

Thinking Organization

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Abstract

Organizational learning is vital for companies to survive. Many scholars and practitioners emphasized that organizational learning is important for competitiveness of companies. However, under some conditions, learning may be insufficient for companies to get competitive power. Companies should think as well as learn to be more competitive. In this conceptual review paper, we tried to emphasize the importance of thinking in organizations. We also tried to explain how thinking organizations can be created and improved.

Introduction

Organizational learning is vital in today's competitive and dynamic business environments. The increased rate of competitive challenges imposed by global economy (Nixon 1992), technological changes in products, process and organizations (Nixon 1992, Dodgson 1993) and abundance of information available (Huber 1991) force organizations to learn and learn faster than others to survive. De Gues (1997) explains that one-third of the Fortune 500 disappears every 15 years due to the inability to learn better and faster. Many scholars emphasize the importance of organizational learning for corporate surveillance. For instance, Stata (1989) states organizational learning may become the only sustainable competitive advantage. Senge (1990) mentions that a learning organization creates its future by continuously improving its abilities and competencies. Kim (1993) states that learning is the fundamental requirement for organizations' sustained existence. Dodgson (1993) argues that learning is required for adaptation and improved efficiency in times of change.

Prior organizational learning scholarship broadly discussed different aspects of organizational learning, such as the types of learnings (single-loop, double-loop, low-level, high-level, etc.) (Argyris & Schon 1979; Fiol and Lyles 1985), information processing activities (Huber 1991), knowledge creation (Nonaka 1991), culture and communication, organizational design and etc. Most of these studies were in favor of learning in the organizations and in teams. However, there are a few studies that show the deficiencies of learning in the organizations (Weick 1979). These studies showed that learning might not be enough for endurance of organizations under different environmental conditions. For instance, Herzberg (1981, p.13) states "Organizations in turbulent environments float with their surroundings, almost unable to learn and to control their developments." McMaster (1996) mentions that

environmental turbulence, uncertainty and complexity make learning an insufficient condition for corporate success.

A rapidly changing environment (e.g. turbulent) yields impulse actions and responses. Learning which is adding new information and knowledge into memory is insufficient for fast decision-making and actions within fast paced environments. Essentially, learning becomes a time consuming activity. Under turbulent conditions, improvisation may produce more desirable results than learning. Weick (1979) shows that under turbulent conditions, people should first act and then interpret the fact of action. He is noting that individuals have to act in order to know what they are doing. Preston (1987) mentions that unfamiliarity of the situation and lack of precedents for action could be seen as an ideal forum for improvised behavior. Crossan and Sorrenti (1997, p.163) explain that situations of crises requiring immediate action without the benefit of prior analysis provide a useful look at improvised behavior. Moorman and Miner (1998) explain that external shocks or demands come along more rapidly than an organization can anticipate, and that organizations will often respond to such situations by improvising rather than not responding. They empirically demonstrated that in turbulent environments, team improvisation can impact design effectiveness and team learning.

Besides turbulence, uncertainty also challenges the importance of learning alone. Dutton and Webster (1988) state that “Where high levels of uncertainty exist, there are multiple paths for achieving ends, ends are unknown, and the probabilities that paths will achieve a desired end are difficult to determine.” Teams may not have enough information or they do not know how to use that information under the uncertain conditions. Philosopher Dewey (1910) states if individuals do not have any information to act or they do not know how to use the existing information, they use their thinking abilities to give decisions. Schrag (1988)¹ gives an analogy of an explorer trying to travel successfully over unknown terrain. To reach the destination successfully, the explorer needs substantial knowledge and skills, but the novelty of the task poses a significant mental challenge in how to apply the knowledge. For ill-defined problems like this, Newmann (1990, p.45) proposes deductive reasoning, inductive reasoning, formal or informal reasoning, analytic thinking, creative thinking and metacognition. Langer (1978) states that conscious thinking is necessary when the outcomes of our acts are inconsistent with anticipated outcomes. Abelson (1976) and Langer (1978) mention that novel situations are guided by thinking.

Thinking

Thinking is a broad and elusive concept. In this sense there are many different definitions of thinking in the literature (see Table 1)².

Thinking is a process of decision-making, judgment, creativity, and deliberate search for alternatives and information processing. *It is a planned, intentional and goal seeking activity to*

¹ Adapted from Newmann (1990, p.45).

