Advancing Acquisition of Business Know-How: Critical Learning Elements

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Abstract

The turbulent business environment requires business expertise from ever-larger personnel groups. The required business know-how is a combination of knowledge and several different skills, and it should provide the learners with an overall view of the functioning of a business organization as a whole. Moreover, while work is increasingly becoming a team and group effort, the potential strength of collaboration should also be presented in the learning environment. In this paper we first identify elements that advance the acquisition of relevant business know-how. Second, we describe how these elements can be embedded in a time intensive business simulation game, and present two simulation training sessions. Third, we analyze how the participants in the case trainings reflect on the elements that advance the acquisition of business knowledge. The analysis is qualitative by nature, utilizing simulation game participants' answers on questions concerning the different elements. Our results show that with dynamic simulations it is possible to support the team learning process, and enhance collaboration skills and overall understanding of the functioning of business organizations. (Keywords: business simulation gaming, experiential learning, complexity, business expertise, team learning).

INTRODUCTION

The decision-making at all business levels concerns larger personnel groups than before. Employees at lower levels of the organization are participating in decision-making that has major effects on the strategy of the organization. Senge (1997) predicts that in the future leadership will be distributed among diverse individuals and teams who share the responsibility for creating the organization's future. This means that the organizational processes and their interconnectedness need to be understood by wider groups of employees. In order to succeed in the post-modern world, employees need overall business knowledge to complement their task-specific skills. The challenge is to gain an understanding and to be able to operate with concepts that previously were the domain of top management.

Learning arises from people working together to achieve practical outcomes and building practical know-how in the process (Senge, 1997). The more specific the employee's knowledge and skills are to a company's unique set of customers, technologies, and equipment, the more productive they become and the more efficient the company becomes (Ghoshal, Bartlett, & Moran, 1999). This expertise is a combination of several different skills and know-how and it should include overall understanding of the basic logic of business processes and operations.

Required Overall Business Knowledge

In this research we are interested in the expertise domain of holistic business understanding. This could also be called business know-how. Though being a common term in business literature, it is extremely difficult to find any definition for business know-how. In this paper we will define business know-how as the overall understanding of how business organizations function to achieve the business goals (profitability) set by the organization's management. This overall understanding includes the ability to make informed decisions that lead to outcomes that best serve the organization's goals. Central capabilities in business know-how are the ability to optimize the whole instead of functional sub-optimization, and the ability to make decisions with imperfect information in complex decision-making domains.

Formerly, building functional excellence through narrow personal expertise was considered to be enough. Mastering your own area of expertise, however, is nowadays not sufficient. In addition to substance-specific knowledge and expertise, various other types of knowledge and skills are required. Expertise has traditionally been examined as a competence based on individual abilities and dispositions rather than focusing on relations between individual skills and the dynamic functioning of communities and organizations (Hakkarainen, Palonen, Paavola, & Lehtinen, 2004). Hakkarainen et al. call for networked expertise, which means "higher-level cognitive competencies that arise, in appropriate environments, from sustained collaborative efforts to solve problems and build knowledge together" (p. 9). Networked expertise emerges from the tailoring and fine-tuning of individual competencies to specific conditions of the environment. It is represented as a joint competence of communities of experts and professionals. Hakkarainen et al. note that higher cognitive processes are dependent on the physical and social environment of the activity, and cannot be fully understood by studying isolated individuals.

Work in organizations is increasingly becoming structured in teams and groups supported by technology. Competence is based on the collaborative expertise of teams and networks, socially shared cognition and capability (Hakkarainen et al., 2004). Van der Vegt & Bunderson (2005) note that when representatives from all relevant areas of expertise are brought together, team decisions and actions are more likely to encompass a full range of perspectives and issues that may affect the success of a collective venture. Teams combine the expertise and talent of many people, and can thus exceed the limits of personal performance. Teams also naturally integrate performance and learning, and the learning is cumulated into a collective knowledge-base (Katzenbach & Smith, 1993). Team learning is more than the sum of all individual learning: it is collective learning (Simons, Germans, & Ruijters, 2003).

