

# 以學習型組織為介入方式所產生之 跨層次的組織學習動態歷程

## Exploring the Phenomenon of Learning Organization Intervention on the Dynamics of Organizational Learning from the Cross-level Perspective

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## 摘要

傳統上，學者咸認組織學習是一種涵蓋個人、團隊和組織層次的學習現象，而學習性組織亦為組織學習的重要介入的機制之一，但殊為可惜，在回顧相關組織學習的文獻後，我們發現既有的研究成果中，此議題似乎沒有受到應有的實徵關注。職是之故，為瞭解此一介入手段與現象之間的連結，本研究藉由學習型組織的介入來探討個人、團隊、和組織學習不同層次間的學習連結和學習轉換機制，以探索跨層次間的學習動態現象及其驅動因素。實證上，我們針對一家地區性醫院為個案研究對象，透過為期兩年的田野研究，我們針對所收集的訪談稿、觀察記錄、會議記錄及其他相關資料進行多面向資料的質性分析，據此，本研究發現以下的結論：(1) 團隊學習構成關鍵性的連結脈絡，以社會認知為基礎的學習型態，做為個體、團隊和組織學習效能的移轉機制(2) 其中又以團隊學習技巧和學習規範為促進學習移轉的因素，強化個人和團隊學習之間的連結。(3) 團隊透過專案，將學習成效呈現在標準作業流程的改善，並將學習成效體制化，構成團隊和組織學習的連結。(4) 而部門主管推動專案的內容代表體制力量回饋到個體、團隊和組織的學習，並影響其未來的學習內涵。最後，依據本研究所發現的結果，我們分就組織學習上理論和實務二方面的意涵提出相關建議與看法。

**關鍵詞：**組織學習、學習型組織、團隊學習、轉換機制

## Abstract

Organizational learning is the process of how learning occurs in organizations; it involves individual, group and organizational learning. This study seeks to illuminate dynamics of cross-level learning by focusing on facilitators and impediments to the learning transfer from individuals to the organization, and vice versa. A qualitative case study of a local community hospital with a two-year learning organization (LO) intervention sheds light on team-learning contexts as the key to moving forward learning effects between the various levels. A socio-cognitive process of team learning accounts for an explicit transfer process. Within the process, team-learning skills, characterized by inquiry and reflection,

broaden individual intuiting, and interpreting, comprising the transfer mechanism between individual learning and team learning. Team-learning norms give rise to the informal coordination mechanisms, and integrate interdepartmental learning effects. Team-learning projects institutionalize learning outcomes through improvement of standard operational process (SOP), which further reinforce the linkage between team learning and organizational learning. Endorsement by a subunit supervisor is the institution force for feedback flows, thus completing an iterative cycle of individual, team and organizational learning. This research concludes that under the support of LO, the idea of organizational learning and its learning activities can be practically carried out. LO practices integrate cross-level dynamics and elucidate learning factors that make transfer of learning across multiple levels.

**Keywords:** organizational learning, learning organization, cross-level dynamics, team learning, transfer mechanisms

## 1. INTRODUCTION

Since the 1990s, as advanced industrial economies became more 'knowledge-based' or 'knowledge-intensive,' organizational learning has been seen as necessary to retain and improve competitiveness, productivity, and innovativeness in uncertain technological and market places. The researchers believe that a learned individual will reinforce and add to the advances in organizational performance as a whole. If learning ensures organizational performance, then it is contingent upon the transfer process through which individual's learning advances. The process is organizational learning.

The literature on organizational learning primarily discusses the multilevel learning in an organizational learning model (Kim, 1993; Nonaka & Takeuchi, 1995; Crossan et al., 1999). Senge (1990) showed how organizational learning can be seen as a hierarchical and interconnected structure of an iterative process from individual, to team and final organizational learning. Cyert & March (1963) showed how individual learning manifests itself as learning agents for

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organizational transformation. Argyris & Schon (1978) discussed how team learning can achieve a collective performance that is greater than what individuals could know or accomplish alone and Nelson & Winter (1982) discussed how collective intelligence of teams can be transformed into organizational routines and knowledge.

Understanding the linkage between individual and organizational learning has the capacity to facilitate the organizational learning process. The researchers have found few studies that discuss the mechanisms of the feed-forward learning process (learning that moves from the individual to the group and finally to the organization), and the feedback learning (from the organizational-level learning to the individual and group learning).

While individual organizational members have been noted to be in constant interaction with each other, and with the contexts in organizations (Fiol & Lyles, 1985; Bapuji & Crossan, 2004), what have been missing are ways that allow individuals to engage in both the relationship across levels of analysis and the multiple dimensions of learning (Antonacopoulou, 2006). In other words, we need to explore mechanisms by which the feed-forward learning processes and the feedback learning can be reinforced. The research discussed in this article hopes to address this gap.

This study focused on a learning organization intervention to explore the interconnectivity between different levels of learning, thus revisiting the transfer mechanisms that facilitate cross-level learning. A learning organization is concerned with “methodological tools which can help to identify, promote and evaluate the quality of learning processes inside organizations” (Easterby-Smith & Araujo, 1999).

This research applied a longitudinal and qualitative method to examine organizational learning process in a community hospital that had implemented a learning organization intervention for at least two years in Taiwan. The analysis used the grounded theory to try microlevel exploration (Eisenhardt, 1989). The case study finds that team-learning skills and norms based on LO concepts and tools comprise the transfer mechanisms in feed forward of the new knowledge to the organizational level. In a bureaucratic structure like a hospital, endorsements by a unit supervisor is feedback force that reinforces the successful learning effects.

This research was structured as follows: first, the discussion began with an

overview of the organizational learning model. Then, we built an argument from the literature review that the learning organization should serve as a supportive basis to detect the learning barriers, and facilitators to organizational learning. Next, the paper describing the research methods was developed and the findings and implications of the study were presented in detail.

## **2. LITERATURE REVIEW**

### **2.1 The Organizational Learning Model**

The Organizational Learning Model (OL) interconnects the learning levels, learning styles, and learning outcomes, which for the purpose of this study is considered as theorizing the learning phenomenon into interrelationships between individual, group and organizational learning. A number of scholars conceive of organizational learning as a technical process through the effective processing of information both inside and outside the organization and acquisition of knowledge (Argyris & Schon, 1978; Huber, 1991). Others conceive of organizational learning as a social process that is rooted in the practices of learning from experiences at work, and of learning from/with each other in work settings (Orr, 1990; Lave & Wenger, 1991; Cook & Yanow, 1993, Coopy, 1994). The distinction of the technical and social views of organizational learning can be linked to the difference between the behavioral and social perspectives adopted by scholars on organizational learning models (Easterby-Smith & Araujo, 1999).

