Simulation Enhanced Learning: Case Studies in Leadership Development

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> *While HRD practitioners strive to use more active learning strategies, the standard approach for developing strategic leadership competencies has largely remained the domain of traditional lecture driven events. This paper presents an alternative, Simulation-Enhanced Learning, that combines assessment, role-plays, mini-lectures, and simulations to provide an integrated leadership development approach that replicates the dynamics of the organization and meets the necessary conditions for development. The creation and application of SEL in two business organizations is described.*

Keywords: leadership development, simulation, competency

The greatest constraint for many organizations is the ability to attract, retain, engage, and develop talent (Chambers, Foulon, Handfield-Jones, Hankin, and Michaels, 1998). At the same time, the practical impact of near continuous change and complexity has meant that people in organizations must constantly learn and adapt. To survive in the turbulence that accompanies rapid change, organizations, their workforces, and their leaders must develop the capacity to learn continuously (Watkins & Marsick, 1993). In this context, the only effective development efforts are ones that increase participants' ability to act successfully in unique, ambiguous or divergent situations (Argyris & Schon, 1996). Yet, many organizations are finding it increasingly difficult to produce the necessary meaningful learning using traditional training methods. In order for development to make a consistent contribution in organizations, a real break from the school-based educational philosophy of "learning through listening" must take place to be replaced by a recognition of the active, self-regulated nature of meaningful learning (Shuell, T. J. 1990).

The world is complex, the development of leadership talent is complex and we are not treating it as such when we approach it with educational methods that assume that a given set of skills are requisite and unchanging. Learning to lead involves dealing with complexity, taking risks, and collaborating with others to bring a myriad of talents to bear on critical issues (Dentico, 1998). The catalyst for development must be the leader and his or her ability to profit from experience (McCall, Lombardo, Morrison, 1989). So, what is the role of the organization in orchestrating development? The role may be to enhance diverse opportunities for individuals to garner meaningful learning from experience, on the job, in the day to day challenges of work and in planned learning activities.

Transfer of Learning and Simulation

Research tells us that learning activities that recreate work situations foster better transfer of learning (Swanson & Holton, 1999). Industry examples of the use of simulations are plentiful. Aviation, civil emergency preparedness, business management, and medicine all use realistic scenarios to teach or improve complex skills. When the cost of failure is high and when the performance arena uncertain, simulations are likely to be useful. It thus seems logical that one thing organizations can do to increase learning transfer and performance in the face of ambiguity is to employ educational interventions that are more like the learner's on-the-job experience—simulations.

Educational simulations are simplified versions of the reality that learners interact with on a daily basis. They capture the essential dynamics of a workplace in a way that allows learners to explore different approaches and experience different outcomes. Simulations have long been used by social scientists to study social phenomena (Goldspink, 2000). Recent trends have been toward the use of complex computer-based simulations created to model workplace dynamics and teach leaders how organizations work. However, regardless of advances in computational technology and application of sophisticated artificial intelligence software, computer based simulations are limited to simplified systems that can only marginally represent reality. "What is distinctive about human social systems is that they are comprised of agents (humans) who have the capacity for language and who are reflexive or self-aware. Computer aided simulation design has yet to come to terms with this complexity theoretically or methodologically" (Goldspink, 2000). Human interaction is the true field test and development arena for leadership talent. The focus of this paper will be on the dynamic of learning created in social simulations featuring human actors.

Personnel Decisions International (PDI) research on organizational environments that foster development identified five basic conditions that must be present for development to occur. These are called the "Necessary Conditions for Development" by the authors of the PDI study (Peterson & Hicks, 1999). According to Peterson and Hicks, there are five essential conditions necessary for systemic and strategic development of both people and organizations. Those conditions include insight into development needs, motivation to change, opportunity to acquire and practice new skills, and accountability for follow through (see Table 1). A deficit in any of these conditions limits the ability of the individual or organization to develop. These conditions served as requirements for development programs created at PDI during the period of time this study was conducted.

Necessary Conditions for Development
1. Insight. Do people know what to develop?
2. Motivation: Are people willing to invest the time and energy it takes to develop themselves?
3. Capability: Do people know how to acquire the new capabilities they need?
4. Real World Practice: Do people have opportunities to try their new skills at work?
5. Accountability: Do people internalize their new capabilities to actually improve performance and results?

Table 1. Necessary Conditions for Development. From Peterson & Hicks (1999).