Whether we work in teams or collaborative networks, we face the demand of being able to make decisions that affect the performance and success of the organization we work for. The accountability for results involves employees on all levels of the organization. In order to see the link of their own work and the performance of the organization, the employees need overall business understanding. This form of expertise complements their specialized, task-specific

expertise. Conveying general business knowledge across the whole organization and making the link between individual performance and organizational success visible may form a huge challenge for organizational learning.

Also enhanced flexibility is necessary for coping with the ever-increasing environmental dynamism. The accelerating speed of change and turbulence in the business environment and the difficult predictability of the future put emphasis on individual and collective sensitivity to pick-up strategic messages and impulses, and agility to adapt to the changes in the environment. Flexibility requires an increase in employee responsibility taking, self-control, and decision-making in ever-wider areas (Heifetz & Laurie, 1997; Zeleny, 1989). The challenge for (business) organizations is to become learning organizations, since learning organizations are able to change quickly. The people performing in the organization are able to change and learn quickly, both collectively and individually (Simons et al., 2003).

It seems clear that if employees are to become adept at making informed decisions, they need to know the outcomes of their decisions. As educators we need to be able to deliver a holistic view of organizational and environmental functioning. The personal, task-specific expertise must be complemented with general business knowledge. The challenge for an effective learning solution is to provide the learners a shared vision, shared concepts, and a shared language with which the collective learning can take place.

ELEMENTS ADVANCING BUSINESS KNOW-HOW

A common thread running through the deficiencies in any learning domain is oversimplification (Hakkarainen, et al., 2004; Spiro et al., 1991). One serious kind of oversimplification is looking at a concept from just one perspective. This may even be misleading with regard to some of the fuller aspects of understanding. This kind of oversimplification is especially acute in the business learning domain.

The present business world contains more complexity than ever. The people in organizations, however, remain the same: They are imperfect in handling complexity and ill-structured problems. The challenge is: how to better equip these people with better understanding of the more demanding environment? We believe that a modern business learning environment should enhance the employees' abilities to cope with the complexity. Besides, the learning environment should illustrate complexity in an authentic manner to provide relevant knowledge that can later be applied in the actual working environment.

The wisdom of teams lies, therefore, in collective learning. The importance of learning together is especially high while learning skills are related to business know-how. Diversity of knowledge and expertise within a group or a team promotes learning and search behaviors that in turn lead to adaptive, innovative solutions. Each participant brings a personal understanding of the business—a mental model of how the organization works and the logic of the industry environment in which it competes. Thus, strategic modeling should be a part of this intense dialogue (Morecroft, 1999). It should help ideas to take shape, help create shared world-views and provide focus for team discussion.

Complex learning environments, such as simulations, encourage identifying relationships between concepts, to view the topic or subject matter from different perspectives and put emphasis upon active application of knowledge or skills to a practical problem (Kolb, 1984). Thus, learning must be situated in a rich context, reflective of real-world contexts for this constructive process to occur and transfer to environments beyond the school. The learner should be moved into thinking in the knowledge domain as an expert user of that domain might think. As we often cannot start the student with an authentic task, we must simplify the task while still maintaining its essence. Most importantly, the goal is to portray tasks, not to define the structure of learning required to achieve that task. Thus, we must leave the identification of relevant information and correct solutions open in the instructional situation. Furthermore, the focus will be on the skills of reflectivity of the learner, not on remembering (Bednar, Cunningham, Duffy, & Perry, 1992).

Simulations provide the learner the possibility to face a real-life problem as a professional. In the attack on the problem, the focus is on the doing (Kolb, 1984). Simulation tools are often seen as the vehicle, which bring along the required complexity and ill-structured components. Simulations help to cope with complexity as they help to visualize strategy, provide the possibility to rehearse strategy, and make it possible to sketch the organizational cause-and-effect connections (Morecroft, 1999). Simulations help to communicate more clearly about the structures that translate plans and decisions into action.

