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**UNDERSTANDING CRITICAL REFLECTION AS INFORMAL  
LEARNING: A CULTURAL HISTORICAL ACTIVITY THEORY  
ANALYSIS OF FACTORY WORKERS IN KOREA**

A Dissertation in  
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by  
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## **ABSTRACT**

This study started from the question “how does learning occur in human life”. In particular, I am interested in learning that takes place continuously anywhere at any time rather than learning that is occurred by being taught by others. This study interpreted critical reflection as learning that continuously occur in anywhere at any time i.e. as informal learning, and then analyzed the process how it takes place in human life. To find out how critical reflection occurs, this study focused on factory workers’ critical reflection while working on the shop floor. Using ethnography methodology I analyzed the observed and interviewed data of factory workers’ working life in order to examine critical reflection as informal learning. In this process, I used Cultural Historical Activity Theory (CHAT) as the theoretical framework in order to elaborate the process that critical reflection occurs while working. The analysis using CHAT was helpful to find out workers’ critical reflection as expansive learning that continuously promotes the other learning. That is, factory workers’ learning activity on working life was gradually expanded to the new pattern of activities such as forming good relationship with family or creating identity as a social member. Using the expansive learning based on CHAT, I examined critical reflection as continuously being occurred anywhere at any time, and suggested it as informal learning that can take place in the workplace.

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## **DEDICATION**

I dedicate this dissertation to my family.

## CHAPTER 1: INTRODUCTION

### Coming to the Topic

The question I have had since I began to study 'education' with an academic perspective relates to how a human being is constantly changed and developed through during his or her entire life. Thus I always have considered why we continuously are changed, how the changes influence our life, and so on. These inquiries came to be connected to what human change is.

Although in the meaning of 'human change' there might be a variety of interpretations, because a human being constantly undergoes various changes while living, in this study my viewpoint is related to continuous changes to become more improved and enhanced than before; it seems to derive a kind of 'expansion' (Engeström, 1987) for enhanced changes from human life context.

To pursue the enhanced change as the expansion is to break the status quo using a variety of ways to improvement. In other words, human being could achieve to and acquire new developed situations and assumptions through re-illuminating the status quo with diverse views. However the process for breaking the status quo and re-illuminating the present conditions are insufficient to explain human enhanced change but rather need more coherent explanation in order to be recognized as an enhancing process. This study regarded improved change as 'learning' and attempted to explore the process of learning which results in a new assumption from the present

condition.

To understand learning which pursues enhanced change, in this study I considered various contextual, cultural, and situational conditions, because they continuously influence learning which permeates a human's real life. According to Livingstone and Sawchuk (2003), "adult learning is an embodied dimension of ongoing cultural material life" (p. 66). This means adult learning is to be constituted by the learner's actual life which brings out various cultural materializations. That is, adult learning encourages that human's life could establish miscellaneous cultures and create a new historical situation, and thus such ongoing human's learning maintains to permeate into his or her life. Therefore, learning that promotes human's enhanced change cannot be separated from contextual elements.

In this study, I suggested that the concept of critical reflection is an adult learning which is mediated by contextual elements, and then I attempt to analyze 'critical reflection' in the workplace as the process or the phenomenon of learning. To reflect critically is to involve "a critique of the presuppositions on which our beliefs have been built" (Mezirow, 1990, p. 1). In other words, critical reflection is creating a new assumption through refining the status quo. Thus I attempted to interpret critical reflection as a type of learning to make human's enhanced changes. But critical reflection might be not a simple genre or category of learning but learning as a one of the most prominent and salient ways to live.

This study focused on factory workers' critical reflection on the shop floor. From the beginning of this study my interest about learning as improved change is not limited to child and adolescent learning in school. My focus, regardless age and place, is on human learning which continuously takes place. I am interested in learning within the routine situation that is not intervened by learning as a particular goal, rather than learning within schooling situation where students are taught by a teacher under the goal of learning. Thus my attention was turned to workplace where there are various goals besides learning rather than to school where there are few goals besides being taught.

Before selecting my research site, I considered the characteristics of 'critical reflection' as a key perspective of this study in order to determine the object of research. As Mezirow (1990) stated, to reflect critically is to involve the critique on presupposed beliefs that is; it is to make a new assumption from the existing facts that are taken for granted. However it would be not easy to directly show the process of transferring existing thoughts to new arguments because it is abstract and indefinite, but nevertheless it would occur in a time and place where there is improvement or enhanced change. That is, although a worker's critical reflection might be not visible on the shop floor, it would occur whenever and wherever workers are working if there are enhancing changes.

However, due to the invisible but ephemeral characteristics of critical reflection, it is not

easy to observe workers' critical reflection from their performance. Thus I came to realize that to understand critical reflection that occurs every moment, I needed to derive it from workers' routine working life, rather than from the planned learning context, and furthermore I needed to illuminate that even under any circumstance critical reflection will occur while working. That is, I intended to select the site where it seems that there are few factors to generate critical reflection in order to illuminate that all workplaces would be suitable place for workers' critical reflection and all workers perform critical reflection while working.

Thus, among the variety of workplaces my interest was inclined toward a factory shop floor with two reasons. First, a factory shop floor is a workplace where there is an elaborately planned task—factory workers have to perform repeatedly planned tasks every day, because the factory aims to manufacture as many products as possible in a limited time. In this climate, factory workers would have to concentrate on just their tasks to achieve as close to the goal as possible. Provably, they might not be allowed other behaviors or even thoughts outside of their tasks on the shop floor while working. Thus I came to pay attention to whether factory workers did indeed perform critical reflection while working on the shop floor.

Second, I considered a kind of social prejudice in terms of a factory worker as a physical worker. Physical workers, such as factory workers and service workers, have been regarded as simple working people who are unsophisticated, and thereby their work has been underestimated,

compared with other occupations (Rose, 2008). In this regard, I came to realize that if I derive factory workers' critical reflection from their 'simple working' (called by the general social prejudice), I can shed light on the idea that all workers perform critical reflection in the workplace. However in my study the important point is not whether or not workers perform critical reflection, but rather the key focus is that workers who are working cannot help but critically reflect in the workplace. Thus I attempted to show that factory workers who perform planned tasks on the shop floor reflect critically.