Statement of the Problem

The standard approach for developing leadership capabilities in organizations has been to identify needed leadership competencies or skills, and then to provide learners with awareness and skill building activities to prompt a change in behavior around those separate competencies (Dubois, 1993). Management education as a practice has also focused attention on the need to use active, experiential learning techniques (Zemke & Zemke, 1984). Typically, these activities occur mostly in classroom settings. This model of leadership education was developed and perfected in a stable and more predictable age (Lynham 1999; McLagan & Nel, 1996) and is proving to be less than adequate in an age of what Peter Vaill calls "white-water change" (1989). To live up to its potential to become a truly strategic tool (Conger & Xin, 2000), a new model of leadership education must be formulated.

The issues that the authors identified when they were exploring this problem within their client organizations revolved around the following questions.

1. Would the use of simulations be an effective way to enhance traditional classroom-based leadership development programs?
2. How could simulations feasibly portray the complexity of strategic business issues in ways that are engaging and effective for the learners?
3. How could such simulations be developed and integrated into classroom-based leadership development programs in such a way as to meet the practical needs of training designers, facilitators, learners, and program sponsors?

This paper describes the authors' exploration of these questions in the development and implementation of two unique leadership development programs featuring a strategy named Simulation-Enhanced Learning (SEL).

Method

The approach used by the authors in developing a simulation-enhanced learning (SEL) strategy followed a simple action research perspective (Argyris & Schon, 1996). As such, the principal purpose of the activity was to help the client individuals and organizations reach their learning goals. The study itself was secondary to this primary goal, but planned from the outset as a method of enhancing the authors' understanding of how simulations could enhance leadership development interventions. The process of intervening, reflecting on the intervention, and reflecting upon the reflection process contributed to the learning the researchers gained.

As practitioner inquirers, the authors understood that they were not objective, but rather biased participants in the formulation of theories of action (Argyris & Schon, 1996). Also, because this was an exploratory study conducted as part of a learning intervention, the researchers decided to document the results of their experiences as cases (Yin, 1994.)

With this understanding in mind, the goals of the reflection were to attempt to identify where the intended actions had seemed to produce a pattern of desirable results, and where surprises occurred. In addition, reflection upon the process of reflection itself surfaced possible biases. Among these was the likelihood that the researchers tended to pursue and justify the use of simulations because of personal motives (as noted, creation of new processes, application of creativity, desire to do something new, desire to enhance credibility). The authors acknowledge that this bias affected the selection of methods, application of the SEL approach, and description of the results. However, this bias should be recognized as appropriate to the simplified action research method as the researchers were simultaneously participants and researchers (Herron, 1996).

The researchers were consultants external to the client organizations, in both cases. They had been contracted to provide customized leadership training that would help each organization address its unique strategic situations and leadership development skill gaps. During the training design and development process, the researchers were able to involve program sponsors in the action-reflection process around the use of simulations within their respective leadership development programs.

Designers and sponsors of these leadership development programs were initially interested in addressing the needs of leaders within two organizations who were facing increasing complexity with apparently insufficient skill. As the intervention designs progressed, each client indicated a receptivity to using simulations to enhance the learning experiences. At that point, the researchers concluded that a sound approach to developing and using simulations for leadership development might be a useful tool. The examination of the SEL approach and the development of the process model underlying these interventions became part of the authors' goals for the experience. The researchers and participating organizational sponsors considered collecting empirical evaluation data about the relative effectiveness of the SEL approach, but elected not to pursue this for varying reasons. However, as an exploration of the Simulation-Enhanced Learning approach itself, the authors report two case examples that demonstrate its application.

Case: Developing an Approach to Simulation-Enhanced Learning

"Executive education is undergoing a gradual but radical transformation. Programs operating today must be far more innovative, learner-centered, and relevant to immediate company needs than ever before" (Conger & Xin, 2000). This was certainly the standard called for by Rockwell Automation and Anheuser Busch, two organizations with strong traditions in the area of innovative leadership development. In late 1998, each organization set out to create new leadership development programs in partnership with Personnel Decisions International, an international human resources consulting firm. In these two separate projects, the similar goal was to craft leadership development experiences that were directly linked to organizational challenges and strategic business initiatives. The result was a design methodology and learning technique labeled Simulation-Enhanced Learning (SEL). Simulation-Enhanced Learning programs are an integrated blend of assessment, coaching, focused lecture presentations, case-study discussions, experiential activities, action learning, and large-scale business simulations. As the approach to designing both leadership development programs was generated at the same time, and in collaboration, this is documented first. The specific application to the two organizations' unique needs follows.