² Since this study proposes a conceptual framework for the importance of thinking in general, we did not demonstrate the different stream of thought about thinking in literature.

solve complex and ill-defined problems. It involves imagination, day-dreaming, scenario planning, what-if analyses and manipulation of memory.

Thinking is vital in individuals' lives. Halpern (1998) explains that if people cannot think intelligently, then they are in danger of having all of the answers but still not knowing what the answers mean. Eden, Jones and Sims (1979) state that thinking is the ground of every day interactions of human life.

In addition to the individual level, thinking is also important at the organizational level. Thinking is used from daily activities (e.g. manufacturing operations, scheduling etc.) to long term planning (e.g. budgeting, strategic planning etc.) by every function in the organization (e.g. marketing, manufacturing, sales, etc.). Pasmore (1997) states that flexible thinking is important in R&D, marketing, and management. He mentions that flexible thinking is an important element in task completion by creating or applying knowledge. De Bono (1994) states that "Business, in general, is far more interested in thinking than any other sector of society – not excluding education." Hunt (1995) states that an increasingly technological and internationally competitive world requires us to think quicker.

Creation of Thinking Organizations

Based on the importance of thinking in corporate and daily life, one must ask; how can we create a thinking organization? There are many studies in the literature of educational psychology that emphasize the creation of a thinking classroom. In the thinking classroom, teachers and students try to work together to improve the quality of thinking and teaching.

However, several theorists are skeptical about applying individual cognition models to an organizational setting. Weick (1991) and Argyris and Schön (1978) state that individual and team/organizational thinking and learning is different. Nevertheless, there are studies that apply individual cognition models to organizational and team levels. For instance, Garud and Kotha (1994) developed a model based on the workings of the human brain and applied it to flexible manufacturing systems within an organization. Laszlo (1972) explained the similarities between human brain and organizations in their information-processing systems.

Those studies used analogical thinking processes when they approximated the different concepts (e.g. individual versus team/organization). Analogy is an assertion that a relation structure that normally applies in one domain can be applied in another domain (Gentner, 1983). Holyoak and Thagard (1996, p.19) state that surface elements in analogical thinking are very different, but the underlying pattern of relations among the elements is similar. In this vein, we can use the thinking classroom (source domain) as an analogy for thinking organization (target domain) with some modifications.

Beyer (1997, p.6) explains that a thinking classroom can be established by 1) nourishing thinking of students, 2) providing thinking opportunities, 3) supporting and guiding student thinking, and 4) making visible and explicit the thinking of students. The attributions of thinking classrooms can be

applied to teams and organizations and consequently similar steps can be used for teams and organizations with modifications.

1. Nourishing thinking

Beyer (1997) suggests that in order to nourish student thinking, a thoughtful classroom should be created. A thoughtful classroom engages students continuously in purposeful thinking in the pursuit of meaningful learning. It provides encouragement, support, and motivation for students. In a similar sense, a thinking-friendly environment should be created in the organization to support, motivate and encourage employees to think and reason freely. In thinking-friendly environments, people are engaged in the collection, analysis, evaluation and synthesis of information. People in the organization inquire and pose questions about current procedures and operations, search for, produce and evaluate information, knowledge and new mental models. They are curious and want to explore new practices. People engage in dialogue and debate for better solutions. They venture, carefully consider, and evaluate ideas and explanations and critically examine them in terms of evidence, reasoning, assumption, and implication.

2. Providing thinking opportunities

Providing opportunities to help students to increase their thinking abilities. In the thinking classroom, students produce knowledge new to them, rather than simply to reproduce information or knowledge claims already presented to them in texts, lectures, or media.

Thinking opportunities can be provided by 1) framing learning assignments or lessons around thoughtful questions, 2) provoking puzzlement or dissonance, 3) engaging students in knowledge-producing activities (Beyer 1997). Similar procedures can be used in the organizations. People should ask 'why', 'how', 'what' questions for every problem in the organization. Management should give autonomy to people to improve themselves. People should seek answers to their own questions, or seek to resolve problems of group rather than a question or problem posed by someone else. Designing experiments, simulations, discussions, collaboration and training provides opportunities for thinking in organizations.