Likewise, to understand factory worker's critical reflection as a learning practice I need to consider its incidental or informal characteristic, because critical reflection is not concretely visible but rather is abstract. Thus I regarded critical reflection as informal learning which might take place anywhere at any time. Workers are provided diverse learning or training programs such as on-the-job training, skill acquisition, service training, and so on, from their company, but the programs might not be all about their learning. Besides training systematic educational programs, workers continuously experience the enhanced change as informal learning while working. Underpinning the informal characteristics of learning, I attempted to interpret worker's critical reflection as informal learning in the workplace.

### **Statement of the Problem**

Recently, there has been increased the attention toward workers' learning or training in the workplace because of the potential that workers' knowledge can improve company's productivity. Peter Drucker (1999), a representative expert in management theory, has emphasized the relations between knowledge, workers, and productivity, suggesting that a knowledgeable worker could lead to increase productivity. He identified six factors of knowledge worker for productivity; they know what their 'task' is, they manage themselves with autonomy, they try to achieve continuing innovation, they require continuing learning, they realize the importance of product quality, and they are recognized as asset rather than as cost (p. 142). His perspective, which consists of six elements, has been highly recognized, because it focused on 'knowledge' of workers at the same time on the 'accomplishment' (Key, Thompson, & McCann, 2009).

Drucker's identification, which considers simultaneously workers' knowledge as well as productivity, might be quite remarkable for management. Although business could not overlook the market performance or economic profits when investing in workers, he emphasized worker's knowledge as the investment that is hard to measure in the profits. However, in spite of his efforts to illuminate the importance of workers' knowledge in the workplace, he did not pay attention more to workers' learning which is generated from their working and personal life. In

this study, I attempted to look for this answer.

This study tried to shed light on the importance of workers' learning while working, and then to clarify that it needs to be understood as adult learning from the perspective of adult education rather than business. When providing workers' learning in the workplace, management might have to consider profitable strategies for productivity. That is to say, the goal of workers' learning cannot help but depend upon the goal of company. In this regard, the learning contents might be changed by the intentions of management, rather than a worker who is a learner. After all, the worker as a learner would be provided workplace learning that benefits the company's particular goal. But I don't intend to overlook company's economic profits or to ignore the perspectives of business theories. In this study, I attempted to shed light on workers' ongoing learning that is continued in the workplace as well as at home, based on the perspective of lifelong learning (or adult education). That is, an individual worker's learning is occurring not only in the workplace but also in everywhere—in the car, in the elevator, in the kitchen, and so on. Therefore, worker's learning needs to be realized as an adult learning which considers both working life and personal life.

Likewise, this study attempted to interpret critical reflection as informal learning in order to understand how worker's learning can occur in all of life such as working life and personal life. Informal learning, which takes place in anywhere and anytime, has not been easy to recognize as

learning, because it is not clearly viewable and it is hard to measure the output. However there might be a variety of informal or incidental developmental changes leading to worker's learning besides systematic training program, and thus workers are provably missing many opportunities to enhance their day-to-day work. In this regard, adult educators need to pay attention to informal learning as workplace learning. Thus in this study, I suggested that we need to understand the importance of informal learning in the workplace using the concept of critical reflection as an adult learning, and likewise to explore its potential to be recognized as an example of workplace learning.

### **Research Questions**

This study aimed to examine workers' critical reflection as informal learning of workplace and to provide the importance and the potential of workers' critical reflection to improve and enhance working life as well as personal life. Given these perspectives, my research questions are as follows:

1. How do factory workers perform critical reflection on the shop floor?
2. How does critical reflection as informal learning influence factory workers' working life and personal life?
3. Why do factory workers engage in critical reflection besides systematic training

program?

4. What is the role of critical reflection as workplace learning for factory workers on the shop floor?
5. What is the relationship between factory workers' critical reflection and task performance on the shop floor?

To explore these research questions, Chapter 2 reviews the literature related to critical reflection and critical theory of Habermas, compared with critical thinking based on psychological concepts to explain the concept of critical reflection as an adult learning. Likewise, I describe informal learning in the workplace to suggest the potential of critical reflection as informal learning in the workplace. In Chapter 3, I examined Cultural-Historical Activity Theory (CHAT) as a theoretical framework for collecting and analyzing research data. In this chapter I introduce the principles, strengths, and shortcomings and suggest that CHAT is useful as a theoretical framework for analyzing workplace learning. In Chapter 4, I describe ethnography as a qualitative research approach and outline my procedure of data collection, research site, and participants. In Chapter 5, I describe backgrounds of Pruge-Clark Corporation (my research site) to introduce its cultural and historical characteristics. In Chapter 6, I examine the analyzed data by ethnographic method using Cultural Historical Activity Theory as a theoretical framework. In last Chapter, I suggest critical reflection as a way of understanding workplace informal learning,

and I illuminate a new concept of informal learning.

## CHAPTER 2: LITERATURE REVIEW

### Critical Reflection

Critical reflection is a concept drawing increasing interest among adult education scholars who have been trying to understand adult learning. Mezirow (1990) described critical reflection that triggers transformative learning as “the process of learning through critical self-reflection” (p. xvi), and Brookfield (1998) understood critical reflection as the practice of adult learning through criticizing political and social ideology. However, much of the adult learning literature uses an ill-defined idea of the concept of critical reflection that can be confused with similar terminologies. For example, Jones and Safrit (1994) interpreted critical thinking in the field of adult education as a skill for self-directed learner who participate in distance education. They regarded it just as a technique for occurring the self-directed learning in the field of adult education. On the other hand, Garrison (1992) recognized critical thinking as a theoretical framework on an equality with self-directed learning. However, he asserted that they (critical thinking and self-directed learning) need to be integrated because adult learners can have control and responsibility as the fundamental elements of adult education issue through self-directed learning as external management function and critical thinking as internal cognitive process.

Even though their assertions were derived from the same field (adult education), the meaning of critical reflection has had the terminological and conceptual confusions. These confusions are caused by terminological complexities such as coexisting psychoanalytic and critical social theoretical traditions in many studies of critical reflection (Brookfield, 1995).

At present, there are a few terms that are used in adult learning studies such as ‘critical reflection’ (Brookfield, 1990; Mezirow, 1981), ‘criticality’ (Boxler, 2004), ‘critical thinking’ (Brookfield, 1987) and so on. Those appear to have similar or even the same meaning. However, because of the confusion of terminology with other theories, there might be misunderstandings by readers of literatures that used other terminologies such as critical thinking. In fact, determining which term is used and should be used is not an important point. What is important is that the concept of ‘critical reflection’ in adult learning is clearly defined without any theoretical confusion. In this study, as a matter of convenience, I will use ‘critical reflection’ to refer to the concept within adult education, and ‘critical thinking’ to describe the concept’s use in the field of psychology.