At the outset, the development teams recognized three challenges. These challenges rose from the needs expressed by the program sponsors and the Personnel Decisions International (PDI) training and development standards. Each leadership development program designed through this process needed to:

1. Present learners with business challenges to build strategic competencies. Learners must be able to apply the skills effectively in their own workplaces.
2. Use learning strategies in such a way as to satisfy the "Necessary Conditions for Development," a research-based PDI model for development.
3. Increase the transfer of learning by employing methods that help participants "learn by doing."

Using a common approach to meeting these objectives seemed to offer the most efficient use of consulting time for both client organizations and the researchers. This prompted the researchers to pool efforts to develop an intervention approach that would address the objectives.

The decision to pursue simulation as a learning strategy came about as the researchers were asked to address a variety of needs in each organization that cut across simple and straightforward competency lines. As Peter Vaill (1989) had observed, the reduction of leadership to competencies was useful in identifying the skills to address, but not for crafting naturalistic development experiences to strengthen leadership ability. The long history of work that PDI had done in using simulations for management assessment centers suggested that competencies could be

observed and practiced in pseudo-realistic ways for individuals. One researcher's experience with military and gaming simulations suggested that simulation could be useful for integrating competency-based learning in a group setting, as well.

As the researchers explored the concept of using simulations with the client organizations, the reaction of the sponsoring teams was very positive. They particularly appreciated the way that the simulation would bring their specific business challenges and conditions into the development program. Discussions of the learning strategy also highlighted the ways in which the simulation-enhanced program would address the "learning by doing" and "present business challenges" objectives, and provide firm support for the necessary conditions for development. The only serious question from both client organizations was whether the researchers would be able to deliver on the timeline and budget initially specified for the interventions. After these questions were addressed, and the scope of the simulation and the rest of the program negotiated, both Anheuser Busch and Rockwell Automation decided to proceed with the Simulation-Enhanced Learning approach.

Challenge 1: Present Learners With Business Challenges To Build Strategic Competencies

Each team followed a slightly modified version of traditional instructional design process as described in Figure 1 below. Designers began by analyzing organizational goals and constraints (steps 1&2). The analysis yielded information that allowed the design teams to identify the implications for talent and begin constructing realistic business challenges.

The design teams were assisted in identifying talent constraints by the availability of custom competency models and job analyses. These models provided useful starting places, but were also somewhat limiting. In practice, competency models are frequently used in selection,

Analyze	Design	Implement
1. Goals -discover organizational goals.	8. Evaluate - assess changes in critical competency performance	7. Implement - create an implementation strategy.
Given		
2. Constraints- identify potential barriers.	Information Flow	6. Construct - design a realistic simulation
So		*If a simulation, then*
3. Talent Implications - recognize talent constraints.	4. Skill Focus - focus on critical competency clusters.	5. Learning Mix - define learning objectives and design.

Figure 1 : Design process for Simulation-enhanced Learning

assessment and performance measurement. However, translating those competencies into meaningful objectives for leadership development has been challenging and often not very successful. One reason for this was described by Peter Vaill as, "Competency lists cannot describe how people experience their work life." Therefore, competency models sometimes remain an interesting exercise in categorization and do not become critical drivers of individual leadership development. So, if competency models don't drive development then what does? According to Peterson & Hicks (1999) development occurs when the necessary conditions for development are met.

When experience drives insight, motivation and learning, accountability, competencies can then become touchstones for progress. If the programs the researchers were designing were to present learners with realistic business challenges, then the competency focus and learning content needed to be similarly realistic and relevant. Through the situation analysis, the researchers found that business challenges required leaders to employ a number of competencies simultaneously. The question then became, what cluster of competencies should be the focus for this program? (Step 3 & 4). The focus of needs assessment shifted accordingly.

