TRANSFER OF ORGANIZATIONAL LEARNING PRACTICES

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Abstract

Recent writings in organizational learning literatures celebrate the use of social practice as a new conceptual lens for understanding how learning processes take place in organizations. Organizations are seen as learning when these shared work practices are preserved, upgraded and changed as a response to the changing conditions at the workplace. However, a key question is whether these patterns of socially complex, situated and culture-specific learning practices can be transferred and reproduced across national boundaries. The present study attempts to explore the processes for transferring the organizational learning practices into a foreign setting by conducting a multiple case study with five Japanese manufacturing subsidiaries operating in the context of People's Republic of China. The findings indicate that the overall process entailed three elements, which are knowledge repositories, organizational routines and enterprise context. A successful implementation of the organizational learning practices involves a dynamic interaction between the possessed knowledge and knowing in actions, but the success of it is strongly mediated by the enterprise context. We argue that the overall conditions in the enterprise environment play a formative role for engendering the occurrence of the 'generative dance' between knowledge and knowing (Cook & Brown, 1999).

1 INTRODUCTION

Recent writings in the organizational learning literatures celebrate the use of social practice as a new conceptual lens for understanding how learning processes take place in organizations (Brown & Duguid, 2001; Nicolini & Holti, 2001; Gherardi, 2000; Chaiklin & Lave, 1993; Turner, 1994). With its major assumption that learning is a social phenomenon involving the interactions and dialogues between people (Wenger, 1998), the focus is to examine the ways that members in different communities of practice interact to perform their daily work processes within the historical and social context. Organizations are seen as learning when these shared work practices are preserved, upgraded and changed as a response to the changing conditions at the workplace (Brown & Duguid, 1991).

However, the idea that learning as a collective act situated in different communities seems to create a dilemma for the organizations. On one hand, as each community has developed their own pattern of cultural work practices based on the past habits, norms and routines (Cook & Yanow, 1993), it helps coordinate the interdependent and distributed knowledge work processes. Having the opportunities to work with other members under a sustainable period facilitates the social interactions and the development of mutual understandings among each other (Wenger, 1998). The existence of these shared learning practices provides a practical and yet localized solution for the organization members to get their jobs done in an efficient manner.

On the other hand, these shared learning practices, ranging from highly visible artifacts to the unspoken rules of thumb, are the social competence commonly held by and specific to different communities of practice (Wenger, 2000). They represent the unique customs, habits, traditions, rituals and causes of actions that are built up from a long history of socialization, co-participation and collaboration among the members and are situated within specific socio-cultural and material context. The context specific and socially embedded natures of learning practices make them hard to be understood and shared by the outsiders.

Therefore, failing to recognize the embedded quality would render the attempt for transferring the knowing in practice futile, especially when other groups and organizations have different socio-cultural backgrounds. As argued by Cook and Brown (1999),

> Thus, there is a need for better understanding and better models of how this essentially non-transferable or ‘situated’ dimension of knowledge and knowing, as elements of an organization’s core competency, can be ‘generated in’ (rather than ‘transferred to’) other groups or organizations. (p. 398)

The present study attempts to fill in the gap in literatures and explore the process for transferring the organizational learning practices into a foreign setting. Given the illusive concept of social practice, a key question is whether the tacit dimension of mutual adjustment and understanding by which groups structure and coordinate their knowing process can be transferred and reproduced into other cultural communities.

A multiple case study was conducted with five Japanese manufacturing subsidiaries operating in the context of People's Republic of China, focusing on how the organizational learning practices were conducted at the shop floor level. The findings indicate that the overall process entailed three elements, which are knowledge repositories, organizational routines and enterprise context. A successful implementation of the organizational learning practices involves a dynamic interaction between the possessed knowledge and knowing in actions, but the success of it is strongly mediated by the enterprise context. We argue that the overall conditions in the enterprise environment play a formative role for engendering the occurrence of the 'generative dance' between knowledge and knowing (Cook & Brown, 1999).

The paper is structured as follows. In the next part we provide a brief overview of the practice-based perspective of organizational learning with the emphasis on its socially embedded nature. Then, the research setting and methods are discussed in the third part. Subsequently, we present the main study findings and discuss how the three elements contribute to the implementation of organizational learning in the foreign setting, followed by the conclusions.

2 ORGANIZATIONAL LEARNING AS SOCIAL PRACTICES

Social practice has emerged as a new conceptual tool to analyze the knowing and knowledge processes in organizations (Easterby-Smith *et al*, 2000). The image of organizational learning as everyday activities highlights work practice as the unit of analysis (p. 790), with the focus on identifying the concrete experiences of the individuals' knowing in action in a particular social context. In other words, learning is not so much as what the individual has learned cognitively, but as to what extent that he/she can master the practice itself to solve particular problems on hand for engaging in the process of legitimate peripheral participation. As argued by Lave and Wenger (1991), 'learning is an integral and inseparable aspect of social practice' (p.31).

As practice implies doing, it carries the notion that learning as knowing in practice requires the development and mastery of skills at work in order to engage in the process of productive inquiry. According to Cook and Brown (1999), practices are understood as 'the coordinated activities of individuals and groups in doing their work as it is informed by a particular organizational or group context' (pp. 386-387). This definition conveys three underlying attributes for conceiving organizational learning as social practices, which are socially complex, situated and culturally specific.

2.1 Socially complex

The first characteristic of practice as 'coordinated activities of individuals and groups' denotes the collective nature of learning processes. It assumes that learning in organizations is a social phenomenon and occurs primarily through the sharing of experiences and dialogues among different individuals in the social learning system (Wenger, 2000). Each member with different expertise, knowledge and know-how acts interdependently in the joint decision making process by taking into account each other's perspective in order to resolve diversities and reach consensus (Fiol, 1994). The competence necessary for carrying out the tasks exists beyond the individuals' knowledge. Instead it is distributed among different members in the communities in which they operate (Hutchins, 1991).

The social dynamics of the interpersonal learning processes are significant among different communities of practice (Brown & Duguid, 1991; Lave & Wenger, 1991; Wenger, 1998). Defined as various organizational groups sharing and engaging in the collective know-how and sense-making processes (Brown & Duguid, 1998), the communities of practice developed a shared understanding among each other through the ongoing practices of how to get things done and how to relate themselves to other communities of practice (p. 96). By going through the process of legitimate peripheral participation (Lave & Wenger, 1991), they are able to pool their expertise, generate creative ideas and narrow the gap between the static written instructions and the improvised nature of work (Brown & Duguid, 1991). As a result, the collective know-how is shared, maintained and updated among different groups where the knowledge resides (Cook & Yanow, 1993; Lave & Wenger, 1991; Nicolini & Meznar, 1995).

In the ethnographic study by Orr (1990, 1996) about the nature of work for photocopy technicians, it was found that they benefit substantially form the social interactions with other team members to obtain new ideas for handling the work related problems. The 'war stories' that are told in various breakfast and lunch meetings serve as an 'anecdote of experience, told with as much context and technical detail as seems appropriate to the situation of their telling.' (Orr, 1996: 125). Technicians gain a lot of insights by listening to the narratives from other colleagues to perform their diagnosis, generate solutions and evaluate the outcomes. Orr (1990) calls the knowledge commonly known to all members as 'community memory'.