3. Supporting and guiding thinking

Support and guidance by teachers is important the student thinking. Teachers should intervene in the students' thinking activities when needed. Beyer (1997) explains that teachers should be a model for thinking, guide students and encourage thinking in the classroom. Similarly, management in organizations has similar responsibilities for employee thinking. Thomas, Clark and Gioia (1993, p.240) state that due to environmental complexity and dynamism, the key role of top management is to provide meaningful interpretations for patterns of ambiguous information. Management should intervene in the thinking process of people when needed (management meddling).

4. Making thinking explicit

Visualization or explicating of an individual's thinking process helps others to increase and motivate their thinking abilities. Visible record of one's thinking allows people and managers to diagnose the flaws or gaps of others. Thinking can be explicit by recording, check lists, flowcharts, blueprinting, drawing steps—step-by-step description of the procedure of problem solving. Similar tools and techniques can be used at the organization. Bring expert thinkers (consultants) into an organization, display quotations, cartoons (such as Dilbert), puzzles and inspirational tools in the halls and waiting rooms help to explicit thinking. Also frequently meeting (similar to quality circles), face-to-face communication, argument and debate make thinking explicit in the organization.

Supporting Factors of Thinking Organizations

Supporting factors help organizations to increase their thinking abilities. Those factors are experimentation, self-evaluation, memory, simulations and dialogue.

1. Continuous Experimentation.

Dewey (1910) shows by way of an analogy a man traveling in an unfamiliar region who comes to a fork of the road. He mentions two alternatives for action, the first one is blindly and arbitrarily taking his course, trusting to luck for the outcome (e.g. improvisation or learning-by-doing) or the second is discovering a basis for the conclusion that a given road is correct. In order to discover the basis for his decision, he emphasizes the importance of thinking by inquiring facts, looking for evidences, such as climbing a tree, trying different directions and coming back the same place to find signs, clues or indications. Discovery of facts can be obtained by continuously experimenting. Experimentation with new ideas, process and technologies help organizations to improve their thinking abilities.

2. Self-Evaluation

Thinking organizations have the ability to continuously monitor their own activities to determine if they are meeting their goals or whether these goals should continue to prevail. Wildavsky (1972) states that if an organization is self-evaluating, it believes in clarifying goals, reflecting them to different mechanisms of achievement, creating models of relationships between inputs and outputs, seeking the best available combination.

3. Memory

Memory is an important factor for the thinking process. Without memory, thinking cannot be achieved. Flesch (1951) states that thinking is the manipulation of memories.

Walsh and Ungson (1991, p.61) define memory as stored information from an organization's history. El Sawy, Gomes, and Gonzalez (1986, P.12) defines memory as repository of detailed past decisions and their perceived results, past surprises and organization's responses and unwritten decisions. Under uncertain conditions, any usable information is very important for potential solutions to problems. Dewey (1934) mentions that if a person gets familiar with a current problem by using his/her experience, he/she starts to think in order to solve the problem. In this sense, storage and retrieval of past events is

critical in the thinking process. Casey (1997) mentions that memory of past events is an important link in predicting and understanding present and future actions of organization. New information technologies and computer systems help organizations to improve their memories by creating databases and project files.

3. Simulations/Scenarios

The basic notion in simulation and scenario planning is to create the future rather than predict it. De Geus (1997, p.46) states that "...simulations and scenario planning are tools for foresight-discussions and documents whose purpose is not a prediction or a plan, but a change in the mindset of the people who use them. By telling stories about future in the context of our own perceptions of the present, we open our eyes for developments which in the normal course of daily life are indeed." People can see the different parts of the stories and expand their current memory, thinking way and learning by creating futures at the present time. Scenarios provide imaginary iterations of our decisions and help us to think more profoundly.

5. Communication/Dialogue

Schein (1993) mentions that dialogue helps teams and individuals to reach higher levels of consciousness. He mentions that dialogue is focused more on the thinking process and how our perceptions and cognitions are performed by our experience. He (p.43) states "In dialogue, we explore all the complexities of *thinking* and language. We discover how arbitrary our basic categories of thought and perception are, and, thereby, become conscious of imperfections or bias in our basic cognitive process." In organizations, dialogue is a problem identification and solving tool. Communications across the different functions and hierarchies and constructive dialogue increase the thinking abilities of individuals and the organization as a whole. With dialogue, people see different points of view, increasing their thinking abilities.

Results of Thinking

Thinking organizations have the ability to learn how to learn, to change their mental models and to be more creative and innovative.