Challenge 2: Satisfy the Necessary Conditions for Development

With the skill focus and competency clusters identified, the design teams began to craft the learning mix (step 5 & 6). The challenge for each team was to create a program that satisfied the necessary conditions for development. In practice, the conditions became a "blueprint" for design. In order to satisfy the necessary conditions for development, the researchers planned to integrate a variety of activities into the framework that would provide the basic structure within which the learners could work. Examples of learning strategies employed in SEL are shown in Table 2.
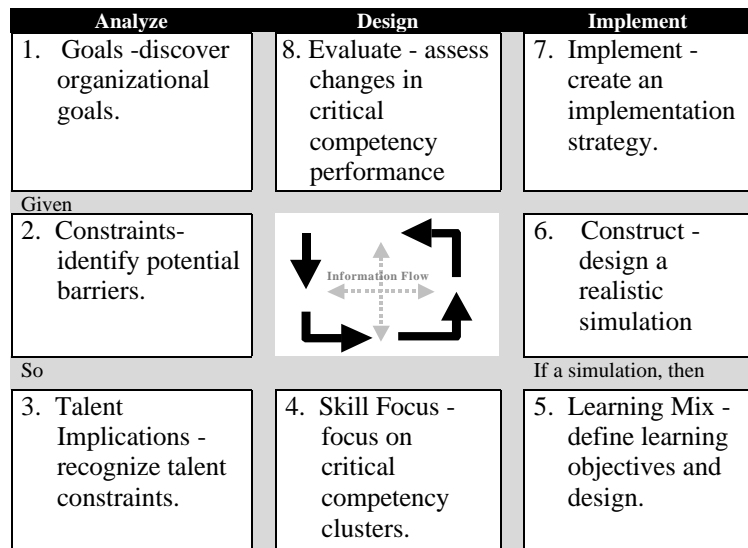
Challenge 3: Learn by Doing

As the design outline took shape, the emphasis was on employing methods that helped participants to "learn by doing." The plan called for participants to experience the program in cohort groups immersed in an integrated, large-scale business simulation. In the process, each group would be faced with challenges and opportunities analogous to the types of challenges encountered by leaders at their level back on the job (step 6). The business issues used were modeled after the situations identified in the analysis phase (see the information flow from step 2). For example, in one simulation, the group was asked to recommend a revised marketing strategy in response to new competitor and customer information. In another instance that same group was required to negotiate for capital investment resources. Each group was paired with a trained facilitator. The facilitator's role was to observe helping and hindering behavior and facilitate critical reflection discussion in the after action group debrief sessions.

Condition	Strategies Used in the SEL Approach
Insight	360-degree feedback assessment, peer-to-peer feedback, self-assessment.
Motivation	Debrief of 360-degree feedback, linking of simulation to real business issues, learner identification of benefits to be gained from the program, pre- and post-program boss discussion, linking to personal career issues for the learners.
Capability	Lecturette, experiential exercise, case study discussion, introduction of business simulation material, learner-led debrief of simulation modules, facilitator coaching.
Practice	Take-home applications, business simulation work, and some action learning components.
Accountability	Pre- and post-program boss discussion, responding to 360-degree feedback givers, organizational expectation for results, some action learning components.

Table 2. SEL Learning Strategies.

The expectation was that these cohort groups would sponsor and enrich the learning process through peer feedback and collective wisdom. Calhoun W. Wick and Lu Stanton Leon (1993) emphasized the value of cohort groups in The Learning Edge. "Leaders who are successful learners are powerboat drivers pulling a team of water skiers. By converting their energy into action, those in their wake are pulled to explore new territory, to see their work in new ways, and to get increased results they never thought possible." In bringing together leaders from diverse functions and divisions within the organization to participate in these cohort learning groups, the expectation was for participants to learn from each other as well as from the simulation experience.

Case: Deployment of SEL at Rockwell Automation

In 1998, Rockwell Automation was in the early stages of an organizational culture change. The company had reorganized several parts of its industrial controls business to create a more efficient and responsive business structure. The goal of the restructuring was an improvement in Rockwell Automation's competitive capability. As frequently happens in restructuring efforts, the structural changes occurred in advance of work on the underlying organizational culture. The previous structure had allowed the five business units a lot of autonomy, but the new organization would require a greater degree of cooperation and collaboration across the whole organization. Rockwell Automation's executive leadership felt that the legacy culture was a constraint on the ability of the restructured organization to deliver on its promised potential.

One implication of the talent need was that leaders at all levels of the organization needed to be better equipped to support the intended culture. They also needed the opportunity to develop increased leadership skills to more effectively support their employees through the change process and on a day-to-day basis. As part of the effort to provide these skills, Rockwell Automation sponsored a leadership development program to give all supervisors, managers, and directors a common set of skills, tools, and expectations. By building individual capability and creating a shared experience for leaders, Rockwell Automation hoped to gain both direct performance improvement and a foundation for a more flexible culture.

The HRD team that developed the leadership development solution began with a thorough assessment of the strategic, operational, and leadership needs of the organization. The assessment methods included leader interviews, supervisor focus groups, review of multirater feedback data group reports, and analysis of strategic direction. The assessment revealed a broad set of leadership skills that were important to the job and to the new strategic direction, and which leaders felt needed development. By analyzing the needs in terms of importance and potential impact on leader effectiveness, business unit performance, and strength of support for the desired cultural practices, the HRD team was able to establish a reasonable focus on a set of key talent needs.