2.2 Situated

The second characteristic of practice as informed by the surrounding social and physical context indicates the situated nature of learning processes (Lave & Wenger, 1991; Lave, 1988; Suchman, 1987; Rogoff, 1984; Tyre & Von Hippel, 1997). Learning is considered as a situated activity, which has consistently been shaped and re-shaped through the dynamics of interplay between context, action and actors. Their actions and consequences are inseparable from the surrounding material, symbolic and social environment in which they take place (Brown *et al*, 1989).

Learning as social activities situated in a cultural and historical context appears as the central theme in Lave's (1993) arguments. Drawing his empirical findings from how shoppers perform mathematical activities in stores (Lave, 1988) and other phenomenological studies of people's behavior in different contexts (Chaiklin & Lave, 1993), Lave (1993) argues that learning is not a de-contextualized activity in which knowledge is transferred and internalized into the human mind during the schooling process. On the contrary, learning is conceived as situated social practice with the person acting in the social world and hence inseparable from the surrounding context (p. 5). The emphasis is on the context of activity that people engage in order to give meanings out of its existence (Chaiklin, 1993).

There are two propositions for integrating the physical and social context with the social learning processes. The first one is related to the situated nature of workplace knowledge (Orr, 1990, 1996; Sole & Edmondson, 2001). Findings from the studies of how the technicians perform their improvised work indicate that the access to the contextually bound knowledge and the ability to make sense of it are critical to their work performance (Orr, 1990; Barley, 1996). Sometimes the knowledge for action is even contained at the collaborative activity with the communities. Notions of 'learning curriculum' (Lave & Wenger, 1991) or 'situated curriculum' (Gherardi *et al*, 1998) indicate various learning resources and opportunities available to the members when co-participating with other people in the increasingly interrelated and interdependent activities.

Another proposition suggests that the context is a coherent part for the individuals' knowing in action. It is based on the belief that the local circumstances and institutional settings can be used to co-produce situated intelligent actions (Suchman, 1987). Various elements in organization context are perceived to have important contributions to shape how individuals become competent members in the particular context. For instance, Tyre and von Hippel (1997) explore the situated nature of adaptive learning and the embeddedness of organizational settings in studying how engineers tackle users' problems with the new production machines introduced in two factories. The results indicate that physical context plays a central role in learning about and solving problems throughout the situated learning process. The major functions are conceived as the containers for various clues about the problems, the resources for generating and analyzing information, and the opportunities for problem solvers' own reflections.

2.3 Culture specific

The third characteristic of practice as shared meaningful actions denotes the culture-specific nature of learning processes. As the system of practice reflects the particular ways of doing things among different individuals, groups and organizations, the existence of these durable and transposable behavioral dispositions, or *habitus* (Bourdieu, 1979), helps unify the members within their own social and cultural communities and distinguish them from others not sharing the same cultural practices (Weick & Westley, 1996). It calls for an interpretation of the collective and visible acts performed by the communities in their relevant settings (Yanow, 2000).

A typical example of culture-specific organizational learning practices is provided by the study of flute-making workshops in Boston (Cook & Yanow, 1993). Throughout a long history of operation, the flute-makers have developed a unique set of collective know-how, enabling them to interrelate with each other without any conscious reference to explicit norms or instructions. Their theories of action (Argyris & Schon, 1978) necessary to perform the daily work are entailed in the collective cultural knowledge (Sackmann, 1992) in each workshop, which are jointly negotiated and reconstructed throughout the interactive process (Weisinger & Salipante, 2000). As a result, they become aware of and used to the shared cultural practices through numerous occasions of daily interactions with other team members under a long period of time. By observing how the master-craftsmen and other colleagues perform their work on site, the novices gradually develop understanding of the cultural *habitus* underpinning the activities of their own collectivities.

> Although all three know how to make flutes and all follow similar production operations, each makes its own particular flute, one with a unique, unambiguously recognizable style. Thus part of what each workshop knows is unique to it. (p. 381)

Besides the influence of organizational culture (Leonard-Barton, 1992; Barrett, 1995), more variations of social practices also appear among different subcultures inside the organizations, namely different occupational communities (Van Maanen & Barley, 1984; Schein, 1996), hierarchical groups (Carroll, 1998), or national cultures (Easterby-Smith, 1998; Taylor & Easterby-Smith, 1999). Among them, more profound differences can be found among workforces with different nationalities whose behaviors are usually affected by their own cultural values and norms. For instance, Hedlund (1994) argues that the learning processes in Japanese organizations contain a high degree of tacitness and tend to be collective in nature, which is driven by the indigenous Japanese culture favoring collectivism and persistence (Keys *et al*, 1998). In another study for a HK-based learning organization, Snell and Hui (2000) identifies that the company's learning practices are reportedly a reflection of Hong Kong Chinese culture, which emphasizes on high power distance, long term orientation and relational collectivisms (p. 171).

More instances of cultural differences impacting on organizational learning are reported in the studies of international joint ventures (IJVs). As IJVs are complex inter-organizational arrangements involving people from different cultural backgrounds, the chances are that the participants in IJVs may fail to develop a mutual understanding throughout the cross-cultural interaction process as a consequence of their insensitivity to the partner's own cultural assumptions, thus leading to some dysfunctional outcomes. And the effects will be more significant if the IJV is formed between the partners from developed and developing countries (Liu & Vince, 1999). In a Sino-Swedish technology transfer venture, Easterby-Smith and Wu (2000) contend that different views on the management of interpersonal relationships result in misunderstandings during the process of the collaborative learning. The tradition of Chinese people respecting the elders and

foreign experts was perceived as a weak attitude among the Swedish expatriates, who then complained about employees' reluctance to participate in social learning processes.

2.4 Summary

We have discussed the practice-based perspective and outlined three conceptual dimensions for assessing the embedded nature of social learning practices, which are socially complex, situated and culture-specific. It is based on the assumption that each community of practice has their own traditions and shared norms, or *habitus*, for engaging in the processes of collaborative inquiry that are locally produced and embedded in the social, physical and institutional contexts.

We argue that organizations attempting to transfer the social learning practices abroad will encounter difficulties for the following reasons. The first reason concerns the interdependence of social context. While knowing in practice is defined as a social competence, which emerges from the complex and highly ambiguous relationship within various communities of practice (Wenger, 2000), the social and cultural context will influence how and what the actors behave. The evolution and change of social learning practices is a product of the cultural dynamics typical of each specific social and organizational context of membership. It will be difficult, if not impossible, to replicate the same kind of collaborative process situated at the relevant social learning system. According to Billett (1996),

> However, disembedded social practice, such as that which is remote from the circumstance of the knowledge's deployment, may fail to provide the array of social circumstances, thereby inhibiting the construction of transferable knowledge. (p. 267)

Moreover, the second reason is the nature of practice. Contrary to other types of technology and management system, practices entail a high degree of tacitness and ambiguities (Turner, 1994; Bourdieu, 1979), because they represent the shared thoughts and mental trace that disposes actions in a certain way, which persist in individuals and beyond individuals. It can only be understood and accessible to the community members through on-going participation and feats of inference (Cook & Yanow, 1993). The requirement for personal experience contrasts with the cognitive view of learning (Huber, 1991) and constrains the potential for cross-national transfer.