In this section, I first reviewed literature in terms of critical reflection based on critical theory of Habermas, and then I described critical thinking based on psychology in order to compare this with critical reflection. Secondly, I explained the differences between critical thinking and critical reflection, and then suggested the potential of understanding critical

reflection in adult learning.

### **Critical Reflection based on Habermas' Critical Theory**

Critical reflection as an adult learning concept was suggested by Mezirow (1981) in an article titled "A critical theory of adult learning and education", published in the American Journal *Adult Education Quarterly* 32 in 1981. Mezirow has been credited by other adult education theorists for first incorporating the idea of critical reflection based on the critical theory of Jürgen Habermas, who was associated with the Frankfurt School. Through adapting the theory of communicative action of Habermas to critical reflection to adult learning, he created a new paradigm of adult learning largely overturned the andragogical emphasis of the time (Brookfield, 2001). Although the idea of communicative action of Habermas is complicated and esoteric to understand, Mezirow adopted core components of Habermas ideas to adult learning theory.

"Critical Theory" was founded by German philosophers known as the Frankfurt School. Members of the Institute for Social Research, better known informally as the "Frankfurt School" looked for combining perspectives of various theorists such as Kant, Hegel, Marx, Freud, Weber, and Lukács. Frankfurt School consisted of thinkers who were associated in the Institute for Social Research that founded by Carl Grünberg in 1923 as an adjunct of the University of

Frankfurt in Germany. Max Horkheimer maintained the institute through initially outlined critical theory that was defined as social critique for emancipation, and then Habermas succeeded to the study of critical theory.

Critical theory that emerged in the 1930s by Horkheimer was developed by Adorno, Marcuse, Benjamin, Löwenthal, Pollock, and Neumann through research activities to conduct for “searching reexamination of the very foundations of Marxist theory with the dual hope of explaining past errors and preparing for future action” (as cited in Welton, 1995, p. 21). Under the subject matter, the Frankfurt philosophers aimed to criticize positivism and to provide a basis for critique of the dominant political system (Roberts, 1991). They rejected positivism as an ideology that protects technical interests and leads the political climate to technocracy. That is, it empowers technology in society. However this should be understood not to be the privilege to technology but rather simply to be ‘objective’ (Roberts, 1991).

Such rejection of ‘objective’ or ‘positivism’ of Habermas was connected in criticism to ‘rationality’ of Weber. Habermas (1984), in his book *The Theory of Communicative Action Vol. 1*, analyzed the concept of ‘societal rationalization’ of Weber and reconstructed ‘rationality’ as one aspect of social change based on his communicative theory.

Frankfurt school theorists were who postulated the autonomous and enlightened subject; Max Horkheimer and Theodor Adorno, who criticized instrumental rationality; who embraced a

broad concept of rationality, and so on (Procee, 2006). The most prominent post World War II member of the Frankfurt School Jürgen Habermas has been qualified as a successor who has sustained the “attempt by a member of the Frankfurt School to get clear about the underlying assumptions of the critical theory” (Geuss, 1981, p. 3).

Before analyzing Weber’s rationality, Habermas (1984) provides three divisions to understand Western Rationalism: society, culture, and personality (p. 158). According to Habermas, rationality in the dimension of “society” is organized in the capitalist economy and the modern state with formal law; “cultural” rationalization is generated in modern science and technology, autonomous art, and religious domain. In the level of the “personality,” the rationalization can be found in behavioral dispositions of that style of life (pp. 158-164).

Using these standards for understanding rationalism, Habermas (1984) criticized Weber is limited only in the dimension of society, i.e. “societal rationalization” (p. 216). In other words, when explaining the action of rationalization, Weber understands the rationality only in the level of institution without consideration of culture and personality. Habermas suggested that Weber directs his attention to “effective institutionalization of purposive-rational action with structural effects on society as a whole” (p. 217). Weber explained that societal rationalization is the process to be obliged to act purposive rationality in capitalist enterprise and modern state. In this regard, although Weber, at the beginning, intended to understand the balance between purposive-

rational and value-rational aspects of action, in the end he was to consider only the cognitive-instrumental level of rationality (p. 254).

For Habermas, the societal rationalism of Weber was problematic in terms of understanding the rationality – as epistemological process or acquiring knowledge – in only the dimension of the cognitive-instrumental level as the epistemological factor. He argued that Weber could never explain the “social pathologies” of modernity because he has understood the evolution of society within just one path, the societal dimension (Welton, 1995). Thus Habermas (1984) provided another factor: the rationality in “lifeworld” besides societal rationalization. According to Habermas, a rationalization of everyday practice can be accessed only by the perspective of action oriented to reaching understanding – a rationalization of the lifeworld (p. 340).

In *The Theory of Communicative Action*, Habermas (1984) wrote that “lifeworld is represented as a culturally transmitted and linguistically organized stock of interpretive patterns” (p. xxiv). That is, lifeworld is a “background” of communication which is formed by situation definition and mutual understanding (Habermas, 1987, p. 121). In *The Theory of Communicative Action*, Habermas attempted to examine the process of rationalization formed through the interactions between individuals as a subject of using language in everyday life, and then to adapt the rationality to lifeworld, which leads the process of societal rationalization. Using the

concept of lifeworld, Habermas embeds and links the social and individual components of communicative action to a concept of society (Plevin, 1997).

Communicative action is oriented toward reaching “intersubjective mutuality of reciprocal understanding, shared knowledge, mutual trust, and accord with one another” (Habermas, 1979, p.3). That is, communicative action is based on reciprocal understanding through using language (i.e., “intersubjectivity”) between communicative actors. The intersubjectivity has been defined already to conceptualize lifeworld by phenomenological philosophers, but Habermas, in particular, emphasizes the importance of language as mediation to achieve interaction for intersubjective action. As an action oriented toward mutual understanding, communicative action have to be divided with the instrumental action that is oriented to achieving particular goal. For Habermas, the communicative action is an action to derive the balance between different opinions of participants in communication from their various actions one another. The view of Habermas toward intersubjectivity is an attempt to resolve the dichotomy between the objectivity and subjectivity (Roberts, 1991) and to connect the public system and the personal lifeworld.