The design itself included two sessions of five days each. The first session introduced a common set of management skills grouped into five areas: managing people, managing performance, selection interviewing, coaching people, and managing diversity. This session was presented as a classroom training program, including lecture, discussion, case study, role plays, learning applications, development planning, and a two hour interviewing simulation. The design team considered using simulation here, but decided to limit the simulation experience to the second session, due to resource constraints.

Between four and six weeks later, the same group of participants returned for the second session. This session focused on leadership skills (influence, decision making, fostering innovation, strategic thinking, team building) in a leadership laboratory environment. The session was designed around a comprehensive business simulation called "RoboPet," developed by PDI for this program. The fictional company called "RoboPet, Inc." was a manufacturer of high-technology toys. It faced an unforeseen challenge from a new competitor and had a limited time to respond. The learners took on the roles of cross-functional product line teams to address the market challenge of the competitor's product. The HRD team developed the materials with the goal of information richness and detail. Each participant received different information that pertained to his or her role and product line.

In the implementation phase, the facilitators ran the program as five related and sequential simulation modules. Each module furthered a storyline developed to match the scenario and the leadership skills the program would emphasize. Each simulation module followed a similar pattern: 1) introduce new information, 2) respond to the information, 3) analyze and solve problems, 4) apply the leadership skills, and 5) debrief the results of the learners' actions. The actions that the learners could take within their roles were bounded only by the resources given to them in the scenario and by the guidance of the facilitators. After each simulation module, the learners discussed their own lessons learned and shared insights about their actions, with the facilitator asking open-ended questions to prompt critical thinking. The facilitators' role in guiding this loosely structured simulation was key to its success, and required significant preparation and familiarization time.

The HRD team built the scenario for the RoboPet simulation around business situations that posed challenges for the Rockwell Automation leaders. These situations included: dealing with information overload, responding rapidly to competition, fostering innovation in teams, influencing other teams and upper management, making tough decisions independently, and creating a shared sense of purpose. The design team matched the simulation scenario and situations to what the leaders frequently experienced on the job. At the same time, the scenario was crafted so that participants could not use so much industry knowledge that the focus on leadership skills would be lost. As a result, many participants in the program commented to the facilitators about "Wow! This feels just like what I do at work!" This illusion of realism helped the participants transfer what they learned back to the job, according to later comments and evaluation interviews with program sponsors.

Case: Deployment of SEL at Anheuser Busch

The Anheuser Busch Leadership College was created in 1997 to promote learning and development across the numerous organizations that make up the Anheuser Busch Companies. In late 1998, the organization was seeking top line growth, conrol of the bottom line and leadership consistency across the company. In order to support these goals, managers in the organization needed to improve their ability to implement Anheuser Busch strategy and build strong relationships. A leadership program geared for the middle management population was already in place. While the existing program was generally well received, it lacked a tight focus on these and other critical competencies. A new approach was called for and the SEL design project was initiated. The HRD team included Anheuser Busch Process and Human Resource leaders and a PDI design consultant.

As in the Rockwell Automation design process, the Anheuser Busch (AB) team began with a thorough assessment of the strategic, operational, and leadership needs of the organization. The assessment methods included leader interviews, review of multirater feedback group reports, and analysis of strategic direction. Anheuser Busch is a market leading organization, very stable, it has a strong track record of success. One question asked was, "How could leader development contribute to an already successful formula?" The picture that emerged from the interviews and analysis showed some opportunities in the area of strategic thinking, cross-process influence skills, innovation management and employee development. As in many large and complex organizations, managers at Anheuser Busch tended to have a very narrow focus on their own process and little on the bigger picture. In the bigger picture, AB was facing increasingly innovative competition, flat international sales and rising costs.

In the design of the Anheuser Busch Leader Lab, groups of leaders from across the organization, including some from brewing, bottling, and entertainment were brought together. In future programs managers from supply organizations would also be invited. Over the course of three days participants in the program assumed the leadership of a consumer products and services organization called Broucharde Companies, International. The

Broucharde Companies was a multinational organization comprised of three enterprises, Broucharde Wines, Undine Hotels and Dawntide, Cruiseline (BUD). Like Anheuser Busch, the Broucharde Companies was a privately held firm led by the grandson of the founder. All the issues and opportunities embedded in the scenario and simulation had their analog in Anheuser Busch.