Early models (March & Olsen, 1975; Kim, 1993; Gnyawali & Stewart, 2003) are based on feedback loops between the organization and its environment as stimulus-response models with some cognitive elements. These models emphasize perceptions of environmental conditions as the antecedents of OL and adaptive behaviors as outcomes of OL in responding to the environmental changes. Recently, a few models strengthen the social perspective on organizational learning (Williams, 2001; Casey, 2005; Antonacopoulou, 2006). The second type recognizes the importance of collective behavior and highlights a social system where power, politics and institutional identity build up an interlocking context to define the content and process of learning.

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Despite the emphasis on individual and collective learning as a social and cognitive process, both early and recent models are characterized with deficiencies of explanations over mechanisms that transfer knowledge between different levels. The earlier models deal with the relationship of antecedents, processes and actions yet rarely draws on the methods that develop a better understanding of dynamic complexity underlying the multiple levels of learning. The recent models, still, make few suggestions on how to overcome the barriers that leave learning effects of subgroups fragment. Berthoin-Antal et al. (2001) pointed out that the key challenge to models of organization learning is recognizing how its processes are embedded in social contexts, where learning is through engagement and interaction with people in the workplace, and the resulting knowledge is ephemeral and tacit, residing within interaction between people. Thus, social contexts in terms of participating groups, cultures, task systems, organizational structures and environmental forces are integral to organizational learning processes but seldom get explicitly clarified on their influences.

Upon the division of OL models, Crossan's et al. (1999) 4I model adopts the cognitive and interpretive stance, integrating two approaches of learning as a principally social psychological phenomenon. Crossan's et al. (1999) 4I model portrays learning in terms of steps or phases—usually starting at knowledge acquisition and continuing through diffusion and sense-making to action and then storage. It is through the four processes—intuiting, interpreting, integrating, and institutionalizing (the “4Is”) that one learns how information is transformed into valued knowledge. In addition, the 4I model allows learning to feed forward to the organizational level and feed back to the individual, thus making a circulation between stimuli from the environment, the behaviors of the members and the organization belief system.

Our intentions in this exploratory study are to enrich our overall understanding of dynamics of organizational learning by including contextual variables that facilitate learning at the organizational level. We used the 4I model since this model has the three characteristics that stand out as particularly important in this research: (1) it uncovers different processes of learning, recognizing coordination mechanisms required in bridging the processes; (2) it stresses the institutionalization of learning, encouraging the establishment of learning facilitators at the organizational level, and (3) it places learning as a dynamic

process between multiple levels.

The LO intervention enhances learning in organization by intervening in organizational systems to structure a flatter organization to increase flexibility (Senge et al., 1994), and create the learning climate (Garratt, 1990; Pedlar et al., 1991). The 4I model fits the purpose of the LO intervention regarding its implications of the contextual drivers as specific mechanisms in bridging the levels of learning.

## 2.2 The Learning Organization

Learning organization (LO) has dealt with learning as a core characteristic of firms. Though learning organization evolved out of the tradition of organizational learning, the learning organization literature is action-oriented, focusing on finding strategies and tools that can help to increase the quality of the learning process (Senge et al., 1994; Easterby-Smith & Araujo, 1999). It is for this reason that we argue LO can illuminate the cross-level dynamics in the organization.

Easterby-Smith & Araujo (1999) found people who write on learning organization interventions can be divided into those who propose linear models with a series of hierarchical stages, and those who propose cyclical models. Argyris's (1993) notion of single-and double-loop learning is the inspiration of the former. His LO intervention emphasizes developing individual's ability for self-discovery, and communication. Reflection and inquiry are used as communication skills to make organizational members more aware of their actual theories-in-use in order to produce new action strategies that enable learning (Argyris & Schon, 1978). The assumption of the linear models is that successive levels are increasingly desirable for organizations wishing to increase their learning capacity and therefore, double-loop learning is preferable.

Cyclical models, by contrast, do not posit any hierarchies of desirability but iterate between individual and collective meaning structures (Kolb et al., 1984; Dixon, 1994). Intervention focuses on conditions fostering the collective learning cycle. It is argued that only a collective learning process allows for a contextual approach in dealing with organizational contexts for effective information integration.

Yet, conceptualization of learning also accounts for how a LO intervention is operated (Finger & Brand, 1999). The psycho-sociological approach to the learning organization is based on theories of Human Resources and Organizational Development. This school of thought conceptualizes organizations as a set of ‘resourceful humans.’ The intervention aims to create adequate conditions for learning at work and applies strategies to promote learning, such as empowering people toward a collective vision, or encouraging collaboration and team learning, (Watkins & Marsick, 1993).

A LO intervention mainly takes form of group or inter-group intervention, such as team building, and conflict resolution (Burke, 1982; Pedlar et al., 1991; Whyte, 1991). A humanistic approach fosters individual and collective learning in order to continuously transform itself (Burgoyne, 1995). It uses strategies oriented to create conditions fostering personal growth, like a learning culture (Schein, 1999). On the other hand, in the cognitive approach, intervention mainly takes the form of education and training in order to increase an organization’s knowledge basis, as well as in order to question underlying organizational assumptions (Argyris & Schon, 1978; Senge, 1990).

In Senge’s (1990) view, the fundamental sorts of change involve basic shifts in people’s values and belief about what is possible and how things work by the five core disciplines. To him, a LO intervention implies a fundamental change in thinking and behavior. It has the potential to make a contrast between the new and old learning behaviors. This research applied Senge’s five core disciplines as building blocks for a learning organization. Senge’s cognitive conception of learning promises the prospect to detect the learning barriers, and facilitators to organizational learning.

## **3. Methods**

### **3.1 Research Site**

This study used a qualitative methodology to address the cross-level dynamics in organizational learning. Qualitative methods are well suited to the study of dynamic processes, especially where these processes are constituted of the

nonlinear dynamics at learning in organizations under continuous change (Meyer et al., 2005). Furthermore, qualitative research is sensitive to organizational context and focuses upon activity sequences as they unfold, so it is a valuable means of investigating dynamic processes in organizations (Pettigrew, 1992).

This study's aim was the elaboration of the 4I model. The researchers searched for an extreme situation where the process of interest was "transparently observable" (Eisenhardt, 1989) to facilitate theory building.

Chu Shang Show Chwan Hospital (CSSC), was recently identified as a seed hospital for learning organization development by Taiwan Joint Commission and Hospital Accreditation (TJCHA) and offered an excellent organizational setting for studying. Its insistency and continuity of LO development in Taiwan's medical industry meet the criteria of Eisenhardt's (1989) "extreme case."

Based on Yin (2003) idea that "case studies are the preferred strategy when 'how' or 'why' questions are being posed" (2003:1), the research used a case study approach to explore 'how' and 'why' learning is transferable between levels to satisfy the need in medical disciplines.