1. Deutero-Learning

Thinking helps to improve the ability of deutero-learning of organizations. Bateson (1972) defines deutero-learning as learning to learn and acquiring habit of thought. Argyris and Schön (1978) mention that individuals should have deutero-learning ability to carry out single-loop and double-loop learning. With deutero-learning, people invent new strategies for learning, they produce these strategies, and evaluate and generalize what they have produced. Bateson (1972) states that inquiry is essential to carry out deutero-loop learning. Acquiring the abstract habit of thought and developing schematics for learning requires a thinking ability, inquiry and judgment (Argyris and Schön, 1978).

2. Unlearning

Thinking helps organizations to unlearn the previous habits and routines. Before organizations try new ideas, they must unlearn old ones by discovering their inadequacies and then discarding them (Nystrom and Starbuck, 1984, p.53). Finding out the deficiencies of current practices and mental models requires inquiry, evaluation and judgment. This inquiry process requires thinking different ends alternative aspects of the current application. Changing mental models and scripts in memory is the result of the ability of thinking.

3. Creativity

Creativity is the ability to produce novel (original or radical) and appropriate (incremental or evolutionary) works. It is a thinking process to solve problems and generate new solutions. Ray (1967) states that original thinking produces new ideas. Sternberg and Lubert (1996) mentions that at the individual level, creativity deals with problem solving on the job and daily life, and at the social level it deals with new scientific findings, inventions and social programs. Creativity involves judgment and evaluation. It requires divergent and convergent thinking.

Discussion and Future Research

Organizational learning has been receiving popularity in the academic literature as well as popular press. Learning is vital, however it is not enough to survive in competitive environments. Organizations should improvise, unlearn and think as well as learn. The most successful organizations of the future will have the ability to apply learning, unlearning, thinking and improvisation simultaneously.

However, unlikely to the concept of learning and improvisation, current management scholarship gives less attention to the concept of thinking in organization. Thinking organizations have abilities to learn, unlearn, improvise, be creative and innovative. In this sense, it is important for top management to increase the thinking abilities of employees and diffuse the individual thinking into the organization. A thinking organization starts with the thinking of individuals and thereby amplifies of thinking by the organization.

In this conceptual paper, we briefly summarized the importance of thinking and some antecedents of it at the organizational level (see Figure 1). From prior studies in psychology and philosophy, we can further investigate the components, antecedents and consequences of thinking. Individual thinking can be modified and tested at the organizational and group levels. However, operationalization of thinking may be challenging due to the elusiveness and ambiguity of thinking. As a concept, thinking is very broad and involves many constructs, such as reasoning, deliberation, lateral thinking, critical thinking, implicit and explicit thinking, divergent and convergent thinking. During the operationalization of thinking at the group and organizational level, selection of one of these constructs may be more helpful, such as reasoning in teams or organizations. In future research, e.g., new product development, how teams reason, critically think, improve their implicit and explicit thinking, transfer

implicit thinking (e.g. tacit thinking) to explicit thinking, and other thinking modalities can be investigated. Another future study is when organizations and teams should use thinking, improvisation, unlearning and learning, and how a mix of them leads to better success rates under the different conditions.