However, the business simulation tools that have been applied so far, do not properly illustrate the dynamism in the business environment, since they have not been able to reveal the inevitable time dimension of strategy (Lainema, in press-a; Lainema, in press-b). Our experience is that simulations should be platforms for experiential learning using a real-time operated, realistic model of business processes.

Simulations enhance learning through group interaction and if this is used realistically, the experiential nature and the intensity and motivational aspects of the training should make the learning experience superior to any other learning activity. A dynamic and authentic learning environment provides a self-directed learning experience, where the instructor acts as a facilitator for learning. The group discussions in a simulation training setting help to bring out the tacit knowledge of the members of the group or a team, a challenge that many organizations are facing today (Nonaka, 1994).

In a real-time processed business simulation game the learning setting is formed of experimenting on one hand, and on sharing and interactive learning on the other. Multiple roles are available for the team members in the simulation game setting, and this offers not only a platform for experiential learning, but also gives the team members the possibility to learn in the way that best suits their learning style.

Based on this situation and our experiences, we have identified some elements that advance the acquisition of business know-how. The following table draws together these elements. We also describe how these elements are embedded in the case simulation game used in the research presented here. In the remainder

Table 1: Elements Advancing the Acquisition of Business Knowledge in a Simulation Environment

Elements advancing expertise acquisition	As presented in the case simulation game
Empowerment	The teams are responsible for managing their (game) companies and making independent decisions (a common feature in simulation games in general).
Learning by doing	The teams form a strategy and make the decisions regarding business functions. The consequences of their decisions are visible practically immediately.
Authenticity	Transparent business transactions and business processes are illustrated in an authentic manner, business processes are tailored according to real processes.
Intensity	The case simulation game is clock-driven and dynamic (not operator-driven and hierarchical). A real-time-operated game model provides a sense of urgency to the decision-making. The actions of other teams are visible in real time.
Complexity	The game simulation provides a holistic view on business operations. Each team must handle hundreds of dynamic business transactions, and face non-linearity and ill-structured decision-making problems.
Collective experience	Decision-making in teams of two to three participants forces the participants to reason and justify their views to the others. Formulating and carrying out a strategy is a joint effort during which the team members share their expertise and externalize their mental models. The teams' collective learning produces the shared views and goals according to which they run their (game) company.

of this paper, we draw together how the participants in the case simulation game reflect on the elements that advance the acquisition of business knowledge.

CASE: ENHANCED LEARNING OF BUSINESS KNOW-HOW

The Simulation Game Model in Use

The learning environment (RealGame; http://www.realgame.fi, Lainema, 2003) presented in this paper aims at responding to the demands and requirements presented above. RealGame has been designed to describe the actual business operations and functions of a manufacturing company. In RealGame there are a maximum of eight companies competing against each other, and the markets, suppliers, and funding organizations are common to all participating companies. The companies are steered by teams of three participants. The virtual customers on the game market server trigger demand according to the

offers (sales price, term of payment, delivery speed), image (marketing, delivery certainty), and product quality (R & D) of the participating companies. The demand is the same for all the participating companies and the game operator can change the demand during the game. RealGame includes a detailed materials process, starting from raw material purchases (suppliers with different prices, delivery speeds and terms of payment), incoming inventory (including alarm sizes for automatic raw material purchases), the actual production process (multiphase cell based production line, the capacity and workers in each production cell can be changed during the game), finished goods inventory, and deliveries (several different delivery methods for each market, differing between delivery speed and cost). Furthermore, the game includes functions like sales, marketing, R&D, and funding.

As the game describes and collects information about the detailed business transactions, the participants are able to produce detailed reports on the materials and monetary processes. The processes of RealGame are continuous for the game participants in the sense that the game time is clock-driven, the smallest increment in time being one hour, and the participants are not tied to making decisions at specified points of time but can make decisions whenever they choose during the game run. Furthermore, the participants see the internal and external business processes evolve hour by hour. Thus, RealGame is a business process based simulation game. RealGame differs from traditional business simulation games in that it is a time intensive environment, where the clock is running independently of any operator or participant actions. Therefore, the participants need to make well-timed decisions in order to manage the game processes.