A LO suggested that teams are the fundamental learning unit in an organization (Senge, 1990). Thus, this case study approach allowed for a fine-grained detail on understanding how experiences in subgroups were transferred into organizational practices, linking team learning to organizational learning. Elkjaer (2001) also discussed that Senge's Systems Perspective Organizational Learning popularized a LO intervention. This case study approach highlighted the remarkable potential for double-loop learning in individuals and teams. Cross-level learning is a dynamic, complex and micro-processed.

### **3.2 Research Context**

CSSC is a 410 bed hospital. It has 500 employees, of which 25 are professional occupations, and 41 are doctors. CSSC sees about 12,000~15,000 patients monthly.

The organizational goals are oriented towards the healthcare of residents in the surrounding communities and remote areas. CSSC was first appointed by TJCHA in 2001 as a primary hospital for learning organization development. TJCHA,

authorized by the Department of Health, acted as an initiator of the healthcare system reform. For the study the LO interventions were undertaken to improve the medical quality under TJCHA endorsement and subsidy. This external goal was in contrast to the internal conditions at the hospital where there was a disintegrated operational process, manifested by a lack of collaboration among functional units.

This condition called subunit orientation was defined by Jones (2004) as “a tendency to view one’s role in the organization strictly from the perspective of the time frame, goals, and interpersonal orientations of one’s subunit.”

Adding to the internal issues was the decision of the hospital’s chief executive officer (CEO) whose top-down administrative bureaucratic structure played a contextually conducive factor for the initial implementation of a LO. The CEO made LO participations mandatory for the middle-line managers with an aim to improving their management skills. The study took into account this decision in its analysis.

### **3.3 Process: LO<sub>1</sub> and LO<sub>2</sub>**

LO<sub>1</sub> was the initial period (October, 2001 to November, 2002) of the LO intervention. It was conducted through a top-down approach of planned change with the CEO as the change agent. TJCHA provided an external consultant to recommend a course of change model and instill the core concept of a LO. LO<sub>1</sub> was conducted by the external consultant.

LO<sub>2</sub> was completed from March 2003 to November 2003 when the learning designs were transferred to a team of internal consultants. The Internal Consultant Team was a self-managed team who had completed LO<sub>1</sub> along with a two-month training session where they learned to be competent coaches, lecturers, and facilitators. The team adopted an empathetic approach to design change activities, grounded in contingency thinking for aligning change flows with daily schedules of hospital operations. The team operated the change intervention with a feedback loop that assimilated participants’ inputs regarding constraints from the formal structures and bureaucratic procedures.

LO<sub>1</sub> mandatory participants were 31 unit supervisors, including 5 physicians, 3 lab/medical technicians, three pharmacists, 10 administrative managers, and 10

nursing workforce of director, middle-line managers, and first-line managers. LO<sub>2</sub> voluntary participants were 38 front-line employees of one physician, 6 lab/medical technicians, 18 administrative employees, and 13 nurses.

### 3.4 Contents: LO courses and Team-learning projects

LO courses and team-learning projects comprise the fundamental part of the two interventions. LO courses center on fostering Senge's (1990) three core capabilities—shared vision, team learning, and systems thinking. The practitioners in Taiwanese organizations in general have learned the concept of a LO through the publication of *The Fifth Discipline* (Senge, 1990). Senge's systemic approach was known by the practitioners who used the provocative, cognitive tools that were pertinent to the social contexts. Shared vision creates the motivation of the collective learning; team learning and systems thinking develop individual and collective learning capabilities in projects. Learning is driven by vision-emotional commitment, and this driver motivates organizational members to build learning into their daily routines and promote team learning. Team learning includes listening (not only to others but also to oneself); suspending judgment (in order to change with new perspectives); and voicing one's opinion (speaking one's own voice has to do with revealing what is true for oneself regardless of other influences that might be brought to bear) (Isaacs, 1999).

In addition to the Fifth Discipline, people learn concepts and skills useful in enhancing quality of collective thinking in a LO. These include Argyris & Schon's (1996) reflection and Inquiry, Left-hand column, the ladder of inference, Model I theory-in-use, and Model II theory-in-use (Argyris, 1993), Six thinking hats (six thinking strategies for productive meetings) (de Bono, 1992), check-in (to make participants mentally and physically concentrated in discussion), and check-out (to encourage sharing individual opinions). Other courses are oriented to develop the ability of systems thinking: principles of system, causal loop diagram, and archetypes (Senge, 1990; Senge et al., 1994), and the Beer Game (Senge, 1990). Developing learning capabilities takes time and practice. Team-learning projects are the practice field that provides a zone of change for participants to put learned LO concepts and skills into practice, and to internalize what has been learned.

### **3.4 Data collection**

The primary method of data collection involved semistructured interviews with LO members ( $n = 24$  in LO<sub>1</sub> and 29 in LO<sub>2</sub>). We chose as participants various types of learners (the CEO, medical technicians, physicians, administrators, and nurses), who were recruited as LO seeds for the first two years. Confidential interviews occurred at two points in time — in June (wave 1) when LO courses were completed, and in December (wave 2) at the end of the project learning.

The ratio of administrators and nurses to physicians was 3:1. The ratio showed that most informants were administrative staffs and nurses who are more compliant to hospital activities. In terms of hierarchical levels, LO<sub>1</sub> had managers and top managers while LO<sub>2</sub> had lower managers and frontline workers.

Interviews were performed at the hospital and ranged in time from 30 to 60 minutes. In order to avoid bias observation and inference inflicted by a lack of triangulation, the authors trained a team of college students to join this phase of data collection. The training process followed the guidelines of Miles & Huberman (1994) by using unobtrusive measures and clearly identifying research intentions. Two researchers were at each interview, one conducting the interviews while the other took notes. The interviews were taped and later transcribed by one of the researchers. After the interviews, researchers crosschecked facts and impressions. The researchers also modified interview protocols during each wave of data collection to take advantage of emerging themes.

Common questions in each interview were individual's (1) cognitive and behavioral changes, (2) application of LO tools, (3) assessment of LO function in work units and the organization, and (4) evaluation of the learning facilitators and barriers. This common set of questions allowed a longitudinal track over changes in members' response to questions over time.

The researchers supplemented interview data with secondary sources and unobtrusive observations. The researchers reviewed event documents, including teaching materials of LO courses, project-learning records, and meeting minutes of the Internal Consultant Team.

The researchers also gather archival documents from various resources, including nursing department files on quality control indicators, fill-in charts that

support clinical service, patient care checklists, and hospital and departmental pamphlets. All of this data helped the researchers to understand and identify the styles and norms of organizational learning in the healthcare organization. The researchers also followed administrative and nursing managers during their visits with patients or subordinates and made general observations of how the hospital functioned and of how much LO experience was embedded in the hospital contexts. These were made to confirm interviewees' descriptions of both their learning effects and the general hospital environment. Taken together, these additional sources of data were not central to the further development of the findings but helped to provide a richer context for understanding members' responses, the research setting and its dynamics.