The third reason is about the cultural relativity of organizational learning practices (Easterby-Smith, 1998). As organizational learning is a socially constructed process (Nicolini & Meznar, 1995), it is highly influenced and shaped by the uniqueness of local cultural values and norms. This implies that the actors within the boundary of national culture would develop a particular pattern of practices for identifying and solving problems. But these culturally specific learning practices may not work in another country environment, and potential conflicts may arise as a consequence of the differences in cultural expectations and understanding (Simon & Davis, 1996), undermining the potential for retaining its validity across national boundaries.

The remaining parts of this paper examine the processes that shape the adaptation of organizational learning practices to a foreign environment using qualitative data from a multiple case study of the Japanese manufacturing plants in China. The purpose is to find out how the socially complex, situated and cultural specific learning practices can be 're-generated' within another context.

3 METHOD AND DATA

The findings of this paper are obtained from a multiple case study of Japanese manufacturing plants operating in the People's Republic of China. The choice of Japanese companies as the subject of study is based on the following reasons. Firstly, Japanese organizations are well known for their capabilities of organizational learning and knowledge creation (Hedlund & Nonaka, 1993; Nonaka & Takeuchi, 1995). The factory management processes, namely lean production techniques, are considered as an exemplar for developing multi-skilled and flexible workforces, and for achieving world-class level quality (Womack *et al*, 1990). The Japanese firms' success for mobilizing workers to engage in continuous improvement and learning processes depends on the organization of their small group activities and situated work practices. Therefore, it makes them a good candidate for examining the implications of social embeddedness of the learning practices on the transfer process.

Secondly, even though Nonaka and Takeuchi (1995) have documented various knowledge creation practices in Japanese organizations, their case study examples are mainly located in the domestic context in which a homogeneous culture and skilled labor forces are present. Exploring the extent of adaptation and re-alignment in the case of factory-to-factory transfer in a foreign country with different social, cultural, and institutional environment can further our understanding on the complexities involved when transferring embedded organizational learning practices abroad.

Thirdly, as an emerging economy, the institutional and cultural environment of China embodies significant differences from the developed countries, suggesting a new approach of enterprise management (Hoskisson *et al*, 2000). The MNCs in China often face formidable challenges, ranging from regulatory controls, infra-structural deficiencies and cultural differences (Tse, 2000). Therefore, the context of the People's Republic of China can provide an interesting setting for the study. The experiences of other MNCs suggest that local Chinese cultural values, management practices and institutional mechanisms pose large barriers to transferring organizational learning to China (Child & Markoczy, 1993; Tsang, 2001), and we assume that these contextual influences will also affect the Japanese companies as well.

3.1 Research Setting

The study took place in the region of Pearl River Delta, People's Republic of China. Geographically, it is situated in the southern part of Guangdong province in the

neighborhood of Hong Kong and Macau, the two special administrative regions (SAR) that were returned to the Chinese sovereignty in 1997. The decision to choose Pearl River Delta as the research setting was both guided by theoretical and practical concerns (Silverman, 2000). Starting from 1979, the Pearl River Delta has been attracting foreign investments, and Japan represents the fourth largest source of foreign capital (after Hong Kong, Taiwan and the U.S.) in terms of both contracted and realized investment value (Sung *et al*, 1995). The presence of Japanese investment has mainly been concentrated on labor-intensive industries, such as electronic equipment, electrical machinery and textiles. Their relatively long history of involvement in the Pearl River Delta provides a rich context in which to study the subsequent processes of building organizational learning capabilities. As a practical concern, the first author is employed at the University of Macau, and the geographical proximity of the Pearl River Delta allowed frequent and repeated visits to the case companies for gathering interview data.

A theoretical sampling approach was adopted to select the sample cases. According to Mason (1996), 'theoretical sampling means selecting groups or categories to study on the basis of their relevance to your research questions, your theoretical position and analytical framework, your analytical experience, and most importantly the explanation or account which you are developing.' (pp. 93-94). This thinking guided the selection of appropriate sample cases. In this research context, the main theoretical issues were related to the investigation of how local workers could adopt the Japanese home-based practices for problem solving and continuous improvement. So the main criterion of eligibility was that the Japanese transplants must hire local workers to engage in various workplace-learning activities, which was based on the assumption that learning, work and innovation were intertwined (Brown & Duguid, 1991).

The sample cases were contacted through different channels. Apart from the official invitation letters sent to the list of Japanese Chamber of Commerce in Zhuhai, various personal contacts by the researcher were also used to obtain permission for continuous access and data gathering. Due to the idiosyncratic situation in China and the conservative culture of the Japanese, it would have been difficult to depend on only formal channels for approaching the respondents (Snell & Easterby-Smith, 1991; Shenkar, 1994). The introduction by a middleman was able to save a lot of time and effort to open up the contacts. Finally, five Japanese manufacturing subsidiaries agreed to participate in the study.

The participating case companies came from different industrial sectors, which covered electronics, food and beverage, textile products to architectural products. They also differed on other background characteristics, such as types of ownership, years of experience and geographical locations. It provided more opportunities to look for the variations across different cases and engage in constant comparisons (Strauss, 1987). Detailed descriptions of the sample case characteristics were provided in Table 1.

= Insert Table 1 =

3.2 Data Collection

Fieldwork was conducted by the first author during the period from February 1999 to December 2000. Data was collected from both primary and secondary sources, including semi-structured interviews, on-site observations and internal company documents. A total of 24 interviews were carried out in the five Japanese transplants (Table 2), with each one lasting from one to two hours. It was not possible to tape record all interviews due to the interviewees' requests for anonymity and confidentiality. In these cases the interview was fully written up from the detailed field notes within 24 hours. Where there was any doubt, or need for clarification, the interviewees were approached again for clarification.

= Insert Table 2 =

We generally followed the interview protocol during the conversation with the respondents, but took the liberty occasionally to ask follow-up questions in situations when more clarifications were needed. The purpose was to help the interviewees produce useful materials pertinent to the research questions through more detailed elaboration on some specific issues. They were encouraged to give concrete descriptions and specifics of the incidents that led to any generalized statement (Weiss, 1994), and most often they were asked to recall the 'last incident' in order to elaborate the idiosyncrasies of the situations. All interviews were conducted either in Mandarin, English or Cantonese, a provincial dialect of Chinese language. The first author had a reasonably good proficiency of Mandarin and English languages, and has Cantonese as a mother tongue. However, it was necessary to rely on company interpreters when the respondents spoke only Japanese. But the quality of the translations was assured since the interpreters were normally responsible for company correspondence and public affairs.