Human life is maintainable and changeable in the lifeworld as the intersubjective domain by means of complicated relationships between individuals, as well as between the individual and the institutional system. In this complex structure, humans encounter various contradictions

such as political power, contemporary ideology, or social hegemony, and therefore human life cannot help but be influenced by social system. In this situation, the human needs to act with critique to the particular authority. Habermas (1984) regards the human's critical action as the emancipatory action. The emancipatory action comes through being aware of potential coercion from the system and then taking free action (Ewert, 1991). Habermas connects the human striving for emancipation with the ideology critique in terms of the pattern and structure of communication (Brookfield, 2005a). According to Habermas, the ideology critique based on a critical theory of communicative action reveals "the relations of power surreptitiously incorporated in the symbolic structures of speech and action" (as cited in Brookfield, 2005a, p229).

Mezirow interpreted the communicative theory of Habermas as a pedagogical model for self-reflective learning in adult education (Ewert, 1991). Through taking the emancipatory view, Mezirow (1990) argued that critical reflection "involves a critique of the presuppositions on which our beliefs have been built" (p. 1). For him, critical reflection can be the process by which one can escape from dominant perspectives—assumptions that are taken for granted—and creating new assumptions that are posed against old ones. That is, critical reflection is to critically examine one's assumptions and to reinterpret one's political, social, economic, and cultural life. Thus, numerous adult educators and theorists have emphasized that critical

reflection inspires human beings to form their political, social, economic, and cultural life, as “a critical learning theory.” They have highlighted the importance of adult educators’ role in exhorting people to critically examine the contemporary societal climate (Welton, 1995).

Critical reflection on assumption is the emancipatory dimension of adult learning as the function of thought and language that frees the learner from frames of reference, paradigms, or cultural canons (Mezirow, 1998). Critical reflection as the emancipatory dimension challenges the validity of presupposition in prior learning and it plays the role of addressing the questions of the justification for premises of the problems. Therefore, through critical reflection humans can critically interpret or understand the contemporary ideology in various dimensions—political, economic, social, and cultural—and get a new assumption overturning prior ideology.

Accordingly, the key purpose of critical reflection in adult education is that it criticizes particular ideology (i.e., “ideology critique”) (Brookfield, 2005b, p. 68). According to Mezirow (1990), “ideology is a form of prereflective consciousness, which does not question the validity of existing social norms and resists critique of presuppositions”(p. 16). That is, criticizing the ideology (“ideology critique”) is equivalent to critical reflection that focuses on probing sociocultural distortions and that stands against external ideologies such as communism, capitalism, or fascism or political, economic, social, or cultural systems (Brookfield, 2005b, p.13).

In the adult education domain, there have been attempts to make the concept of critical reflection as adult learning. Brookfield (2000) classified the four traditions of critical reflection that many adult education scholars have defined with their perspectives: “ideology critique,” “psychotherapeutically inclined tradition,” “analytic philosophy and logic,” and “pragmatist constructivism. van Woerkom (2008) added two more traditions: “qualitative social science” and “organizational learning.”

Firstly, critical reflection as ideology critique has been examined based on thoughts from the Frankfurt School, particular Adorno (1973), Horkheimer (1947) and Marcuse (1964). It focused on encouraging people to be aware of how capitalism shapes social relations and imposes contemporary political and economic ideology. It influenced many adult education scholars such as Freire, Tawney, Williams, and so on (Brookfield, 2000). The second tradition, the psychoanalytically inclined tradition, was to emphasize “critical reflection as the identification and reappraisal of inhibitions acquired in childhood as a result of various traumas” (p. 36). Brookfield classified critical reflection as the transformative learning of Mezirow into the psychoanalytically inclined tradition. Mezirow explained critical reflection as “the way we have posed problems and reassessing our own orientation to perceiving, knowing, believing, feeling, and acting” (Mezirow & Associates, 1990, as cited by van Woerkom, 2010, p. 341). As the third tradition, critical reflection which was classified with analytic philosophy and logic was

“the disciplined mental activity of evaluating arguments or propositions, and making judgments that can guide the development of beliefs and actions” (Ennis, 1962, as cited by van Woerkom, 2010, p. 341). In this tradition, critical reflection explained the process of being improved more skillful in argument analysis (Brookfield, 2000). Critical reflection in pragmatist constructivism as the fourth tradition was to emphasize “the role people play in constructing, and deconstructing, their own experiences and meanings” (Brookfield, 2000, p. 37).

van Woerkom (2008) added two additional traditions of critical reflection such as qualitative social science and organizational learning. In the social science perspectives, one needs a reflexivity which involves “a critical stance toward the place and function of the particular research project within broader debates about theory and method” (p. 5). Moreover, the term critical reflection is used for organizational learning, especially its relation to double-loop learning (Argyris & Schön, 1996) that “enables workers to identify, question, and change the assumptions underlying workplace organization and patterns of interaction, resulting in a change in the values of theories-in-use, as well as in its strategies and actions” (van Woerkom, 2008, p. 5). However, she asserted that those existing traditions have overlooked the impact of emotions that drive attention, which drives learning, memory, and problem-solving behavior, because “critical reflection can be seen as a form of instrumental rationality” (van Woerkom, 2010, p. 343). She explained that unconscious and implicit learning happens more frequently and plays

greater role than acknowledged learning, and therefore we need to pay more attention to the role of emotion in critical reflection which is related to rationality. That is, “critical reflection should be conceptualized as an experience linking reason and feeling (Taylor, 2001) instead of experience of controlling emotions” (van Woerkom, 2010, p. 348). The works of Brookfield and van Woerkom have played a role in defining critical reflection as a crucial process for learning. Brookfield and Woerkom have focused on categorizing the traditions and conceptualized the meaning of critical reflection based on various theoretical backgrounds.

However, in this study, I focused on narrowing the perspective for understanding critical reflection as adult learning and looking for the meaning to be shaped in adult education rather than classifying or categorizing the concept of critical reflection based on particular theories. Thus in order to clarify the concept of critical reflection based on the point of view of adult education, I reviewed research of critical thinking based on psychological perspective in next section.

### **Critical Thinking in Psychology**

Angeli and Valanides (2009) describe the goal of critical thinking “active citizenship in any pluralistic and democratic society, where citizens are daily confronted with tremendous amounts of information and ill-defined problems with real uncertainty as to how they can be best

solved” (p. 322). Under this goal of critical thinking, it might be understood that it is almost similar to the goal of critical reflection as it relates to the development of citizenship that enables an escape from particular difficulties in society. However, although both concepts are defined as the inevitable precondition for getting along well in society, the perspectives on society are very different from one another.