### **3.5 Data Analysis**

Data analysis comprised three main stages. First, the researchers developed a database of learning narratives associated with learning conditions that emerged from the interviews. As the interviews and transcripts were carried out in Chinese, the NVIVO database was built in the Chinese language, too. In stage 2, the researchers sought to answer the research question: "Are there any discernable cross-level patterns of interactions during the implementation of the LO interventions?" In stage 3, we addressed the actions that facilitate learning to feed-forward to the organizational level and feedback to individuals. Table 1 summarizes the stage of analysis.

**Table 1 Stages of Data Analysis**

<b>Data Analysis Stage</b>	<b>Tasks</b>	<b>Outputs</b>
(1) Creating a database of learning processes during the intervention period	<ol style="list-style-type: none"> <li>1. Listing learning issues arising in the hospital.</li> <li>2. Reducing issue lists by applying the core themes in the interview protocol.</li> <li>3. Modifying and refining the list on the basis of reliability test and discussion with internal consultants.</li> </ol>	<ol style="list-style-type: none"> <li>1. 401 issues conveying learning practices.</li> <li>2. Set of 18 key issue domains.</li> </ol>
(2) Identifying cross-level learning patterns deriving from the LO intervention	<ol style="list-style-type: none"> <li>1. Identifying 18 key issue domains.</li> <li>2. Conducting a comparison of data across domains and informants</li> <li>3. Grouping the 18 issues domains into four categories (dimensions), representing the building blocks in learning development, and drawing on the existing theory.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set of four robust learning dimensions for each level of learning.</li> </ol>
(3) Identifying actions that allow learning to feed forward/back between levels	<ol style="list-style-type: none"> <li>1. Identifying commonalities in the actions associated with feed forward and feed back learning process.</li> <li>2. Conducting iterative, cross-case analysis to build up more abstract descriptions of the cross-level learning dynamics.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set of robust actions for facilitating learning to feed forward and back between levels.</li> </ol>

**Stage 1: Creating a database of learning processes during the intervention period.** The researchers began with listing learning issues that arose in the hospital during the study period (2001~2003). The researchers defined learning in a broad sense as “change in cognition, change in potential behavior, or change in actual behavior” (Tsang, 1997). For instance, individual learning process involved in consequences of applications of LO concepts in job duty would be considered a learning issue, though there is no perceivable change in work. The learners reported that they performed their duty as the usual but they could understand why their job procedures were demanded in such a way. The entire database of learning issues was rather large, consisting of 401 issues conveying learning practices. The research then reduced the list of all the issues to a comprehensive set of typical

issues facing a LO intervention. Using NVIVO 2.0, a software program for qualitative data analysis, the researchers sorted the learning issues into 18 major categories based on core themes in the interview protocol. NVIVO 2.0 relied on a process of data reduction in which the issues were grouped thematically into broader issue domains (for instance, we grouped into one domain the issue of inquiring into subordinates' opinions in meeting and the issue of listening to one's thoughts in occasions of controversy before replying one's thoughts) (Strauss & Corbin, 1997).

NVIVO 2.0 is used around the world for qualitative analysis. Currently no Chinese version of the program is available. However the English version is capable of reading and understanding Chinese. All data was entered in Chinese, because the interviews and transcripts were in Chinese. After the NVIVO 2.0 analysis, the data was translated into English.

To verify this categorization, the researchers subjected a pilot sample of 100 issues (about 25 percent), associated with 16 individuals, to a reliability test. Two research assistants identified learning issues provided by the 16 informants and their set of results replicated 87.4% of the other categorization. Then, we developed a draft of 18 domains that covered the major issues from a LO intervention, with reliability of categorization schemes. These domains were, for example, individual cognitive change, change in interfacing with others, attitude changes, or no change. The researchers sought to verify the categories through discussions with internal consultants, who all stated that the final set of 18 domains capture cross-level learning situations fragmentally located at individual, group and organizational levels.

**Stage 2: Identifying cross-level learning patterns deriving from the LO intervention.** The researchers classified the 18 domains as individual, group, and organizational levels. They were presented as followed: (1) individual: personal change, change facilitators, change barriers, LO change tools, LO application by the researchers; (2) Group: workgroup features, workgroup change, workgroup change tools, team-learning projects, LO applications by others, areas of no change in workgroups; (3) Organization: organizational change, organizational change tools, organizational barriers, organizational facilitators, knowledge gaining from team-learning projects, leadership, areas of no change in organization. For each

domain, the researchers continued to compare data across informants to understand how these domains related to similar ideas, issues, or relationships concerning the receptivity or resistance of new LO tools. Refining these categories allowed us to identify numerous second-order, non-overlapping dimensions.

These dimensions we assigned theoretical labels based on a more general description subsumed the first-order categories. Included as organizational learning behaviors were 'learning subject,' 'content of learning,' 'incentive and motives for learning,' 'efficiency of learning,' and 'processes of learning' (Prange, 1999). Drawing on this conceptualization of organizational learning, as well as on a review of learning activities identified in OL literature (Crossan & Guatto, 1996), the researchers then aggregated domains into four robust and mutually exclusive dimensions. Table 2 shows the core dimensions of change across three levels brought by a LO intervention.

**Stage 3: Identifying actions that allow learning to feed-forward/back between levels.** The general, theoretical dimensions facilitated us to engage in a cross-case comparison (Strauss & Corbin, 1997). Our focus was on the accounts and actions (including decisions, policies, and proposals) associated with feed-forward and feedback learning process. The researchers used the constant comparative method to make a cross-case analysis between LO<sub>1</sub> and LO<sub>2</sub> data, gradually building up more robust descriptive categories from the data. The researchers began by tracing through the learning transcriptions in each dimension to develop a set of descriptors that captured the feed-forward/back learning between levels of learning. These descriptions were based on quotations or observations from the raw data, including "good listening skills decrease my bias of views toward my subordinates" and "inquiry facilitates to unlock potential interpretations." Then, through an iterative, cross-case analysis, we built up more abstract descriptions of the cross-level learning dynamics ("team-learning skills broaden the scope of individual intuiting, and interpreting"). Figure 1, in the Discussion section, summarizes this analysis and shows the linkages that connect the four processes of intuiting, interpreting, integrating, and institutionalizing. Team-learning norms and skills are identified for learning to feed-forward to the organizational level while cohort by subunit supervisors, or the authority exerted by subunit supervisors, makes institutional learning feedback to the individuals.

## 4. Findings

The LO intervention with cognitive orientation expands the learning capacity, with change at the individual, group, and organizational levels. The process of development is associated with specific contextual characteristics. We summarize the facilitators and impediments of organizational learning process along with change in other dimensions: learning perspectives, learning process, and learning outcomes in Table 2.