In addition to the qualitative interviews, we also had the chance to act as a bystander, observing how the learning activities were actually conducted in several group-meeting sessions in one of the case companies. The rationale behind the adoption of observation technique was mainly due to the ontological and epistemological understanding of the subject under study. As organizational learning is conceptualized as socially constructed activities, witnessing the conduct of daily learning routines in a natural setting could provide further evidence of the social interactions among people. The planning and implementation of observational technique was primarily based on the advice from Silverman (1993).

Apart from the qualitative interviewing and observations, data from secondary sources, such as company records, brochures and annual financial statements, were also collected to cross triangulate the findings.

3.3 Data Analysis

The data gathering process, revisions of interview protocol and data analysis were overlapping and iterative (Glaser & Strauss, 1967; Eisenhardt, 1989). The interview protocol went through several rounds of revisions upon the appearance of contradictory

patterns of response. This evolutionary process allowed the researcher to take advantage of the emergence of new themes from the *emic* perspective of the interviews by making necessary adjustments of the questions, data collection method or the addition of case samples (Stake, 1995).

At the beginning each case was analyzed as an independent subject in order to allow the unique patterns emerged from the interview data. The objective was to let the researchers become familiar with each case first. Then we proceeded to the search of cross-case patterns to discover any contradictions or confirm the similarities in the emerging dimensions (Eisenhardt, 1989), which were used later on to compare with existing theories to come up an empirically grounded construct. The overall process would not stop until the point of theoretical saturation was reached.

The data was analyzed by using an issue-focused approach (Weiss, 1994), which encompassed coding, sorting, local integration and inclusive integration processes. All the interview transcripts were first coded into different labels on the basis of factual descriptions or inferential interpretation for the interview materials (Miles & Huberman, 1994: 57). The majority of data categories were grounded in the interview transcripts (Strauss & Corbin, 1990), but others were informed by existing concepts in organizational learning. The purpose for using a mixed data coding approach was to be sensitive to the case context while at the same time matching the instances with theoretical concepts.

Then all the codes were sorted out and assigned into different categories corresponding to the research questions. Each category addressed one area to the research questions and contained the relevant coding categories and interview excerpts, illustrating the concepts and explaining the linkages among data categories. The separation of items and concepts into different categories helped facilitate the subsequent stages of local and inclusive integration.

For the local integration stage, various data labels and interview excerpts in each folder were summarized and given interpretation to the meanings behind them (Weiss, 1994). The intention was to make sense of the materials and look constantly for variations. Through the analytical process, different ‘mini-theories’ (p. 159), or memos (Miles & Huberman, 1994) were developed and revised depending on the availability of disconfirming evidence from interviews or elsewhere. It was an iterative process until they were all supported by interview materials and made sense.

The last stage of data analysis was inclusive integration, which aimed at building up an integrative framework to bring together different isolated parts from the local integration (Weiss, 1994). When developing the overall framework, special attention had been given to include all analyses and smooth out the transition from one part to the next. We have tried to make use of different diagrams to synthesize and display the complex and yet interdependent concepts in a systematic way. Finally, a three factor conceptual model was developed to depict the process of re-constructing organizational learning practices overseas.

4 FINDINGS

The findings of our research support the views that organizational learning is a situated practice involving a dynamic interplay between the knowledge and the knowing in action (Cook & Brown, 1999). The organization knowledge essential for actions is contained at the various repositories and different members are engaged in collective knowing through various action routines. However, we argue that the organization context constitutes a major facilitator mediating the interactions between knowledge and knowing.

4.1 Knowledge repositories

Knowledge repositories include various sources and opportunities for creating, sharing and disseminating necessary skills and basic know-how in the host country operations, so as to build up a requisite knowledge base among local people for handling basic operations and solving problems encountered subsequently. Effective sharing of knowledge is a first step in enabling employees to learn individually and collectively. As argued by Kogut and Zander (1992), 'It is the sharing of a common stock of knowledge, both technical and organizational, that facilitates the transfer of knowledge within groups.' (p. 389). The existence of knowledge in different forms and levels in organizations provides the necessary input to the process of knowing, which in turn will create new knowledge and generate new ways of knowing.

Our research indicated that there were five categories of knowledge repositories embedded in different artifacts and processes (Table 3). We classify the knowledge categories in reference to the conceptual scheme delineated by Blackler (1995). The advantage of Blackler's (1995) scheme is that it deals more with the *location* of knowledge in organizations than with the tacit/explicit distinctions and ontological level differences (Nonaka & Takeuchi, 1995). We found that it provides a good conceptual and practical framework to locate the existence of knowledge in organizations. Knowledge used throughout the knowing process was reportedly to exist in multiple locations, such as symbols, bodies, brains, dialogues and routines. Each carries a different meaning and their interaction contributes a unique input to the process of knowing.

= Insert Table 3 =

(i) Physical artifacts. The physical artifacts represent the symbolic meaning of knowledge in organizations, and exist in the forms of data, figures, charts, physical equipment, samples or product defects. Their contributions to the individuals engaged in productive inquiry are twofold. The first contribution is to serve as an informative function. By encoding the subtle information into visible signs, objective figures or concrete physical appearance, it can help convey the expectations of the management, parent company or customers to the local manufacturing teams in unambiguous terms, be it the quality standard, required product attributes or intolerance of defects. The second contribution is related to the potential of physical artifacts as a cue to search for solutions

during the learning process. They help the actors to draw on the knowledge situated at the workplace in order to accomplish their collective work (Sole & Edmondson, 2001).

During the process of problem solving, various cues can be taken from the damaged products and their associated symptoms, especially for those problems for which the root cause is largely unknown. Any broken parts, abnormal noise and damage can convey useful signals to the problem solvers in discovering minute differences, identifying problems and searching for solutions. The following is an account of how a production supervisor made sense of some subtle signs read from the physical appearance of the defective parts.

> *"Some problems are quite obvious, especially when involving physical damage or missing numbers. The workers can easily notice the broken packages or count the whole lot for missing ones by verifying the package labels. But for other cases, the source of problems can only be revealed on the production site. It is difficult to judge by observation. We have to actually operate them to see whether it is due to human or process errors. The workers can put all the defective products aside, and we will classify them into different categories for subsequent repairs and follow-ups. The main sources of problems are basically related to the work processes and raw materials, which are verified by the leaders accordingly. The problem identification process is result-oriented."* Chinese production supervisor, Casio

(ii) Documentation. Documentation includes various operation manuals, instruction guidelines, formulas, and any written reports that contain detailed and yet well-codified responses for various contingencies. Different operational procedures are laid out in those documents with pre-determined solutions for handling any problematic situation. These canonical procedures are supposed to be followed without the need of deliberate thinking or understanding. The main purpose is to provide the local employees with codified knowledge on the related manufacturing disciplines and some structured responses for solving the encountered problems with minimal intervention from the headquarters.