Critical thinking is purposeful, reasoned, and goal-directed thinking (Halpern, 1989). To think critically is to evaluate the outcomes of thought process—how good a decision is or how well a problem is solved—and therefore critical thinking has often been called “directed thinking” because it focuses on obtaining a desire outcomes (Halpern, 1989). According to Angeli and Valanides (2009), most researches of critical thinking have seen that critical thinking is a thinking “skill.” For this reason, most of critical thinking theorists have considered “how to teach critical thinking in educational field” or “how to develop critical thinking for teaching.”

Halpern (1989) asserted that although there are a variety of viewpoints about critical thinking—as argument analysis (Kahane, 1997), problem solving (Mayer, 1992), decision making (Dawes, 1988), or cognitive process (Ravinowitz, 1993)—they have shared a set of common assumptions: “there are identifiable thinking skills that can be taught and learned, and when students learn these skills and apply them appropriately, they become better thinkers” (Halpern, 1999, p. 70).

Ennis (1989), who is often seen as prime initiator of the concept of critical thinking, assumed that critical thinking is reasonable reflective thinking focused on deciding what to believe or do. Ennis (1989, 1992) argued that only knowing and understanding the field of study cannot sufficiently produce critical thinking, rather general strategies are applicable to many subjects and then critical thinking is best taught with a content-free approach (as cited in Angeli & Valanides, 2009, p. 323).

Ennis (1992) provided four controversial issues in terms of critical thinking: whether critical thinking should (1) be taught separately (the “general approach”), (2) be infused in instruction in existing subject-matter areas (the “infusion approach”), (3) result from a student’s immersion in the subject-matter (the “immersion approach), or (4) be taught as a combination of the general approach with either the infusion or immersion approaches (p. 23).

Under “general approach,” he argued that teaching critical thinking abilities and dispositions is separated from the content of existing subject-matter offerings as a general strategy, but the principles of subject-matter offerings depends on the nature of the content which is the critical thinking dispositions and abilities being promoted (Ennis, 1992). That is, critical thinking as a thinking skill can be taught divided from subject-matter contents.

The “infusion approach” is understood as teaching general critical thinking skills embedded in subject-matter. Under this approach, critical thinking skills are “made explicit”

(Ennis, 1989, p. 23) and can be enhanced through student's learning with their experiential and environmental factors. That is, as the specific instructional tactics on critical thinking, the role of cognitive dissonance, student-led seminars and role play, dialogue, academic controversy, and cooperative learning (as cited in Angeli & Valanides, 2009, p. 323) can facilitate the development of critical-thinking skills more than lectures as a form of traditional instruction.

On the other hand, in the "immersion approach," critical thinking is not made explicit (Ennis, 1992), because it encourages students to immerse deeply in the subject-matter without making thinking skills explicit. Under this approach, what promotes students' thought is the role of ideas, not thinking skills (Angeli & Valanides, 2009, p. 324).

The "mixed approach" is a combination of the general approach with either the infusion or immersion approaches (Ennis, 1992). In this approach, students can be facilitated by both general critical thinking principle and the subject-specific critical thinking introduction. Through these four categories, Ennis emphasized that critical thinking, as a strategic skill for individuals' development, has to be taught separately in educational practice.

Kuhn (1999) also argued that education has played a role to enable people to participate fully in a democracy and to encourage them to become rigorous thinkers, and it has been influenced by cognitive development research. But he insisted that the research of critical thinking that aims to grow the serious thinker has proceeded with little contribution from

cognitive development research. He proposed that the critical thinking movement needs a developmental conceptualization underpinned by a growing knowledge base of cognitive development research.

According to Kuhn (1999), cognitive skills are first-order skills that enable one to know about the world, and metacognitive skills are second-order meta-knowing skills that entail knowing about one's own (and other's) knowing. He attempted to apply metacognition or meta-knowing that studies 'knowing about knowing' to critical thinking, and to interpret it as an educational goal.

According to Kuhn (1999), meta-knowing can be examined three categories: metastrategic, metacognitive, and epistemological knowing. Metastrategic knowing is to select and monitor the strategies that are applied (i.e., to find out available strategies). Metacognitive knowing is to operate on one's base of declarative knowledge. Epistemological knowing is to understand more broadly individuals' knowledge and knowing. Kuhn explained that three kinds of knowing are central to critical thinking because: (1) metastrategic skills enable individuals to apply alternative assertions instead of those favored across time and situation, (2) metacognitive skills are to control individuals' own beliefs, in the sense of exercising conscious control over their evolution in the face of external influences, and (3) epistemological skills enable individuals to coordinate the subjective and objective components of knowing.

That is, meta-knowing is to adjust and control the process of thinking and problem-solving. To begin with, individuals monitor whether they get necessary knowledge or strategies and select pertinent strategies for problem-solving, then they apply and perform them to solve problem in the actual, and lastly they evaluate and check whether the efforts are profitably to be put and divided. Kuhn would attempt to apply this cognitive process to educational situations (teaching) and regard critical thinking as thinking skill that have to be taught. According to him, teaching critical thinking is related closely to metacognitive skills (Kuhn, 1999; 2003; 2004) and likewise, critical thinking entails the disposition, as well as the skill, to think well (Kuhn, 1999). For him, the disposition helps to shape individuals' behavior but it is different from the sense of habit because the disposition is to convince the value of doing so. Therefore it might be understood he proposes that the critical thinking possessed features to entail disposition can build a bridge for connecting between cognitive theory and education practice.

### **Differences between Critical Reflection and Critical Thinking**

As stated above, although two theories might seem like the same idea that helps citizens get along well in society, they are by no means the same concept. According to psychologists, critical thinking is regarded as goal-directed thinking. Halpern interpreted it as an outcome of thinking process because the outcome is already determined; Ennis defined critical thinking

separated from subject-matter in school that can and should be taught as a skill; and Kuhn depicted critical thinking with step-by-step process to be able to achieve, and asserts that it has to be realized as psychological cognitive process.

However, critical reflection based on critical theory of Habermas considers relationships between the individual and society. The various situations in the lifeworld that implicate many of the relationships between individual and society are changeable. In addition, human's thoughts are continuously transformed. Therefore, in the changeable situations, there is no a correct answer for the question "how one has to act in this situation?" or "what is correct action in this situation?" There are no particular goals to desire to achieve, and therefore critical reflection cannot be planned and forced by particular people, thoughts, power, or ideology. Likewise, there are no steps to be improved more, and therefore critical reflection can occur in anywhere at any time.