**Table 2. Change in dimensions of healthcare OL brought by LO intervention**

OL Dimensions	Individual learning	Team learning	Organizational learning
Learning approach	<ul style="list-style-type: none"> <li>• A shift of emphasis from behavioral to cognitive approach</li> </ul>	<ul style="list-style-type: none"> <li>• A mixture of cognitive, social/cultural approach in team-learning project</li> </ul>	<ul style="list-style-type: none"> <li>• Observable behavioral approach in SOP modification</li> </ul>
Learning process	<ul style="list-style-type: none"> <li>• LO tools initiate conceptual shifts.</li> <li>• Team-learning skills bring integrated learning of cognitive and behavioral change.</li> </ul>	<ul style="list-style-type: none"> <li>• Systems thinking initiates broader intuition interpretation.</li> <li>• From reproducing bureaucratic features toward spontaneous participating in sense-making process</li> </ul>	<ul style="list-style-type: none"> <li>• Team-learning norms integrate individual intuition and interpretation.</li> <li>• Small-scale modifications of operational procedures by discrete subunits</li> <li>• Isolated LO participants in working units</li> </ul>
Learning context	<p><b>Facilitators:</b></p> <ul style="list-style-type: none"> <li>• Allowed leave of absence for class attendance</li> <li>• Learning content is relevant to task responsibility</li> </ul> <p><b>Impediments:</b></p> <ul style="list-style-type: none"> <li>• Forced participation</li> </ul>	<p><b>Facilitators:</b></p> <ul style="list-style-type: none"> <li>• A climate of psychological safety</li> <li>• A shared vision</li> <li>• Team-learning norms break up existing power-based communication.</li> </ul>	<p><b>Facilitators:</b></p> <ul style="list-style-type: none"> <li>• Unit supervisors as change agent</li> <li>• Chairman as an initiator in providing a legitimate context for an intervention.</li> <li>• Internal consultant team as facilitator,</li> </ul>

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	<ul style="list-style-type: none"> <li>• Sacrificing private time</li> <li>• Incompatible course schedules with rigid working schedules.</li> </ul>	<p><b>Impediments:</b></p> <ul style="list-style-type: none"> <li>• Team relevant expert-based position-based status hierarchy.</li> <li>• Team-learning projects as informal projects.</li> </ul>	<p>change agent, and consultant</p> <p><b>Impediments:</b></p> <ul style="list-style-type: none"> <li>• Bureaucratic structures as segregation</li> <li>• Negative interpretations to LO provided by board.</li> </ul>
Learning outcome	<ul style="list-style-type: none"> <li>• New perception emerges toward interpersonal relationship.</li> </ul>	<ul style="list-style-type: none"> <li>• Informal type of learning emerges from team dynamics, distinguished from formal training in OL.</li> </ul>	<ul style="list-style-type: none"> <li>• Lingered with exploitation as a learning type</li> <li>• Discrete change among different subunits.</li> </ul>

#### 4.1 Learning Approaches

Organizational learning approach (style) is a function of how organizational learning as represented by the different learning activities that organizations take (Dibella & Nevis, 1998). In the hospital, the predominant learning style has been behavioral view of learning. The LO intervention shifted the hospital to support numerous learning practices that presented different learning approaches. Individual learning made a shift to cognitive perspective, team learning assumed a mixture of cognitive, social and cultural ones, and organizational learning remained with the behavioral one.

At the individual level, a cognitive perspective was recognized. LO<sub>1</sub> and LO<sub>2</sub> participants reported that detecting errors or bias in medical services was achieved by a presence of cognitive function. Hospital learning conforms to a type of learning, to “perform” behavior of correct medical operation, without considering if a change in thinking should precede or motivate these behaviors. With application of systems thinking, individuals worked in an active sense to listen to “relative people,” and to make interpretations, not by a one-sided story but in “broader scope.” The interviews showed this.

I guess my reasoning was used to be straight forward...To stretch thinking further never occurred to me. Now the casual loop diagram shows you in the process, something was likely to take place. It makes you think broader. (Anesthetic Technician)

I use six thinking hats...I lean to take in other voices, to think in different angles. Um, systems thinking is useful... The CEO doesn't encourage us that much and we all are willy-nilly to get together. We see this is how a system affects us. (Internal Consultant)

Members in our unit never fell silent to listen to others. Now we quiet down and learn to listen. I feel in our meeting or in projects, co-workers use LO concepts. (Personnel Assistant)

Team learning was rather complex due to the group dynamics. Team learning experienced a transition from LO<sub>1</sub> manager role into LO<sub>2</sub> front-line employees as learning center. LO<sub>1</sub> team learning favored arms-length imitation of observable practices, values or ideas patronized by managers in higher position; members had no engagement in discussion. LO<sub>2</sub> team learning arose from direct involvement in activities and spontaneous participation in practices, and in this sense, learning took a social perspective (Lave & Wenger, 1991). Also, a cultural perspective was involved, with regard to share their daily, know-how experience search for better service products (Cook & Yanow, 1993). The development of a mixture of cognitive, social and cultural perspectives fostered a climate of reciprocal information exchange and shaped a growing consensus with a team-shared vision.

Matters of principle in talk benefits us most...Today we learn to make conclusions and follow up to say some inference and assumption... somebody says besides talking, to listen to people's talk, to other ideas. We'd better drop the subunit orientation...This is our result to share with all. Thanks! (Observation notes in a LO<sub>2</sub> class)

This is clearly a difference in how teams work. We feel there is a bond between us. ... LO skills caution each person to think of the whole

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organizational structure rather than sidestepping to avoid the oncoming duties, different from our daily cases. When more than subunit is responsible for the conduct of work, many people don't assume it is their responsibility and evade it. (Head Nurse in LO<sub>2</sub> interview).

Learning at the organizational level confronted more barriers than the other two levels due to the structural rigidity. If there was change related to organizational learning, it was incremental change in subunit operational processes. An example of this was re-designing the flowchart of patient-records delivery. The modification corrected delivery actions, facilitated doctors' diagnosis and prevented mistakes. The learning kept on the behavioral approach that relies on path dependence in shaping future behavior. Overall, there was stronger perception of change at the individual and team learning levels.

### **4.2 Learning Process**

This case showed individual's team-learning skills were critical to integrated learning. Team learning proceeded from LO<sub>1</sub> exploitation to LO<sub>2</sub> exploration. Organizational learning patronized SOP behavioral learning.

