learns best. Team members can identify the synergies and challenges relative to their individual learning styles.
4. Roles: Team members identify their role preferences and map them to identify gaps and potential strengths of team members and the team as a whole.
5. Context: The team identifies its primary contextual demands, including the nature of its task and the resources it needs to complete its task effectively.
6. Team process: The team once again visits the four-phase team learning cycle. In this module, however, the team diagnoses its own process and identifies its strengths and weaknesses relative to navigating the learning cycle.
7. Action planning: The team works through a detailed action-planning worksheet. In this final module, the team pulls together what it learned about itself from the other six modules. The planning process provides the team with a detailed but flexible action plan, including deadlines, expected results, and the necessary team processes to achieve these results.

Team learning is an essential process that facilitates team development and, in turn, the ability of a team to take action in the face of specific contextual demands. The

history of group and team research describes both the positive and negative aspects of team functioning. The KTLE provides a structured simulation to help teams realize the importance and potential of team learning without falling prey to the problems that often plague teams during the learning process.

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