Under these differences, critical reflection can be interpreted as informal learning that a human is doing without any decided intention rather than as a skill that can be taught by teacher. That is, a human has to reflect and decide pertinently on particular situation by themselves unlike goal-directed critical thinking. Thus in this study, I attempted to shed light on critical reflection as adult learning which takes place continuously and informally in everyday life.

In next section, I review the literature and current research related to informal learning in

order to suggest the potential for understanding critical reflection as informal learning.

### **Informal Learning as Workplace Learning**

There have been various attempts to understand and explain informal learning in adult education, and there are a variety of terms, concepts, and meanings of informal learning such as informal and incidental learning as workplace learning (Marsick, 1988), informal education or informal training as a type of adult education (Livingstone, 2001), and so on. But the variety of terms and meanings of the divisions of learning gives rise to confusion in conceptualizing and emphasizing the concept of informal learning as workplace learning, because of mixed theoretical complexities of existing concepts. Thus, in this chapter, I reviewed existing concepts of divisions of learning—formal, non-formal, and informal learning—and then shed light on informal learning as workplace learning.

### **Formal Education, Non-Formal Education, and Informal Learning**

Coombs and Ahmed (1974) believed that education can no longer be viewed as a time-bound, place-bound process, because education spans the years from earliest infancy through adulthood, and then they identified three types of education that occurs in various contexts: formal education, non-formal education, and informal education. Marsick (1988) defined informal and incidental learning compared with formal learning as an opposite concept. Garrick

(1998) criticized the existing definitions of informal learning using various types of learning that examined by several scholars in order to establish the meaning of informal learning in the workplace. For example, Garrick suggested that separating informal and incidental learning, as Marsick does, is a false dichotomy because it is unwarranted to distinguish self-directed learning from incidental learning (pp. 9-12). Garrick further suggested that informal learning is directly related to the experience of lived reality (the 'lifeworld' in Foucault's sense), because informal learning has very different significance for each of the participants in the everyday corporate and site contexts (p. 13). Livingstone (2001) followed those ideas and classified four types of education: formal education; non-formal education or further education; informal education or informal training; self-directed or collective informal learning.

However in this study I attempted to show a different approach for defining informal learning from above those perspectives. I classified three categories: formal education, non-formal education, and informal learning (using the term "learning" for informal instead of "education" because of the characteristics of informal learning, which I explain later). But my categories are just for the particular definition of informal learning differently from formal and non-formal education, rather than for all of them. Thus I focused mainly on describing informal learning in this chapter.

First, formal education is highly institutionalized, chronologically graded and

hierarchically structured, within an “education system” from the lower primary school to the upper university (Coombs & Ahmed, 1974). Briefly, formal education takes place in schools and educational institutions, with classes which are arranged by age group (Overwien, 2000). In this educational situation, there might be the behaviors for teaching and learning through interaction between teacher and student under a common educational goal, but it occurs only during limited time and governed by formal institutions. Therefore, across our lifetime, we experience formal education only in the regulated time, which is determined by the formal institution.

Second, non-formal education is “any organized, systematic, educational activity carried on outside the framework of the formal system to provide selected types of learning to particular subgroups in the population, adult as well as children” (Coombs & Ahmed, 1974, p. 8).

Non-formal education includes all organized learning that takes place outside of school (Sandhaas, 1986, as cited in Overwien, 2000) and all people who want to learn as an educational object. Although this educational situation also includes the interaction between teacher and student under a systematic curriculum, learners can choose the learning contents with the particular purpose, unlike formal education. Therefore all people regardless of age, gender or ethnicity may experience non-formal education along with individual intention to pursue whatever and whenever they want to learn.

Among Coombs and Ahmed’s (1974) three types of education, the third is informal

education, but I used the term distinguishing between “informal education” and “informal learning” because of theoretical characteristics of informal learning for this study. Both terminologies have been mixed and used by many of the education scholars without coherent definition and distinction of them. Thus there is not much research in terms of the difference between informal education and informal learning.

Overwien (2000) distinguished between “learning” and “education,” stating that learning occurs without intention but education can take place in intentional situation, and therefore “the notion of ‘informal education’ should only be used where what it involved is the creation of special contexts for informal learning” (p. 623). That is, education can take place intentionally but learning occurs in unintentional situation. However, it is a little bit hard to follow the view that is distinguished by being intentional and unintentional as the standard, because learning can take place in intentional situations as well as in unintentional situations. But it is worthwhile to consider that informal education can create the special contexts for informal learning, i.e. informal education plays a role to support what can be generated by informal learning through making situations. In other words, education includes planned curriculum, instructors, a teachable place, and so on, in order to facilitate learning. Schugurensky (2000) explained the difference between them, using the word “learning” when there are not educational institutions, institutionally authorized instructors, or prescribed curricula. That is, the educational situation is

much closer to institutional and organizational structure, although learning is considerably affected by it.

However there might still be difficulties with defining informal learning unlike informal education because of a lack of theoretical support. Accordingly, it is not easy to determine the exact differences between education and learning, but I focused on learning characterized as an activity and a practice in this study. That is, this study attempted to shed light on learning as continuous development through intentional or unintentional contextual elements, and therefore cannot help but use the term “informal learning,” which is regarded as an activity in practice rather than “informal education,” which is related to schooling or institutional instructing.

In explaining informal learning, Coombs and Ahmed (1974) stated it is:

The lifelong process by which every person acquires and accumulates knowledge, skills, attitudes and insights from daily experiences and exposures to the environment—at home, at work, at play; from the example and attitudes of family and friends; from travel, reading newspapers and books; or by listening to radio or viewing films or television. (p. 8)

For them, informal learning can take place in everywhere and any time through various contextual elements. However it is not enough to define informal learning as the continuous and transformative development throughout a person’s lifetime, rather it needs more theoretical

support in terms of the process of informally formed learning.

However the categories described earlier are not sufficient to define and conceptualize the meaning of informal learning because they fail to explain how environmental and contextual factors influence learning. In learning situations, there cannot help but be various social elements that are constructed by miscellaneous relations between human and society. Thus I tried to understand informal learning using a view that is different from other studies of informal learning.

### **Informal Learning in the Workplace**

In this study, I especially focused on workers' informal learning in the workplace as constructed by various contextual elements. This focus on the workplace can intensify the characteristics of informal learning as the social-cultural process and contextual phenomenon because "workplaces are embedded in broader institutional networks that are economic, cultural, political and historical" (Sawchuk, 2009, p. 329). So far, much of the research related to informal learning has overlooked the significance of social-cultural and contextual issues for formulating learners' environmental factors, because many of the learning theories "deny, denigrate or ignore the everyday capacities of subordinate social groups" (Sawchuk, 2003b, p. 293).