Regarding the individual learning process, team-learning skills were effective means to interact with others, including skills in listening, inquiry, applications of systems thinking and six thinking hats, and the ability to examine the latent beliefs that spur the action. These were behaviors of giving affirmative order, postponing feedback, inquiring in interpersonal interactions, making critical reflection, and sharing questions and reflections. LO<sub>1</sub> middle managers became more willing to listen to subordinates and other interdepartmental groups, and "hold back the intuition that other units are picking on their department in meetings". Subsequently, conflicts were reduced. Practices of team-learning skills enlarged the possibility for individuals to act, and then to change. Individuals were also more likely to have both cognitive and behavioral change when suspending belief, trying out communication skills and interpreting the action with a fresh mind-set.

The meeting gives you a glimpse of how our folks are faring after getting to know LO. We're being practical about how to manage a meeting. You know,

when meetings went on, Chairman used to talking about his own ideas and we followed him. Presently, LO teaches how to take a meeting, how to communicate your ideas and how to coordinate with others. LO gives each person a chance to talk and you will find it is this person that is so interesting and I didn't know before, and it is the idea that is so wonderful and I didn't know before, either. (Manager in Accounting Unit in LO<sub>2</sub> interview)

Team-learning process showed greater extension of learning development; two types of learning emerged: exploitation and exploration. LO<sub>1</sub> team members refrained from self-expression, attributed more legitimacy to ideas purposed by members in higher position and made self-imposed constraints on issues that didn't correspond to their choices. LO<sub>2</sub> members were granted more chance of negotiation in framing issues for team-learning projects and then more information sharing flew across each other.

To frame the issues of our projects, at the very beginning, we exchange ideas and benchmark other teams that take longer time to create a compelling vision. We then engage in the process of finding our own visions in a meeting. Only after that meeting, did our team start to go smoothly. (Physical Therapist in an interview)

Team members felt safe to exchange ideas and to assume sense-making process, as each person's role had no relevance to expert-based status hierarchy or position-based status hierarchy. LO<sub>2</sub> team learning had broader scope and deeper level of conceptual change. In addition, systems thinking was reported to be the most applied tool in the learning process in LO<sub>2</sub>. Systems thinking helped teams to find the key point and solution and support behavioral change with new, positive attitudes to face problems in work and personal life.

The mechanisms of transfer from the team-level to organizational-level learning were grounded in institutionalizing updated standard operational procedures (SOP). Employees reported that they were more likely to get involved in projects improving the outdated SOP. Relevant employees pondered together the meaning of the experiences for themselves, purposed new programmed actions and achieved mandated performance objectives. Observable behavioral change was facilitated by institutionalizing new SOP as part of internal working policy.

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Examples of projects are: “Improving Hospital Information Delivery and Flow,” “Improving the Environments for Medical Safety,” and “A Campaign for Hospital Polite Manners.”

### 4.3 Learning Context

In the 4I model, Crossan et al. (1999) encourage a pursuit of “*understanding the mechanisms that enhance or restrict the stocks and flows of learning*” as a future research agenda. This study suggests: (1) that individual learning context was concerned with stimulus for learning motivation. (2) Team learning context focused affective learning factors and (3) organizational learning context needed subunit middle managers as change agents to construct a local, conducive learning environment.

Individual learning context draws on adult learning theory (Jones & Hendry, 1994) to motivate individuals to learn and to interpret. LO<sub>1</sub> operated with less consideration of learning motivation and conducive learning climate. LO<sub>1</sub> was confronted with negative reactions, as being “*obtuse, bombarding effects or too obscure to grasp.*” Impeding factors included mandatory participation, sacrificing private time for LO training, and incompatible course schedules with a rigid working schedule. LO<sub>2</sub> was restructured by the Internal Consultant Team to raise learning motivation. Change included learning contents and class rules. By planning adult learning experiences, LO<sub>2</sub> allowed leave of absence for class attendance, negotiable learning objectives, and learning content relevant to medical environments. By doing so, LO<sub>2</sub> participants had personal autonomy in learning how to learn and the use of experiential learning as a unique of resource for new learning. It reflected that the initiatives of LO<sub>2</sub> learning in a way are to enhance individual problem-solving capacity, rather than for organizational purpose. Two statements were observed as follows:

As for this year, I have been obsessed with this idea—let him/her to learn, to learn LO tools and the way LO thinks...and may be it is better to set the cohort of LO members free. We don't push them, let them learn in such a context that lessens learning pressure, that is, he/she comes to us rather than we push them...we only get involved with their meeting and projects.

(Director of the Nurse Department as Internal Consultant in a LO<sub>2</sub> planning meeting)

LO participation used to getting through supervisors' recommendation. This year we hope whoever has a mind for learning can take the initiative for participation...Then the biggest incentive is the allowed leave of absence for class attendance, much different from last year. Last participants of middle-line managers took their personal time for learning and it was indeed hard. (Vice CEO's announcement in LO<sub>2</sub> Instruction Seminar)

Team learning was embedded in the bureaucratic structure that encouraged division and segregation. The learning drawbacks were excessive reliance on power and authority of the bureaucratic leaders, and a low degree of information exchange.

In addition, negative emotions, such as anxiety, expected for any new member in a new group can lead to learning barriers. These barriers include: issues in choosing a role, identity acceptable to oneself and others or whether the emerging group goals will include individual member's personal goals. LO tools encouraged a climate of relaxation, and open discussion: a formal 'check-in' to talk, 'checking-out' to leave the field of group dynamic, or passing 'the talking stick' to others. Team-learning skills facilitated mutual negotiation in setting a shared vision. These functioned to be emotional functionally in enhancing a climate of psychological safety, a critical element for team learning (Edmondson, 1999), and reducing self-oriented behavior (Schein, 1999).

...You know, in job, sometimes, I don't want to criticize, there are so many aspects hard to express. We don't say the left-hand column (what you are thinking). Then, after LO courses, I learn to present myself in a graceful way. It's good for me in conversations with co-workers. (Junior Head Nurse in an interview)

Yet, impediments were defensive attitudes toward the team-learning project. Not all employees took doing projects as part of their task responsibility, and made team-learning projects informal. Such attitudes made LO participants in their

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working area isolated.

Our director suggests there is no time or manpower for LO participation. It would be safer if we take care of our own professional work only. No unit has time for such thing except for the nursing department. (Radiologist in Radiology Department in chatting)

A favorable, local learning environment required subunit managers as unit change agents. Middle managers could introduce a learning context associated with social and psychological nature by practicing LO skills to make more inquiry and dialogue and better interaction with subordinates. Other change agents included Chairman's leadership and internal consultant team to play roles as facilitator and consultant. These change agents collaborated to provide a legitimate context for learning in a dynamic inter-level and inter-relating process.

On the other hand, LO dissemination confronted a bottleneck when the impediments were organizational level factors. An example was structural inertia that contributed to a lost of LO learning effects. In spite of the problems with the outdated SOP, some units maintained it and didn't address the problems.