The program implementation followed a similar scheme as identified in the Rockwell case. Each participant was asked to engage in a 360 assessment and goal setting process prior to the program. Once at the program, participants gathered together in learning teams. Each team was paired with a facilitator. In the Anheuser Busch program, there were five sequential modules. Each module addressed a specific competency cluster and the simulation story line was continued in each module. The participants engaged with the simulation, debriefed the activity, reflected individually, and then moved to the next simulation module to highlight another competency cluster.

It has now been a year and a half since the first delivery of the program. Since that initial delivery this program has become one of the more popular workshops offered through the Anheuser Busch Leadership College. In late 2000 the program was offered for the first time outside of the United States to managers in England. In post program reaction evaluations, participants are asked to list the most valuable aspect of the program. Many participants identify the simulation experience as being most valuable. Others cite the value of the 360 feedback. However the number one response by far is the impact of peer and coach interaction in critical reflection or real business case discussions held within their learning teams.

Conclusions

Through the experience of developing and testing the Simulation-Enhanced Learning methodology in two organizations, we were able to address our initial research questions. As expected, new questions and directions for further study arose, as well.

Research Question Conclusions

In the process of creating the Simulation-Enhanced Learning methodology and the two programs described in this paper the authors addressed three questions. First, we asked: *"Would the use of simulations be an effective way to enhance traditional classroom-based leadership development programs?"* We found this to be the case, at least as measured by participant response. The participant response ratings and comments indicated that the simulation-enhanced programs led to more insight, as perceived by the learners. Follow-up questions about utility also indicated that participants and supervisors were more likely to have used what they learned in this program than in other leadership development programs they had taken. However, this data is entirely based upon perception and anecdote. As yet, no rigorous evaluation has been done on either of the SEL programs. Addressing the necessary conditions for development, including use of feedback, multirater instruments, and engaging practice in a simulation, made the entire learning experience effective for the participants. Programs without some simulation component have not been able to achieve such high levels of engaging practice.

Second, we asked: *"How could simulations feasibly portray the complexity of strategic business issues in ways that are engaging and effective for the learners?"* We found that, as expected, the process of creating simulations is complex. It requires a deep understanding of the social system being modeled, the ability to diagnose the system issues underlying the day-to-day challenges, and the ability to portray those system issues through the simulation storyline. We found if we created a well-written story and supported it with reasonable data then people quickly became engaged and enthusiastic about their participation in the simulation. As with any fictional work, enough supporting information must go into a simulation scenario to allow the participants to suspend disbelief. Without details that make the simulation "feel" like real work, participants do not immerse themselves in the experience and construct new insights and learning.

The third question was: *"How could such simulations be developed and integrated into classroom-based leadership development programs in such a way as to meet the practical needs of training designers, facilitators, learners, and program sponsors?"* The key to answering this question was the integration of the necessary conditions for development into the SEL methodology. One of the lasting outcomes from these projects was a repeatable methodology for creating and implementing Simulation-Enhanced Learning programs. Using the SEL approach, shown in Figure 1, we were able to identify the system issues and constraints, group competencies into related clusters, and design programs that included a variety of learning strategies, supported by business simulations. The SEL approach helped us balance the very real constraints of time, money, and effectiveness as we

made decisions about how much detail to put into the simulations, how to structure learning around the competency clusters, and what learning activities to emphasize or limit.

Other Questions and Directions

There are other questions about the use of simulations for leadership development that remain unanswered. This study did not examine how learners used their learning groups to enhance the quality of their learning. Continuing work beyond the simulation and into real business issues could be a very powerful action learning extension to the SEL approach. Another unresolved question is whether or not the SEL approach is more effective, empirically, than its traditional alternatives. One additional possibility raised during the design phase of these projects was whether participants could engage in e-learning with online versions of the simulation in lieu of or in preparation for the learning event. Each of these issues offers the potential for further study.

Returning to our original premise, leadership development in the face of increasing complexity must incorporate more effective and engaging learning methods. Using simulations to put boundaries around the complexity and, in essence, "package it" for learning has shown to be a useful tool. Within the simulation itself, the learner has much greater control of his or her learning than is possible in most traditional learning activities. Adult learning theory continues to suggest that this learner control and engagement is key to the construction of knowledge and to making intentional changes in behavior.

As we find new ways to help people develop the knowledge and skills they need to adapt to complexity, simulations are likely to play an increasingly important role. Simulation-Enhanced Learning is one way to bring the context into the classroom to build strategic leadership capabilities.

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