In all the case companies, there is an indication that the physical technology (Westney, 1991) of the Japanese parents, such as production processes or other related technological matters, can fully be replicated in the host country setting, and this is largely due to the explicit codification of the production procedures. The advantage of explicating complex technological know-how is that it can reduce the complexities and ambiguities of the application of functional expertise (Zander & Kogut, 1995), so as to smooth the progress of knowledge transfer. These is especially relevant in the case of China, in that the local Chinese workers are generally perceived as lacking in sophisticated production skills and knowledge and are dependent upon foreign partners for technological inputs (Tsang, 2001).

> *"In Canon group, we have developed a unified production standard thirty years ago applicable to the global operation, which is called Canon*

Production System (CPS). It deals with the standardization of the production method, quality assurance and line management. We try to follow the production and quality standard specified by the parent company to organize the workflow. About thirty years ago, before introducing CPS, we were taking the production system as if it were making an art object, depending on each worker's skills. But the system has changed to a new one through which anyone can engage in production after experiencing some training and would be able to make reasonable quality products within a reasonable time. Every worker in the CPS will have to decide, obey and improve the operations. Once the various production processes are standardized, the production workers have to follow the standard" Japanese Production Manager, Canon.

(iii) Experimentation. Experimentation involves the internalized beliefs and feelings of individuals after participating in the process of productive inquiry. One major distinction between experimentation and the above two knowledge sources is that the knowledge gained from experimental as well as experiential learning usually remains in the private sphere of individual intelligence in the forms of experience, intuition or heuristics. It is internalized into the sub-conscious level of individuals through the sense-making process (Weick, 1995), which makes it proprietary and limits the potential to abstract into practices.

The findings from the interview results are consistent with the general understanding that the workers in Japanese organizations acquire the skills and production know-how primarily through on-the-job training and job rotation schemes (Cole, 1992; Odadiri, 1994). Through an on-going process of participating in the manufacturing process, the production workers develop a pool of common knowledge (Dixon, 2000) essential to their operations and indigenous to the company (Boisot, 1983). As a result of the long period of time taken to learn different bits of production skills in different posts, more experienced workers have much valuable knowledge to pass on to other colleagues on and off the production sites through a kind of 'buddy', or mentoring, system.

"We emphasize very much the training and development of our staff. Some of them have been working in the company for more than 20 years and they are all quite familiar with the company's operation. They are receiving on-the-job training continuously to learn about the technical skills and latest developments in the technology. There is a policy in our company to groom the new staff from the bottom. No matter what level of education he obtains, he has to work as a junior worker in different departments in order to familiarize himself with the production technology and accumulate the experience. Otherwise he couldn't manage the team well with just the theoretical knowledge. Among those new employees, we tried to pick up some with potential to give them opportunities for making independent decisions to lead other people, but it would take a longer time". Chinese Production Manager, YKK (HK)

(iv) Social interactions. Social interactions refer to various occasions on which different organizational members come together to share what they know through dialogues, storytelling, face-to-face meetings, or personal coaching. These are manifestations of knowing as a collective act situated within and between the boundaries of communities of practice (Brown & Duguid, 1991; Wenger, 1998). The shared know-how is learned by becoming a member of the community by engaging in the common practice of dialogic discourse and being granted the opportunities to observe and participate in the actions of communities, or the process of 'legitimate peripheral participation' (Lave & Wenger, 1991).

Having the opportunities to interact with other co-workers is also an essential channel to get to know different perspectives, share one's knowledge and ignorance, and pool expertise, in order to deal with abnormal situations. The following quote highlights the importance of having informal dialogues to facilitate the problem solving process.

> *"I was not a college graduate and was transferred from the assembling unit. My colleagues helped me a lot to pick up the skills at the beginning. Besides, I often reflected on my previous working experience when encountering some problems myself. Since different people have their own specialty, I believe that dialogues can also help widening the perspective to tackle the problem."* Chinese Supervisor A, YKK (Guangzhou)

(v) Off-the-job training. The off-the-job training coincides with the popular image of company in-house training programs, which take place in a classroom environment outside the company. Although the format and contents in each course may vary according to the training objectives, the participants attending the technical training sessions are generally introduced to new concepts, theories and technology.

Off-the-job training programs are popular among the Japanese transplants in China, and they are usually provided to the new staff before embarking on the job. The training topics cover some basic operational skills, quality control techniques, industry background, and company philosophies and culture, so as to provide a general picture about the company and job. These training programs can also be used as a selection mechanism to screen out the unsuitable applicants if they fail to demonstrate desirable attitudes and behavior.

> *"Upon the recruitment of new staffs, there are different kinds of training programs that they have to undergo, such as introduction to the company, on-the-job training, internal training, management training, attitude training, and self-development training. It is through the introduction of these training programs that the employees would become acculturalized to the corporate culture."* Japanese General Manager, Canon

As a conclusion, we consider the knowledge repositories as various 'retention facilities' (Walsh & Ungson, 1991) that can be useful for the knowing process and are widely distributed across different parts of an organization. Through access to different

repositories of knowledge, organization members can be more prepared to make better-informed decisions and to create further knowledge through problem solving.

4.2 Organizational routines

Organizational routines are known as various formal and informal patterns of actions undertaken by groups and organizations for the systemization and institutionalization of the learning processes at the collective level. The formalized organizational routines refer to the manipulated and programmed individual and group responses, whereas the informal organizational routines are the products of jointly negotiated and emerged actions among the actors. Institutionalization, socialization and implementation of these organizational routines are argued as an important mechanism for expressing the order of social structure, coordinating different moves and enacting performances for achieving organizational purposes.

Our concept of organizational routines emphasizes the dynamic and situated aspect of the knowing in actions in the organization context. Instead of conceiving routines as knowledge (Levitt & March, 1988; Cohen, 1991; Cohen & Bacdayan, 1994), they are interpreted as various behavioral dispositions for regulating and controlling the social interactive processes between individuals and groups. Through the engagement in different types of organizational routines, organization members can systematically develop better collaboration, participate in the social learning process, and share the learning outcomes among each other.

There were three subsets of organizational routines, each playing a different function for coordinating the dispersed communities of knowing (Boland & Tenkasi, 1995) in the local operation unit. These subsets of routines were identified based on the recurrent and distinct patterns of behavior as reported by various respondents and grouped in accordance to the relative contributions, which enable them to accomplish their collective work practice. The first subset of integrative routines relates to the activation of contacts and establishment of links between different individuals and organizational groupings. The second subset of learning routines relates to the formal implementation or informal adoption/expression of the sense making and problem solving practices. The third subset of communicative routines is related to interpersonal and cross-departmental communication process, emphasizing on the dissemination and sharing of learning outcomes throughout the enterprise.

(i) Integrative routines. Integrative routines refer to various policies, rules, social norms or behavioral tendencies that help mobilize different individuals and groups to participate in the learning process. One of their major purposes is to ensure that the connections between different individuals and organizational groups remain intact, so as to coordinate each other across various levels and segments of the organization. This is analogous to the individual ‘maintenance role’ in the normal team setting. The other major purpose is to connect whatever problems are arising or anticipated with appropriate people or groups, so as to minimize the chance that the benefits of individual learning will have no effects on organizations (March & Olsen, 1975).