People you closely interact with don't necessarily take a part in LO. We interact mostly with the inspection department and no LO people are from that unit. Nursing department, the largest in the hospital, has many LO members. (Nurse in an interview)

Also, the board doubted the link between learning and performance. Their attitudes influence the amount of funds available for the hospital-wide LO project.

This hospital is founded on investments of shareholders. It is a private one with an emphasis on the cost and benefit, the criteria for running business. To make money is very important in any effort. (Social Worker in an interview)

#### 4.4 Learning Outcomes

Just as there were numerous learning processes contingent on appropriate contexts to get developed, multiple consequences of learning effects have been postulated. The researchers found individual learners showed more understanding of job roles, and work procedures, team learners created a new type of learning, and learning at the organizational level showed organizational routines or SOPs were vehicles of organizational learning.

Individuals underwent a process of change in the values and the belief systems, closely to Argyris & Schon's (1978) surfacing theories-in-use and espoused-theories. Individuals assumed an ongoing process of voluntarily retrieving external information, refining one's schema and developing multiple sets of views, or values toward co-workers' strife, arguments, or surrounding job problems. One was to think in '*multi-layers*,' '*in the opposite stance*' in facing management strife, or perceptible fight picked by other subunits, to be '*analytical*' to a series of bad luck,' or '*positive*,' '*active*' to problems occurring in the working units. The individual learning outcome was then defined as cognitive functions, conducive to schema reorganization.

The development of a higher level cognitive processing was facilitated by team-learning projects, distinguished from formal training in the hospital. The team-learning outcomes went beyond adaptation and efficiency aimed by formal hospital learning.

A team-learning project involved members from different subunits and proceeded with interactions that cut across existing organizational boundaries to get in touch with local residents. Examples of projects are "Marketing Hospital by Offering Health Consultation" "Managing Pleasant Working Climate for Hospital Volunteers" and "Improving Hospital Information Delivery and Flow."

These had features of being "*sense-making topics*," "*with more participation*," and "*potential for hospital reference*." (Head nurse, personal interview, November, 2002). The development of collective cognition resulted from learning process in participation, collaboration, and dialogue.

The advantage in team-learning projects is that when we discuss, you can hold a contrary view, and everybody can hold it. It is like this: I offer a view

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but you take a counterview, and I won't sit there pouting. Then, everyone is inspired and new ideas can get out. Everyone will move on with further discussion and see which way is better. (Member of Medical Records as LO<sub>2</sub> Project Team Member in an interview)

In a sense, a team was stimulated to learn with new group norms emerging from practices of team-learning skills. A formal "check-in" invited each person to state their role or position on a given issue and create a climate of inclusion. "Inquiries and dialogues" serves the function of clarifying and elaborating a point not perfectly articulated yet.

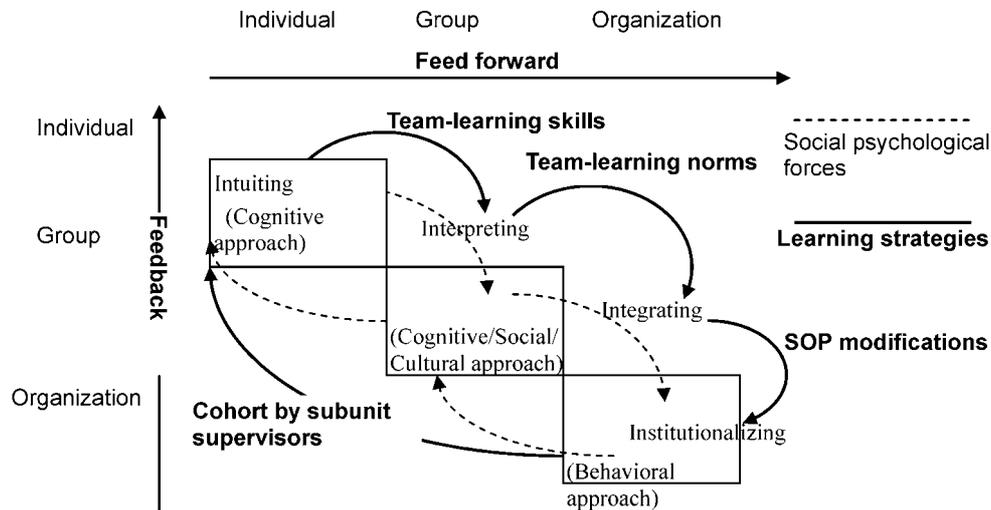
However, the mechanisms that channel the individual and team learning into the organizational learning were the shared mental models, substantiated in organizational routines, or SOPs. In this context, organizational learning highlighted the significance of structures for organizational learning as carriers of organizational knowledge. It suggested that hospital learners preferred predictable consequences instead of uncertain, distant returns in exploration. Generally speaking, LO interventions began to allow improvements in a gradual way. Voices from LO participants toward hospital improvement could only be conveyed fragmentally and slowly due to the hospital's organizational structure. LO diffusion in the hospital was operated more effectively in divisions where the middle managers try LO tools to redesign subunit work flows. Subunit SOP modifications are organizational learning mechanisms, the vehicles of organizational learning.

## **5. Discussion And CONCLUSIONS**

### **5.1 DISCUSSION**

Generally, organizational learning models have the relevance to organizations developing within dynamic circumstances and the collective learning as the transfer mechanisms. The application of the 4I model has allowed the researchers to perform a "levels-of-analysis" of the origins and developments of the

organizational learning process. We provide the coherent explanation in Figure 1.



**Figure 1. LO tools facilitate cross-level learning in a hospital of bureaucratic structure**

*Team-learning skills broaden individual Intuiting, and Interpreting.* Learning in a community hospital is confined to formal training as means of acquiring and sharing knowledge. For medical practices, employees are obliged to obey orders from the professionals in the upper hierarchy. LO<sub>1</sub> individuals in lower status were not allowed to apply intuition to medical actions. However, LO<sub>2</sub> individuals could use team-learning skills, such as inquiry, to help them to carefully reflect on their assumptions in order to learn how and why they interpret the world as they do. The researchers then inferred that even though there was no change in their behavior, they saw the reasons why they performed their actions and understood their limitation of actions.

As the findings show that the nursing department has the most LO members, and LO<sub>2</sub> nurses say in dealing with patients, good listening decreases their information processing bias and enhance cognitive capacity to unlock potential interpretations. Team-learning skills facilitate hospital workers to enhance positive interpersonal interactions.

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*Team-learning norms bring coherent, collective actions for interdepartmental tasks.* The findings show that perception of change at the individual and team levels is stronger than at the organizational level. The learning process is transitioned from LO<sub>1</sub>'s exploitation to LO<sub>2</sub>'s exploration. It is because LO<sub>2</sub> participants mastered team-learning skills that the researchers can then infer that people who master LO languages can develop a shared linguistic repertoire, effectively communicate and form the basis of the shared mental models.