Marsick (2006) explained informal learning as the strategy of workplace learning. She

asserted that informal learning plays role as motivation for individuals' learning and then their learning can be useful for organization. Marsick is interested in individual learning within the context of organizational learning. Thus she argued that "workplace learning grows from a social contact among people who work together to achieve higher-order collective goals, ranging from immediate work groups to complex, even boundary spanning, work organizations" (p. 54). That is, workplace learning can be formed by individuals' efforts, which are informal and incidental learning in order to achieve the collective goals that are stemmed from work organizations

Although Marsick attempted to shed light on the interactive relations between individuals' informal learning and workplace learning for the organization's development, it would be problematic to define informal learning at work because of the lack of explanations relating to the interplay between individual and organization. In other words, she explained that individual and organization are tied to the common goal of organizational development. However it might be hard to regard their common goal as the standard for determining the interaction between them. The reason is that the contents of individuals' informal learning cannot be determined by a particular goal, and likewise the social relations between individual and organization cannot be simplified like sharing collective goal.

According to Sawchuk (2006a), "all human practice is mediated by symbolic, cultural, communal as well as material resources or tools" (p. 1), and therefore learning as human practice

might be defined by the mediations which are formed with several socio-cultural elements.

Mediation is the interactive process that occurs between person and world through symbolic and/or material tools or artifacts (Sawchuk, 2006b). Learning can take place not through individual's cognitive and internal development, but through interaction between individual and external environmental and contextual elements. The process of mediating depicts how individuals interact with socio-historical and contextual issues.

Although Marsick (2006) asserted that there are social relations between individual and organization, she did not explain how the social relation can take place and what process encourages it. In addition, it is limited to understanding informal learning as a way to achieve the collective goal which is directed by individuals, i.e. individuals' informal learning cannot be planned by particular power. Workers can "gain the ability to resist and change the current and accepted practices through the knowledge they gained while doing the job" (Lord, 2009, p. 30); they acquire the ability to discern the contextual situations and make new assumptions through the knowledge they gained while working. Therefore the learning that is interwoven by the particular goal is limited to be regarded as a workers' informal learning in the workplace.

### **Intelligence of Workers**

According to Billet (2002), the workplace is the most likely situation for initially

developing vocational knowledge for any workers, and likewise the workplace experience plays an important role in learning vocational practice and is increasingly worthwhile to achieve diverse purposes for education programs. Therefore ongoing workers' skillful development throughout their working lives will take place through participating in work (p. 28). However workers' formal attainments are currently underutilized in the workplace, and their informal learning capacities are much more widely ignored (Livingstone & Sawchuk, 2003). That is, the variety of potentials for workers' development as workplace learning has been underestimated and overlooked, and therefore it needs to conceptualize the workers' intelligent ability which occurs in the workplace.

According to Rose (2008), currently there is the paradoxical situation in that although we charge the school with cognitive development, we find a restriction of intellectual growth in the very curriculum that places work (p. 634), i.e. despite being linked (schooling with working) in many cases, the intelligence required in a working environment has been undervalued compared with school knowledge. That is, the intelligent growth that takes place in the workplace hasn't been recognized as a cognitive development in the way that the knowledge from school has been. However in the job site there are different tasks to be solved, calling forth different cognitive processes, and indeed the cognition includes motives and values for long-range as well as immediate goals and one's life history (Rose, 2004, p. xx). According to Livingstone and

Sawchuk (2003), “what workers learn informally on and off the job is at least potentially applicable both in jobs redesigned to use workers’ growing repertoire of skills more fully, and in other socially useful and fulfilling household and community activities” (p. 7). In other words, the workers’ intelligent growth has been already incorporated into their working and personal lives.

However, the definition of intelligence has depended on the psychometric tradition, such as mental measurement and IQ scores, which are measured by with an instrument like an intelligence test and represented numerically (Rose, 2004, p. xxi). Thus, working knowledge has not been recognized as the intelligence because it is not easy to measure—unlike cognitive development in school. However intelligence is variable and dynamic under diverse social contexts, and therefore discussion of intelligence is culturally bound (pp. xxi- xxii). That is, in the workplace there cannot help but be a variety of contexts as well as formal learning situations where intelligent growth occurs informally through continuous accidents. Therefore, when defining intelligence, we need to consider the diverse social and cultural contexts, because intelligence can be emerged and expressed in various situations.

### **Cognitive Processes and Social Processes**

Illeris (2002) depicted learning that consists of different characteristic dimensions as a

“tension field” (p.19). According to him, all learning comprises three different dimensions—the cognitive, the emotional, and the social, and may be looked at and analyzed from the three different approaches. Within this learning theory, Illeris arranges other theories of adult learning according to their central preoccupations and conceptual strengths (Sawchuk, 2006b), and therefore his learning theory can be helpful for understanding and analyzing the meaning and process of learning in adult education field.

Among the three dimensions of learning, the “cognitive process” is related to learning contents such as skill and knowledge that can be controlled by central nervous system (Illeris, 2002, p. 18). Individual cognition is the mainstream principle of learning theory as well as the most conventional thought, and indeed, in this field, Piaget’s core theoretical contributions cannot be discounted. In the Piagetian thoughts, an individual strives to maintain continuous interaction with the surrounding world, and accordingly he or she can change. However the Piagetian concept of transcendental learning, as adaptation of the environment to meet an individual’s change established cognitive schemes, can be characterized as conservative (Sawchuk, 2006b, p. 203). In other words, although an individual can be changed through interaction between that individual and his or her surrounding world, the changed condition as “transcendental learning” is the social stasis rather than social development, because individual performs “equilibration,” “adaptation,” and “assimilation” to the already established cognitive

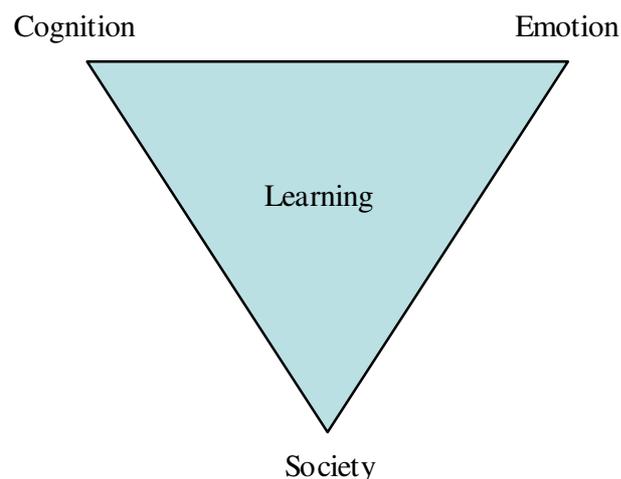
schemes.