One notable feature among the Japanese factories operating in China was their capacity to mobilize and integrate people from different organizational levels and departments to work in various teams. Problem solving activities usually took place in a group setting, coordinated and guided by the team leaders or senior workers. Besides, the pervasiveness of different coordinating methods also engendered a high level of interactions among different individuals. All of these facts indicate that the prevalent explicit rules and implicit norms are important for bringing together the dispersed communities of practice to engage in a collaborative learning process.

For instance, a production supervisor from Casio described how they approached the daily production problems. The efficiency of production teams relied on smooth horizontal coordination among different individuals from various departments. Even though the process itself was complex and interrelated, the responses were systematic and automatic without the need for formal intervention. There was an implicit sequence of actions guiding both the intra- and inter team cooperation.

> ***"****Once the workers have identified any problem, they will inform the superiors immediately. Depending on the nature, some problems, such as the change of processing methods, will be dealt with in a short time, but for the more serious problems, the whole production line will be suspended to wait for the solutions. During the suspension, all responsible teams will gather together to figure out the causes and solutions."* Chinese Manager, Quality Control Division, Casio

On another occasion, a Chinese manager from YKK (HK) mentioned how collective learning was practiced in his company. The capabilities of detecting problematic signals, engaging in the exchange of ideas and creating remedial actions were distributed among different actors situated in different divisions, teams, and product lines. The ability to sustain interactions among them depended very much on their established routines and practices.

> *"If there is any big problem occurring during the production run, the workers will stop the production line immediately and report to the supervisor. In case the problem is too complicated and beyond his expertise, he will consult the opinion of the department head and Japanese technicians. The Japanese technicians will then play a coordinating role to contact with the head office or other overseas branches."*

(ii) Learning routines. The second subset of organizational routines deals with how learning is practiced in organizations. It is referred to various policies, rules, social norms or behavioral tendencies that guide the processes, rituals and procedures for conducting social learning practices. The main purpose is to routinize the seemingly unstructured and complex process of problem solving into regular behavioral patterns and make them part of the skilled actions among local employees, so as to facilitate the cooperation of different actors in different learning communities.

The experience from the Japanese companies in China supported the arguments that a stylized application of an experiential learning cycle was only relevant for recurring problems. According to Koike (1994), these were the 'usual operations' in the production activities with low levels of ambiguity and uncertainty. Since most of them were repetitive in nature, the local production teams had developed a patterned response to handle them.

> *"For routine problems, there is a systematic process within each department to identify the cause, look for alternative solutions, implement the solution and record the results."* Japanese Production Manager, Canon

However, it was not possible to apply routinized learning procedures to all situations, especially when the problems encountered were of an unusual nature (Koike, 1994), characterized by high levels of uncertainty and ambiguity. Under these circumstances, the learning routines were more ad-hoc and emergent in nature, and influenced by the idiosyncrasies of the problems and existing patterns of interactions. A Chinese quality control manager from Casio described their current practice of handling special problems. His descriptions revealed that the learning routines were fuzzy and emerged through multi-actor participation. No single person had sufficient intellectual grasp to analyze the problem or propose a solution by himself. The process was iterative in nature, and the solution was constantly shaped and reshaped until it reached the top to get a final decision.

> *"The process for solving the problem starts with the observation. For some complicated problems, it may need logical deduction and analysis. But there is no systematic ways for this to be applied in every situation. It all depends on our own experience."*

> *"There is no specific procedure to conduct the discussion. Everyone is free to give opinions and reach consensus. In case a consensus cannot be reached, we will refer to the upper levels to make a final judgment based on their experience, evaluation of costs and benefits and product image. Only the team leaders will join the discussion process, whereas the workers are more involved at the problem identification stage*."

In sum, the image of learning routine as explicit rules and implicit norms governing the social interaction of different participants was upheld in the case findings. For the recurring and repetitive problems, the overall learning process followed a pre-determined sequence of actions, whereas the complex and ambiguous situations required a tacit understanding among different actors for the process of productive inquiry.

(iii) Communicative routines. The third subset of organizational routines relates to the wider sharing and dissemination of new knowledge and insights developed from the collaborative learning process. It refers to various policies, rules, social norms or

behavioral guidelines overseeing the communication and transmission of learning outcomes and improved understanding beyond the incumbent groups in order to maximize the potential impact throughout the organization.

A number of methods were employed by the Japanese companies to pass on the new knowledge to other production teams, and the appropriate choice was dependent on the nature and potential impact of the problem. Some were informal and ad-hoc, and others would require a formalized arrangement. The suggestions for improvement within a department were normally communicated by verbal discussion, but those issues with a wider impact on the organization required a formalized approach for announcing and recording changes.

> *"Depending on the seriousness of the issue, results of the problem-solving meetings are communicated to the staff in various ways. For some minor technical problems, the department manager will inform the staff personally, whereas issues with cross-departmental concerns are distributed to the persons in charge in a report format. Company-wide changes are either announced at the corporate meeting or are written into the instruction manual for future reference*." Chinese Production Manager, Canon

A Chinese production supervisor from Casio explained the background and objectives for different meetings in his company. It was evident that a common thread underpinning those meetings was to enhance the circulation of relevant information to all people concerned.

> *'At the department level, there is a weekly meeting to announce some changes in the assembling method and report the production statistics in the past week. Since many people are involved in the meeting, it is technically very difficult to give everyone a chance to speak in the meetings. There are also some smaller-scale meetings on the production line. I will have discussions with the assembly line workers about some important steps for their progress and listen to their difficulties. These meetings are not regular. They just take place randomly on the production site. There is also a production meeting every month. The agenda may touch upon the production matters or company regulations. For the department heads, there is a weekly meeting to promote the sharing of insights from production.'*

Accordingly, the organizations relied on these regular social gatherings to inform the staff about the problem solving progress, and if possible, receive feedback from them. Among them, the daily meetings were most informative and essential, as it was the time for the whole team to review the latest achievements and to suggest follow-up actions on current problems that required solutions. Without such meetings, the new insights of learning would remain proprietary to those individuals or groups who had direct involvement in the learning process. As argued by Adler and Cole (1993), the existence

of these routine communicative practices for capturing and sharing the solutions to production problems across the workplace enables the Japanese production transplant, NUMMI in California, to have better overall rate of learning. On the hand, they were dismissive of the Swedish autonomous team-based production practice in Uddevalla (Berggren, 1993) as inferior to the Japanese lean production practice because of the low level of sharing across the plant as a whole.

4.3 Enterprise context

Defined as various social, managerial and physical arrangements in organizations, enterprise context constitutes a social environment in which people operate. Dimensions of enterprise context include the cultural norms and values, physical settings, HR policies and organizational structure. The combinations of these various enterprise factors provide a foundation on which the 'generative dance' (Cook & Brown, 1999) between knowledge repositories and organizational routines can thrive.