The Experimental Setting

Two case companies participated in our experiment. Company A is a Finnish defense and aerospace group with international operations. It delivers solutions to global markets based on its own specialist know-how and partnerships. Company A has more than 1.800 employees and a turnover exceeding EUR 300 million annually. Company B is a specialist in plant-based nutrition and in ensuring food safety. It is a forerunner in functional foods and has four divisions. Company B employs some 1.400 people, of whom about 70% are located in Finland. It has production units in six countries with a turnover of about EUR 450 million annually.

We ran two business simulation game training sessions, one in company A and one in company B (both in late 2006). Both sessions were a part of the companies' internal long-term development program for middle management; the participants were selected by the companies. In both companies the training was conducted in a one and a half day session. The simulation session was longer in company A (11.5 hours vs. 9 hours in Company B); otherwise the settings and the structure of the training were the same.

In both sessions the purpose of the training, as expressed by the person responsible for the internal long-term training programs, was to produce an authentic decision-making environment and to give a holistic view on how a

Table 2: The Description of the Training Sessions and the Participants

Training session feature	Company A	Company B
Training session length (hours)	11.5	9
Simulated game months	3.5	2.5
Participants (N)	18	17
Number of respondents / response rate	16 / 88.9%	13 / 76.5%
Teams in the game (2 or 3 persons in one team)	7	6
Participants' average work experience (years)	13.25	17.6
Participants' educational background		
economics/business administration	1	4
engineering	13	2
social sciences	1	–
natural sciences	–	3
agricultural sciences	–	2
other	–	4
University level degree	11	7
College level degree	4	6

business organization works to produce profit. In particular, on the link from the materials process to profitability, information flows and cash flows were emphasized. The simulation operator was the same in both sessions (one author of this paper). Table 2 shows the background information of the two training sessions and their participants. During the training session the game clock was occasionally stopped and different financial reports were run. The participants were given time to analyze the game process and to create plans for their future operations. At the end of each session there was a common analysis session of 45 minutes, during which the participants had an opportunity to reflect on the simulation results, their own performance and on other groups' performance.

EMPIRICAL DATA

The data of the experiments includes participant answers to the game questionnaire. The questionnaire was sent to the participants via e-mail a few days after the training sessions. The questionnaire was sent and the answers were collected and analyzed with the help of Webropol, a Web-based survey tool (for more information, see www.webropol.com).

Our research methodology was mainly qualitative by nature. The validity of the results is based on explanation-building (Yin, 1989) between the questions

Table 3: Assessment of Training Qualities
(Questionnaire Questions 7–11; 1= Poor; 7= Excellent)

Training qualities	Company A average (n= 16)	Company B average (n= 13)	Both companies average (n= 29)
7. Ability to motivate	6.4	5.9	6.2
8. Ability to create enthusiasm	6.3	6.3	6.3
9. Illustrativeness	5.7	5.9	5.8
10. Authenticity	5.3	4.9	5.1
11. Ability to display causal relationships of actions	5.2	5.5	5.4

dealing with knowledge acquisition and the participant answers to these questions. The reliability of the study relies, thus, on the capability of the researchers to argue and explain why they have decided to describe the phenomenon with the selected methods (Hirsjärvi & Hurme, 2001).

In this study we combined structured and unstructured questions in order to get richer information about the elements we consider critical in advancing the acquisition of business-know-how. The questionnaire consisted of eight unstructured, open-ended questions and 13 closed questions (on scales Poor/Excellent and Disagree/Agree). We looked for equivalence between structured and unstructured answers, i.e., we wanted to know whether the participants would spontaneously bring up any of the same elements in both of the parts. The structure of the questionnaire was designed so that the respondents would first answer most of the unstructured answers. The response rate regarding both case companies was high, the average being 82.7%.

Findings From the Answers to the Structured Questions

The participants were asked to evaluate the training regarding five different qualities (Table 3).

We also wanted the participants to assess some claims. The participants were asked to tell whether they agree (7) or disagree (1) with the claims displayed in Table 4.