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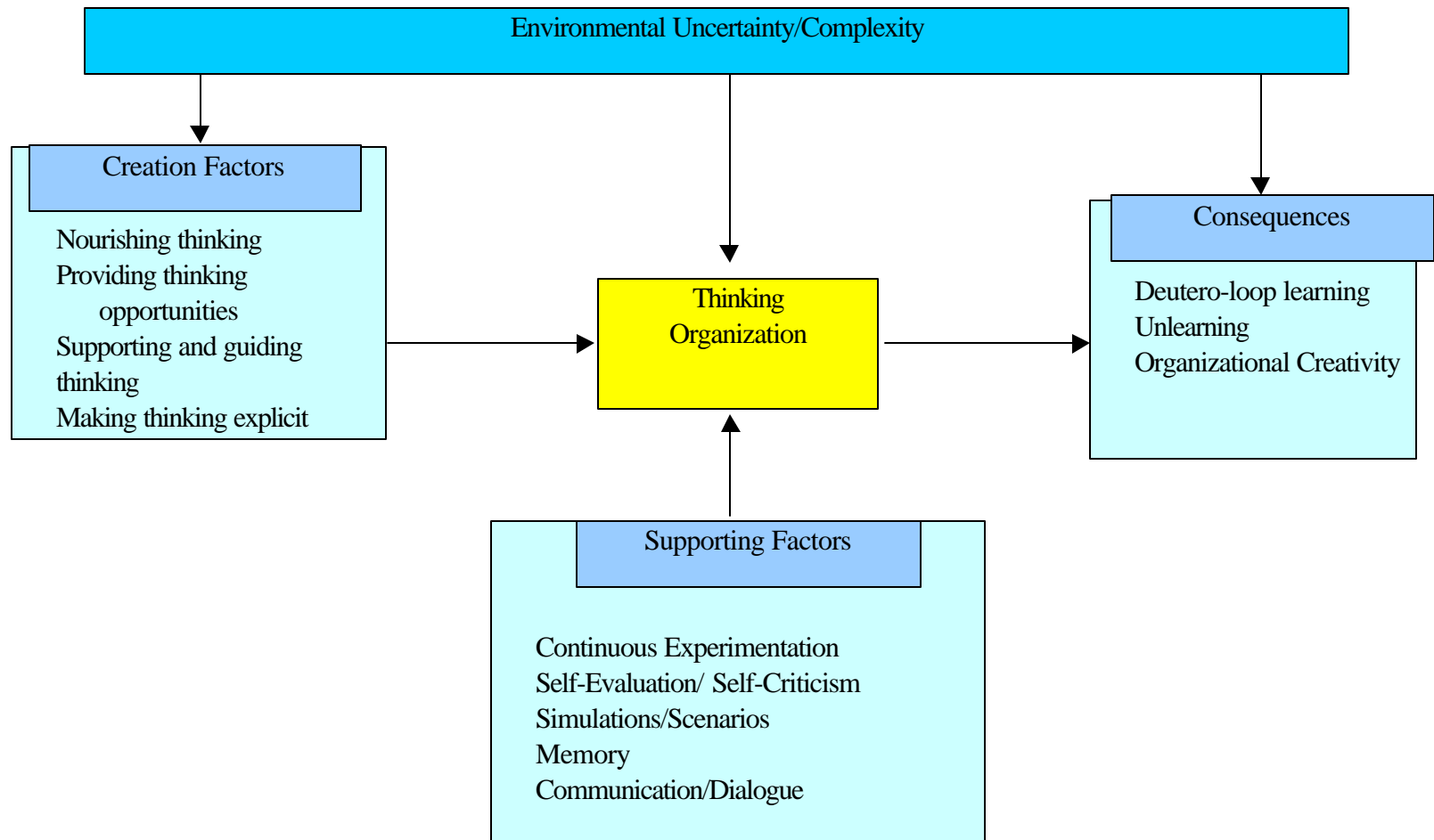
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Table 1
Definitions of Thinking in the literature:

Author	Definition
Halpern (1998)	Thinking is purposeful, reasoned, and goal-directed action. Thinking is involved in solving problems, formulating inferences, calculating likelihoods and making decisions
Jay (1991)	Thinking is purposeful mental activity that helps formulate or solve problem, make a decision, or fulfill a desire to understand
De Bono (1982)	Thinking is the operating skill through which intelligence acts upon experience.
Holyoak and Spellman (1993)	Thinking is high-level cognition, such as reasoning, categorization, and judgment and decision making
Beyer (1985)	Thinking is the process of determining the authenticity, accuracy, and worth of information or knowledge
Myers and McCaulley (1985)	Thinking is the function that links ideas together by making logical connections. Thinking relies on principles of cause and effect and tends to be impersonal.
Ray (1967)	Thinking is internal manipulation of symbols.
Baron (1988)	Thinking is, in its most general sense, a method of choosing among potential possibilities, that is possible actions, beliefs or personal goals (P.6)
Flesch (1951)	Thinking is manipulation of memories.
Jastrow (1931)	Thinking is planning, and planning is essentially doing thing in the mind, or in imagination before accomplishing them in reality (P.11)
Mayer (1983)	Thinking is what happens when a person solves a problem, that is, produces behavior that moves the individual from the given state to the goal state – or at least tries to achieve this change (P.7)
Thomson (1959)	Thinking is remembering, imagining and fantasizing.

Figure 1. A conceptual Model for Thinking Organization



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