(i) Corporate culture. Corporate culture is understood as a set of contextually relevant meanings to reinforce behavior (Louis, 1983). These shared meanings allow the interactions to become routinized and taken for granted. Through the development of shared meanings for collaborative learning process, it gives form and coherence to a sense of common experience that facilitates their coordinated action (Smirich, 1983). So the existence of coherent corporate values and norms help develop a shared context of interactions among different individuals for overcoming the psychological barriers and fostering the action routines (Eppler & Sukowski, 2000; De Long & Fahey, 2000).

In order to modify the attitudes and behavior of local Chinese employees, the Japanese managers relied on the corporate culture as a means to overcome cultural differences. As Japanese organizations are characterized as a 'clan form' organization (Ouchi, 1981), they believed that it was necessary to maintain a coherent set of corporate values and social norms to help guide behavior, especially when the local workforce came from diverse locations, each with their own distinctive background attitudes and behavioral assumptions.

> *"Our workers are recruited from different parts of China. They have diverse backgrounds and attitudes. As the factory production is organized into an assembly line, it does not require very high technical skills. We would prefer to have some who are in good physical conditions and with nice character. So it is very important to change their previous behavior in order to fit the culture of our company."*
> Chinese Deputy General Manager, Kyoden

Interviews indicated that there was a well-orchestrated program from the Japanese side to strengthen the unique aimed-for organizational culture and change local employees' behavior. One way to foster coherent corporate norms and values was through the organization and participation in daily rituals. The following descriptions from the Japanese general manager of Kyoden elaborated the sequence of activities in their daily

morning gathering sessions. By performing various physical exercises and going through corporate rituals on a continuous basis, it was expected that everyone in the company would develop a sense of mutual interdependence and teamwork. The top management believed that these were useful instruments to create and strengthen self-identification with the company.

> *"Here is the basic principle of our company, "Mutual respect, cohesiveness and strengthening the power of co-operation". As we are in the manufacturing sector, it is very important to align everyone to the common goals of the company and we stress very much the value of having a healthy body. Without good fitness, they cannot cope with both the physical as well psychological demands from daily work. So that's why all staff at the ranks of section chiefs or above has to join the morning jogging. Starting from 6:30am, we will run 6 kilometers around the factory, followed by 60 push-ups, sit-ups and other exercises."*
>
> *"At 7:10am, there will be 15 minutes cleaning session for all factory workers, including the management. Responsible workers have to clean the assigned areas. We don't employ any cleaners, because we want to build up the habit among the workers to be conscious about the cleanliness of the factory environment. They have to realize that nobody will take care of their mischievous behavior in littering the premises. Since the production of electronic components requires a very high level of sanitation, we cannot tolerate an untidy environment. By asking the workers to be responsible for the cleanliness of their own department day by day, we can help shape their habits of environmental consciousness. After all they have to stay there for a whole day. They will eventually suffer if their working environment is dirty."*
>
> *"Then all workers will gather together in the factory ground to do gymnastics at 7:20am. They will follow the music to exercise for 20 minutes. Then they will sing the company song and recite the company motto, followed by the announcements by each of the department chiefs. Those workers who have committed certain minor company offences, such as not wearing the company badge or littering will be announced and they will be asked to pay their penalties. At 8:00am, they will come back to their position and start working."*

(ii) Human resource policies. Another constituent factor within the enterprise context to promote and regulate certain desired learning behavior is conceived as the design and implementation of human resource management (HRM) policies and programs. Some HRM practices, such as recruitment, training and performance appraisal, are considered as the important mechanisms to remove the barriers to the creation, development and diffusion of knowledge in the workplace, and enable everyone to maximize their contribution in the learning process.

Among various HR functions, the reward and appraisal systems and systematic arrangements for soliciting employees' viewpoints to improve the work processes, appeared to be especially influential in institutionalizing the learning practices in the workplace. The following comments from the Japanese production manager identified the necessity of setting up a formalized suggestion system in the Chinese production plant and of providing financial incentives to the Chinese workers.

> *"We try to implement a suggestion system for the workers. Though we don't have one now, their self-initiated suggestions are very much welcome. In Japan, everyone has to give 30 suggestions a year. But only 1% of them will be adopted. So far we could not achieve this target here. In order to encourage the workers to raise more suggestions, we try to give them small amount of money or a prize as an incentive. And the value of prize is proportional to the importance of their suggestions."* Japanese Production Manager, Kirin

While the adoption of appropriate reward system appeared to help simulate the workers' interests for participating in the learning process, a fair evaluation and assessment method for their performance also appeared to play a part in reinforcing the desired behavioral patterns in some of the companies. It could also indicate the company's commitment to learning and expectations on a long-term basis. For example, by setting up appropriate standards for linking job performance with targets for individual and organizational learning, the company could promote the importance of continuous learning and improvement into the daily work practices of local employees.

> *"The company's policies may also have some influence. The appraisal system can let the employees know the company's intention about learning and development. We can see whether the company is committed to learning by looking at their implementation of certain policies. The top management initiatives may affect the incentive to learn as well."* Chinese Supervisor, YKK (HK)

(iii) Physical setting. Apart from corporate culture and HRM policies, we suggest that the physical settings in the enterprise constitute the third contextual factor in the enterprise, responsible for providing a suitable spatial arrangement conducive to the conduct of shared learning practices. The overall constructions of the premises, including the design of factory layout, structural framework, and other architectural elements, define the physical boundaries and surrounding environment for facilitating and enabling social interactions among different members.

According to the explanations from the Japanese general manager of Kirin in favor of an open office design, his basic assumption was that the surrounding physical environment was closely related to the individuals' learning behavior for knowledge sharing and creation. He argued that the eradication of office partitions reduced the barriers in the communication process, thus stimulating more spontaneous responses and ac-hoc

discussions, which were important for the situated learning practices. The result of locating different departments together in an open area could maximize the exposure and flow of information among all members, thus strengthening the degree of information redundancy (Nonaka, 1990) and augmenting the common knowledge pool. The co-location of different production groups enables the widespread sharing and leverage of team knowledge throughout the organization (Dixon, 2000).

> *"In the traditional Japanese organizations, all employees share an open office. The managers usually sit with their subordinates in a large floor. One good thing is that the information can circulate easily. For example, when the manager points out the mistake from someone, the other people will take note and remind themselves not to commit the same mistake again."*

> *"One reason why I proposed an open office for three administrative departments is to create more flexibility and reduce manpower. When the finance clerk is busy, the materials clerk can help, and vice versa. All the administrative tasks can be centralized, and the staff can know more other people's duties."*

4. DISCUSSION

As discussed in previous sections, a practice-based perspective conceives learning as situated work activities, which are contextually bound and culturally specific to the community members. Based on the above assumptions, we conducted a multiple case-based study, focusing on the processes that Japanese overseas subsidiaries follow to replicate the embedded social learning practices into a foreign context. The findings from our research confirm that both epistemologies of possession and practice (Cook & Brown, 1999) are essential for engendering the workplace learning but the success of it depends on the provision of a formative enterprise context. More details are discussed in this section.