The training scored high on every quality. We regard the learning environment's ability to motivate and create enthusiasm essential in creating a positive learning attitude. The answers to the questionnaire support our view: RealGame training received high marks on both ability to motivate (6.2) and on ability to create enthusiasm (6.3).

Acquiring business knowledge is oftentimes perceived as a lengthy and complicated process. The difficulty of learning is to a great extent related to the challenge of portraying the learning task in a realistic and relevant manner. The authenticity of the learning task has an important role in the development and utilization of skills that the learner is required to adopt in his or her daily work. The answers to our questionnaire reflect a view that RealGame simulation game

Table 4: Assessment of Claims
(Questionnaire Questions 12–17; 1= Disagree; 7= Agree)

Claim	Company A average (n= 16)	Company B average (n= 13)	Companies average (n= 29)
12. RealGame helped to achieve a holistic view on how a business enterprise functions	5.2	5.4	5.3
13. It was easy to learn through gaming	5.6	5.7	5.7
14. It was interesting to learn through gaming	6.1	6.3	6.2
15. The team work was essential in learning	5.8	5.6	5.7
16. I believe that the training will benefit me in my work	5.6	5.2	5.4
17. The training helped me to see my possibilities to influence things in a wider perspective	4.2	4.2	4.2

training presents authenticity (average score 5.1) and illustrativeness (5.8) on levels that support learning. The perceived easiness of learning (average score 5.7) can alleviate the absorption of new information. Moreover, while presenting complex and interrelated processes, RealGame training manages simultaneously to be entertaining. Learning through gaming was perceived interesting (average score 6.2).

In the pursuit for business knowledge it is vital, on one hand, to grasp the whole picture, and to recognize causal relationships of actions and outcomes on the other. In a dynamic and time-dependent learning environment it is possible to present and illustrate the cause-effect-interrelatedness in a vivid manner, which, in turn, will enhance the learning. The respondents' opinions reflect that RealGame successfully portrays causal relationships of actions (average score 5.4). RealGame also helped in attaining a holistic view on how a business enterprise functions (average score 5.3).

A view that RealGame training can benefit people in their daily work got strong support in the questionnaire (average score 5.4). Some support was also given to a statement "The training helped me to see my possibilities to influence in a wider perspective" (average score 4.2).

In the attempt of providing tools for sense-making, we educators sometimes are inclined to oversimplify the complex phenomena we wish to illustrate to our students. Providing a static snapshot of business operations, that evolve sometimes dramatically and are in constant flux, however, will not serve the purpose. We believe that in order to facilitate learning of interrelated and often complex processes we need to expose the learners to the complexity on a sufficient level,

Table 5: Assessment of Claims
(Questionnaire Questions 18–19; 1= Disagree; 7= Agree)

Claim	Company A average (n= 16)	Company B average (n= 13)	Companies average (n= 29)
18. RealGame was too complicated	2.4	1.8	2.1
19. The duration of the training was too short	3.9	5.3	4.6

not try to protect them from it. Obviously, RealGame was not perceived as a too complex learning environment by the participants (average score 2.1). The biggest difference in the answers between company A and company B can be found in their perceptions about the duration of the training. Since the training in company B was shorter, the claim that the duration was too short got more support from participants from company B (5.3) than from company A (3.9).

Findings From the Answers to the Unstructured Questions

With the unstructured questions we aimed at finding out whether the participants would spontaneously mention the elements we regard essential in acquiring business know-how. The questions were the following:

- 4. Tell the three most important things you learned
- 5. What things supported your learning most during the training (three most important things)
- 6. Did you notice resemblance between the game and your present work?
- 20. Which factors do you think contributed most to your success in the game?
- 21. Free comments about RealGame training

The participant's reflections on the authenticity of RealGame training, presented in the structured questions, got further support by the open answers. The majority of the respondents in both companies reported that there was resemblance between the game and their present work (Company A: 12 out of 15 respondents; Company B: 10/13). Even if the real work tasks were different, most respondents could relate the game environment to a similar real-world environment (italics are used for direct quotes from respondents):