Medical activities are always a synchronized task, and need to be efficient and precise in collaborative actions. However, due to the hospital's departmentalized workforce, it lacks coordination. For example, the examination laboratory says nurses are the ones that should transfer patients to different units; however, the nursing department doesn't agree with this. Members with LO experiences are aware that the problems in medical operations. Since LO skills bring forth positive communications, skills acquired in LO experiences become a norm for interactions between departments. Therefore, those who use LO skills as a norm of coordination report that shared understanding helps to have coherent, collective action in offering services to patients.

*SOP modifications of team's Institutionalized learning outcomes.* When examining LO<sub>1</sub> and LO<sub>2</sub> learning projects, the researchers find that there are roughly two types of projects: (1) quality improvement, and (2) leading the organization to gain a strategic competitive advantage in its respective marketplace. The first type is involved with small-scale changes in subunits and easily institutionalized while the second type addresses to hospital-wide adaptation and is less institutionalized.

Then, quality improvement on existing operations applies LO concepts and skills to reinterpret and refine the existing knowledge base. However, strategic innovation requires endorsement from the top management, but this is not easy and the project may fail and not get institutionalized. The researchers suggest that SOP modifications have great potential to institutionalize team-learning outcomes.

*Endorsement by subunit supervisor is institutional force for feedback flows.* In feedback processes, learning that has become institutionalized guides (or restricts) future individual and group learning, helping the hospital to exploit their existing knowledge. For this study LO participants are in a discrete working area and this

situation makes LO diffusion hard.

Members of LO project teams who return to working unit teams are subject to unit supervisors' authority. The hospital learning is unit-based, and the unit supervisors carry responsibility for employees' learning. Unit supervisors have autonomy in making allocation of resources. One resource that must be given is time. Our findings suggest individuals consider time as a crucial factor for learning under the context where medical work is a regular, primary, and exigent duty. One way is to arrange the appropriate work shift for LO participants. Unit supervisors with internal power serve as significant facilitators in reproducing and reinforcing the successful learning effects of LO interventions.

## 5.2 Conclusions

This study uses a local community hospital to examine the changing nature of organizational learning and to reflect on the underlying process. The organizational learning implications are profound. The researchers find that learning is contextual. The case shows that the learning process in LO<sub>1</sub> has been affected more by contextual factors that embrace the wider environmental forces at the organization and industry specific levels. The contextual factors include the hospital's hierarchy that is in place to provide professional medical service in a centralized institution.

In addition, the LO<sub>1</sub> learning content is a product of the wider social context in the medical industry whose change is regulated by the dominance of institutional isomorphism, encouraging the chairman to follow the institutional forces for quality improvement activities. The Internal Consultant Team internalizes the influence of the institutional forces, and develops the enabling effects of the hospital. The Team constructs a learning context comprising a norm that uses LO skills to induce positive communication. Team-learning process is situated under the guidance of a norm to move forward to a shared meaning. This process creates generative communication skills that integrate and verify individual's knowledge and experience to form team's knowledge and routines. Team's knowledge and routines, then, are 'institutionalized' by organization members in the form of SOP modifications, leading to the results of organizational learning (Crossan et al., 1999).

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In healthcare organizations, a clear division between clinical aspects of the organization and management shows this segregation constitutes an obstacle to the integration of organizational learning. This study shows that team learning transcends organizational divisions and benefits organizational learning by creating new learning boundary and new divisions in practice. Team learning then plays as a lateral and loosely coupling arrangements to make the development of strategic capabilities sensible and possible in the hospital contexts.

### **5.3 Implications for Managerial Practices**

The results show team learning process provides the interlocking context that defines the transfer mechanisms between individual and organizational learning. This suggests that collective constructs, such as team learning, and team-learning norms are important in their managerial implications. For example, in attempts to improve work practices, free selection of learning targets motivates staff to alter the status quo.

The researchers suggest that when learners have autonomy, they are more likely to learn in jointly sense-making process. Also, in the process of organizational learning, team-learning skills and norms are key factors for project teams to have successful collective learning. Team-learning skills can be targeted as managerial skills for unit supervisors. Subunits supervisors can work competently by building learning norms that allow for proposals of new ideas and discussions for better solutions. Also, project learning teams can induce effective organizational learning. Managers can use a team as a learning unit to bring learning effects and interconnect individual and organizational learning.

### **5.4 Limitation and Suggestions for Future Research**

To advance this line of investigation, researchers will need to explore the organizational or unit-level variables that can shape team-learning norms. For example, managers are held responsible for the most part of learning processes in organizations (Coopey, 1995), and managers are motivated by normative control to enforce learning in correspondence to a form of indoctrination (Berger & Luckman,

1966).

Evidence in this research presents different effects of subunit managers' endorsement on implementation successes. Future studies should explore whether certain leadership behaviors have positive impact on organizational learning and, hence, firm performance. In addition, middle managers with high visibility and coordination nature were shown to reinforce exploitation—the feedback processes of learning. Thus, this research provides support for examining the role of middle managers in organizational learning, and suggests future studies look at whether certain leadership of middle managers enables innovative strategies associated with managing the tensions between exploration and exploitation.

As with most research, this study has several limitations. First, the study employs a cross-sectional design to measure organizational learning, which means causality among the variables cannot be determined. Correlating performance with various intervening mechanisms is a challenge as well. Changes in performance might be a result of changes outside the organization or a result of a specific policy intervention. To provide a better understanding of the relationship of learning process, contexts and outcomes, researchers can monitor learning activities and progress against common goals and processes and policies intended to promote achieving those common goals. Second, our results are most relevant for the health-care contexts, and we cannot assume transfer mechanisms of learning generalize to other industries. Health care organizations are characterized by bureaucratic structures and divisional segregation that must work in cross-discipline collaboration. Thus, our results may be the most relevance for collaborative contexts, such as manufacturing and non-health-care service settings characterized by the need for teamwork and learning in the existence of power-based communication and cross-department collaboration. The transfer mechanisms may be an important factor in other cross-functional or noticeably hierarchical manufacturing and service settings. Further studies could strength the findings by taking the differences of industry into account.

A third limitation in this study is that it does not directly take into account issues such as power and leadership as they relate to learning. In this study, expertise power, position power and hierarchical leadership emerged from the observations. Future research would benefit from a comparison of patterns of learning in association with power relations across organizations. A comparative

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case study approach would be helpful.

Organizational learning in the past ten years has attained its instrumental values in building competitive advantages to face environmental change. Through team learning, LO practices, a socio-cognitive process of learning, accounts for an explicit transfer process through which individual learning influences organizational learning, and vice versa. LO interventions reveal the negotiation and maneuver of the interdependent contexts can produce learning that eventually brings forth organizational change and advance organizational performance.

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