4.1 Knowledge and knowing

Cook and Brown (1999) argue that learning entails an actual act of doing through the use of existing knowledge and interaction with the social and physical world. Knowledge and knowing are two complementary concepts, each doing its own epistemic work. They suggest that the interplay between knowledge and knowing gives rise to a generative dance that helps produce new knowledge and new ways of knowing to solve practical problems at hand. But limited understanding has been made so far for better assessing how this dynamic interaction could be generated and replicated in other settings.

The findings of our study indicate that the prior possession of requisite knowledge is the first step for preparing the local learners to engage in the subsequent process of knowing. Having the basic concepts, ideas, principles and underlying logic for the work practices provides the background understanding and confers the cognitive ability for the actors.

The existence of prior related knowledge influences the ability of the individuals and groups to engage in the knowledge works, which is similar to the concept of 'absorptive capacity' at the firm level (Cohen & Levinthal, 1990).

Furthermore, the prior related knowledge distinguished by the tacit/explicit and individual/group dimensions (Spender, 1996) seems to be inadequate to capture fully the complexities of knowledge existing in the organizations. Instead they exist in multiple domains and forms, represented by embedded, embrained, encoded, embodied and encoded types (Blacker, 1995), and the use of it depends on the relevant contributions to the knowing process. Embedded and embrained knowledge focus on the technical and conceptual training of the employees. The main objective is to provide a common language to them and improve their basic competence. In the event of a problem arising, they have the background knowledge and know how to approach the problem solving process. The main function of encoded knowledge is indicative, revealing any problematic signal for further actions. Embodied knowledge is experiential and individualized, extrapolated from past experience into implicit theories that guide actions, so that the individual can generate autonomous responses to future problems that are similar in nature. Encultured knowledge facilitates the development of collective sense making and participation among different individuals through shared understanding of particular social and cultural norms.

Besides, we also argue that the concept of knowing depicted by Cook and Brown (1999) as independent and proactive inquiry into the physical and social world is inadequate to explain the *distributed* and *collaborative* intelligent actions implemented both within and between different communities of practice (Weick & Roberts, 1993; Hutchins, 1991) in large organizations. In order to solicit the engagement from various community members on a continued basis, there needs to have certain institutionalized mechanisms and activities governing their patterns of interactive behavior. One notable feature of the social learning process in Japanese overseas subsidiaries is the extent and number of formal and informal on-going activities in the company for strengthening the interpersonal connectedness, systematizing the problem solving processes and sharing the new insights. The routinization and institutionalization of these activities onto the normal practices of different groups and individuals are essential to develop the competence of organizational learning in local setting.

4.2 Formative enterprise context

Another insight from the study suggests a broader conception for the enabling function of the enterprise context. Current literatures in knowledge management acknowledge the need to construct an organization context that is conducive to social learning (Nonaka & Kono, 1998; Von Krogh *et al*, 2000). Their concern, however, is confined to the matching of source and recipient units in terms of the compatibility of certain dimensions such as size, standards of performance evaluation and organization goals (Szulanski, 1996; Inkpen & Dinur, 1998). Their assessment of context embeddedness thus neglects the importance of broader enterprise context factors, such as corporate culture, human resource policies and physical and spatial layout as overall means of support.

However, our understanding of organization context is more in line with the notion of 'formative context' suggested by Ciborra and Schneider (1992), which 'gives meaning to its everyday practices and routines, defines acceptable and unacceptable behaviors, and determines the way they define problems and solutions.' (p. 270). But the emphasis is more on considering it as various instrumental devices to enable the participants to pursue various learning practices and organization routines without self-reflection. Composed mainly of formally espoused corporate values and implicit expectations, reward systems, performance appraisal policies and physical structure, these elements constitute an overall social system which affects how people from different teams and departments interact with each other.

5 CONCLUSION

By analyzing how different Japanese overseas manufacturing subsidiaries promote learning at work, this study attempts to explore how the embedded organizational learning practices are shared and replicated by people with different socio-cultural backgrounds in a foreign setting. We present the findings in a three-factor framework encompassing the core elements for the local adaptation process.

The main arguments for this paper support the view that organizational learning involves a process of dynamic interplay between knowledge and knowing. The provision of prior related knowledge to local workers is considered as essential for them to have requisite skills, know-how and common understanding before participating in the dynamic knowing process. These types of knowledge appear in different forms and exist in various sources. Then there must be coordinated and heedful routine responses undertaken by the team members for mobilizing the participation from relevant individuals, routinizing their problem-solving process and sharing the new knowledge in order to effectuate and sustain learning at the interpersonal level. But effecting the dynamic interaction between knowledge and knowing routines is dependent on the enabling factors in the enterprise context.

Our research suggests a positive proposition that even though the attributes of social complexity, situatedness and cultural specificity of social learning practices reduce the likelihood of unpacking them from the original context, it is still possible to share them with other participants in a remote setting. The key issues rely on (1) the objectified enterprise context that mediates (2) the collective action routines and (3) the knowledge repositories in organizations. By associating the mutually reinforcing circle of interaction between knowledge and knowing in actions with the underlying context, we extend Cook and Brown's (1999) understanding that the context, knowledge and knowing actions are interrelated concepts in order to stimulate the 'generative dance' for promoting organizational learning.

Table 1: Background information of case companies

	Canon	Kyoden	YKK	Casio	Kirin
Industry	Electrical equipment	Electrical components	Architectural products, garment accessories	Electrical equipment	Food and beverage
Geographic location	Zhuhai	Zhuhai	Guangzhou, Macau, Hong Kong	Zhuhai	Zhuhai
Main products	Camera, photocopier, laser printer	Electrical relaying devices	Aluminium construction materials[1], Zippers [2,3]	Electrical pianos	Beers
Mode of operation	Wholly-owned	Wholly-owned	Wholly-owned	Joint Venture	Joint Venture
Partners	N/A	N/A	N/A	Chinese	Foreign
Registered capital	US$140 million	US$18 million	-	US$4.6 million	US$7.6 million
Year of establishment	1991	1995	1994[1], 1970[2], 1976[3]	1995	1996
No. of employees	2,700	750	550*	483	620
No. of Japanese	48	25	10*	6	10

[1] - Guangzhou, [2] - Hong Kong, [3] - Macau

* Total number of Guangzhou, Hong Kong and Macau

Table 2: Interviewees and their association with case companies

	Canon	Kyoden	YKK	Casio	Kirin
Top level managers					
Japanese	2	1	-	1	1
Chinese	-	1	2	-	-
Middle level managers					
Japanese	1	-	-	-	1
Chinese	2	1	1	2	-
Supervisors/team leaders					
Chinese	-	-	4	1	-
Production workers					
Chinese	-	-	3	-	-
Total	5	3	10	4	2

Table 3: Knowledge Repositories and Types of Knowledge

Repositories	Types of knowledge	Examples
Physical artifacts	Encoded knowledge	Samples Defective products Statistics
Documentation	Embedded knowledge	Operation manuals, Instruction guidelines,
Experimentation	Embodied knowledge	Experiences Heuristics
Social interactions	Encultured knowledge	Dialogues Face to face meetings
Off-the-job Training	Embrained knowledge	Concepts

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