> *The tempo and the markets are totally different, but the essential thing one must realize is that no cause has instant effects and that you have to be prepared and imagine what kind changes there will be (Q6); or*

> *Yes, some. Maybe the products and the markets are different, but in general the process as a whole corresponds to reality (Q6).*

The majority of the respondents saw direct similarities with their real-world environment:

- *The game was based on a realistic business model (Q5)*
- *A realistic learning situation (Q5)*
- *Yes, e.g. production materials requirement calculations and its forecasting (Q6)*
- *Yes, very much. First of all, resourcing the production, scheduling the purchases, and so on (Q6)*
- *Yes. The logistics process, the influence of the marketing strategy to the business and internal infrastructure like financing, machinery and employees were all taken in to account (Q6)*

We expected that the real-time-operated game model would provide a sense of urgency to the decision-making. Intensity and complexity, in the form of dynamism and non-linearity, advance the learning of business skills and know-how. The participant comments to question 20 reflect that RealGame training was successful in this respect. From the 27 respondents, six persons mentioned intensity, three people complexity and eight people the holistic view on business operations as the most important factors contributing to their success in the game. Following are some participant comments:

- The most important things were to understand the whole, motivation and competitive spirit and the reaction and decision-making speed (Company B).
- The game starts fast and there is no time to bungle (good!) (Company A).
- It was important to make the right decisions fast (Company A).

One of the participants had played the game three years earlier and commented,

> *The game environment and the decisions of other groups caused that you could not achieve good results just with copying the success factors from the previous game, but each game session seems to demand scanning the environment with right interpretation. I would still like to play again. (Q21)*

This seems to imply that the complexity in the game is dynamic in that sense that each gaming session will take its own shape depending on the actions of the different teams as a whole. Thus, besides of the game program algorithms also the game company (team) decisions play an essential role in shaping the competitive situation: no two games can become exactly the same as there are so many intervening variables in the form of seven or eight competing companies. This has a lot to do with the definitions of complexity and non-linearity in chaos theory. In non-linear systems, intervening to change one or two parameters by a small amount can drastically change the behavior of the whole system (Anderson, 1999). This seems to be close to the nature of RealGame gaming. As one respondent commented:

> *This was a good exercise. Even the chaos in the beginning of the game was ok, as one could recover from the mistakes (Q21).*

Thus, chaos could be managed even though the game clock speed was increased.

The game setting, where the participants are organized in teams of 2–3 players, requires the participants to reason and justify their views to the other team members. Formulating and carrying out a strategy should be a joint effort during which the team members share their expertise and externalize their explicit, and oftentimes also tacit, knowledge. The teams' collective learning experience produces shared views and goals according to which the teams run their (game) companies.

Teamwork was regarded as utterly important both as a thing to learn and as an essential factor contributing to the success of the (game) companies. In response to Question 4 participants commented: The most important things that were learned:

- A group of three functions pretty well when you need to make good decisions quickly (Q4, Company A)
- Success in business is based on good team play, all the parts in the chain are important (Q4, Company A)
- Together we're strong, never give up! (Q4, Company B)
- Collaboration is better than anything! (Q4, Company B)

Question 20: Success factors in the game:

- A good team and courage to make decisions (Q20, B)
- Team work was an essential part of our success (Q20, B)
- Collaboration in the team was important for our success (Q20, A)
- Collaboration brings about wider know-how than working solo (Q4, Company B)

Actually, none of the respondents claimed that he/she would have wanted to work alone. This is somewhat surprising since Finns—compared to most other nationalities—often prefer personal achievements over team efforts. This time the answers clearly stated that the team effort was a key to success in the game:

> *The success of collaboration of the participants (Q20); Success (in the game) requires a successful choice of strategy and its realization in effective team work between the participants (Q4).*

The empowerment of the teams (to act independently and make decisions) and learning by doing are implicitly embedded in a simulation game exercise. It is in the very nature of simulation gaming that the game participants are given free hands on planning their company's strategy and in implementing it. Some comments are presented below in order to illustrate how these elements were present in the game:

- *We did a good plan and followed it (Q20);*
- *The game was an extremely interesting and inspiring way of learning the whole of business and the cause-effects between different factors (Q21);*
- *1) Good planning 2) uncompromising realization 3) and hard work bring results (Q4);*

- *Facilitating discussion is important, a mere game is not enough. In this the trainer really succeeded. The attitude and performance of the trainer was positive: he was an expert but not too authoritarian. He also dared to bring about his own observations. An interesting experience! (Q10);*
- *You have to have a strategy and to follow it in order to achieve results (Q4).*

The participants realized well that the simulation gaming training aimed at presenting a holistic structure of a manufacturing business as they stated:

> *Ability to visualize the whole (production, transactions, funding). Understanding cause-effect relationships (Q20);*

> *General know-how about the laws of business (Q20);*

> *I think this was an excellent way to learn about the causes in business areas connected to each other (Q21).*

Some other comments that show understanding over the different factors causing the complexity in the game:

> *The instant effects of different actions to each other, dynamicity—the interaction between the players, the influence of different ideas—the opportunity to learn from the competitors' actions (Q5);*

> *You have to have the whole under control: sales, capacity, purchases, deliveries => everything has to seamlessly fit together to create profit (Q5).*

Cause-effects and the holistic view were linked to each other in several comments:

> *A good and interesting way of learn to know about business and the different causes from the point of view of the whole (Q21);*

> *Definitely the most important was the linking of the different business factors as a whole leading to profitability (Q4).*

CONCLUSIONS

If we wish to strengthen the business knowledge of key personnel in companies, RealGame, and similar types of simulation, seems to offer a well-received and an efficient learning tool for it. While it is difficult, if not impossible, to measure what people have learned, we can ask what use they think they will have for their new skills and knowledge. The real benefits and value of the training can, however, be evaluated better after the learners have encountered real interaction and decision-making situations in their daily work. Since the survey was conducted only a few days after the training, the answers reflect the immediate perceptions of the participants. Therefore, it would be interesting to conduct a longitudinal study of the same companies in order to find out what kind of benefits this group simulation training provided for the trainees in the long run.

Once again we can refer to answers to questions concerning motivation (Q7) and enthusiasm (Q8) among the participants and claim that complexity was not an obstacle for a motivating and enthusiastic gaming experience. We would like to claim the exact opposite: the very complexity and the challenge arising from it made the gaming experience so very motivating and enjoyable. This is in line with the modern views on learning which encourage the use of complex learning environments by arguing that students cannot be expected to learn to cope with complexity unless they have an opportunity to do so (Cognition and Technology Group at Vanderbilt University, 1992).

We have identified several elements that can support and enhance the learning of business knowledge: a skill complementing task specific expertise. The elements are (Table 1): empowerment of the learners, learning by doing, authenticity of the task, intensity of the learning setting, complexity of the learning context, and team achievement that builds a collective experience. The simulation game sessions were considered very positive on all of the elements advancing the acquisition of expertise.

We were able to deliver knowledge of several different skills and know-how in the gaming sessions. What the participants learned depended on their background and previous experiences. What is important here is that the huge majority of the participants claim to have learned about a holistic view of a business entity and of the interrelatedness of separate business functions. Also the effectiveness of teamwork and peer learning were illustrated through the experiential learning environment formed by the business simulation. What was learned varied from person to person. This should be in line with the constructivist learning perspective that revisiting the same material, in rearranged contexts, for different purposes and from different conceptual perspectives is essential for attaining the goals of advanced knowledge acquisition (Spiro et al., 1991). We feel that this was achieved in the experiment.

Several participants report to have understood better the bigger picture of organizational functioning. The holistic view should enhance the workers' capability to understand the outcomes of their decisions, leading to potentially better performance in the complex environment.

Investment in the authenticity of the learning environment will pay-off in the form of a well-received and creditable learning environment and experiment. This in turn is closely connected to the receptiveness of the learners and should lead to better learning. The challenge today and in the future is to provide learning environments that support rapid development and dispersion of knowledge and expertise.

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