Illeris (2002) described the distinction between learning psychology and personality psychology as the central discipline of psychology. Learning psychology, which is a part of cognitive psychology, is concerned with knowledge and epistemology dealing with “how we learn something” (i.e., focused on learning something). On the other hand, “personality psychology,” which is found in developmental psychology and clinical psychology, is concerned with the development and structure of the personality dealing with “how we become who we are” (i.e., focused on developing oneself, p. 63). That is, the emotional process is related to psychological energy that is transmitted by feelings, emotions, attitudes, and motivation, and at the same time to the conditions that are influenced and developed through learning (p. 18). Illeris included the interaction between the cognitive and the emotional in the tension field of learning, stating: “cognitive structures are always emotionally obsessed, and the emotional patterns are always affected by cognitive influences; in addition, emotions and motivations are what mobilize and regulate psychological energy in both the cognitive and the emotional aspects of learning” (p. 118).

As Illeris (2002) stated, the social dimension of learning takes place in the interactions between the individual and his or her surroundings, and it depends on historical and societal conditions (p. 18). Illeris understood learning as being shaped by social interaction. This is

related to the fundamental analysis of the basic structures of capitalism carried out by Karl Marx (p. 19). The individual is naturally involved in the interaction with the material surroundings all the time, but it is always transmitted socially and societally, and thus the material is under submission to the more dominant social (p. 119). However, in this way of thinking, learning is “defined as the many overlapping systems of communication through which adults become informed and develop according to distinctive social standpoints” (Sawchuk, 2006b, p. 204). In other words, learning can be used to indoctrinate the particular thoughts of contemporary social power into individuals. Illeris (2002) depicted the interrelated relationship between the three dimensions in the tension field of learning: “learning simultaneously comprises a cognitive, and an emotional and psychodynamic, and a social and societal dimension” (p. 19).

Figure 2.1. The tension field of learning (Illeris, 2002, p. 19)



However, although the tension field of learning shows the integration of the key

dimensions of human developmental capacities, it overlooks the concept of “mediation” in order to understand “how learning actually gets done” (Sawchuk, 2006b, p. 204). To consider the concept of mediation, Cultural Historical Activity Theory plays a role as a theoretical framework for understanding learning. In next chapter, I explained Cultural Historical Activity Theory (CHAT).

### **CHAPTER 3: CULTURAL HISTORICAL ACTIVITY THEORY**

The point of this study is that critical reflection can be interpreted by following three features: (1) emphasis on the issue of social context based on critical theory of Habermas, unlike critical thinking based on developmental psychology—linkage between individual and system, (2) influence on the whole life of the human (included working life and everyday life) as the transformative change considered with environmental factors, rather than as the individual's internal development—change of human life under contextual elements, and (3) potential to be adapted as a workplace learning through interpreting it as informal learning—possibilities as learning.

To define critical reflection with all three features, this study used a specific theoretical framework, Cultural Historical Activity Theory (CHAT). CHAT offers “a systematic social analysis of learning throughout its full range of variation, but never loses sight of the deeply human face of human development” (Lord & Sawchuk, 2006, p. 1). That is, CHAT is a theoretical framework used to understand the linkage between human, social context, and learning. These characteristics of CHAT make it an appropriate background to support my study. Thus, under the CHAT approach, I illuminate critical reflection as workplace learning.

## Principles of CHAT

### Three Generations of Theory Development

Cultural-Historical Activity Theory was initiated by psychologists who were looking for an alternative concept of human action development, and it has evolved through three generations (Engeström, 2001). Vygotsky created the basic concept of activity theory in the 1920s and early 1930s. He developed the idea of “mediation” as a cultural tool into human actions to explain that individual could not exist without society and vice versa. Through this idea, he overcame the dichotomy between individual and societal structures, and he suggested, in great detail, the idea that the object lies in equal position to subject (Engeström, 2001, p. 133).

The key contribution of Vygotsky is to suggest that learning is a socio-cultural rather than just a cognitive phenomenon (Sawchuk, 2003a). Under these perspectives, Vygotsky argues that a child’s language (such as inner speech) is mediated and that his or her socio-cultural interactions influence the development of child’s thoughts and control of activity (i.e., his or her learning). His argument that learning can occur by “mediation” in socio-cultural interactions is a good start for developing activity theory. However, Vygotsky’s work is limited, in that it is centered just on individual development (Engeström, 2001) and on child development rather than adult learning (Sawchuk, 2003a).

Leont’ev, the figure in the second generation activity theory, attempted to overcome

Vygotsky's limitations by explaining the difference between individual action and collective activity, and explain the concept of mediation in more detail. He provided a three-leveled scheme of activity system—activity, action, and operation (Leont'ev, 1978, 1982; Engeström, 1999 ).

An “activity” is defined as “the minimal meaningful context for understanding individual actions” (Leont'ev, 1978, p. 10), and is driven by an object-related motive (Engeström, 1999). In other words, the object of an activity is its motive, and therefore the object always includes the need or desire (Leont'ev, 1972). Leont'ev offered the development of activity theory through two criticisms that “mediation by signs is opposed to mediation by tools” and “subject-subject relations are opposed to subject-object relations” (as cited in Engeström 1999, p. 24). Through these two criticisms, he emphasized that communication is an inherent aspect of all object-related activities, and therefore the speech and language can force “the unity of labor action and social intercourse” (Engeström, 1999, p.24). That is, the subject and the object are mediated by several tools or artifacts.

An “action,” as the middle level, is “a process that is structured by a mental representation of the result to be achieved, i.e., a process structured by a conscious goal” (Leont'ev, 1972, p. 23), and therefore it can be changed depending on the various situations because it is driven by a particular goal (Engeström, 1999). An “operation,” as the bottom level, is the method by which actions are realized such as specific qualities, components, and modes

(Leont'ev, 1972), and it is driven by the conditions and tools of action (Engeström, 1999). Both of these levels of goal-directed individual and group actions and automatic operations are understandable only when interpreted under the entire activity systems (Engeström, 1999).

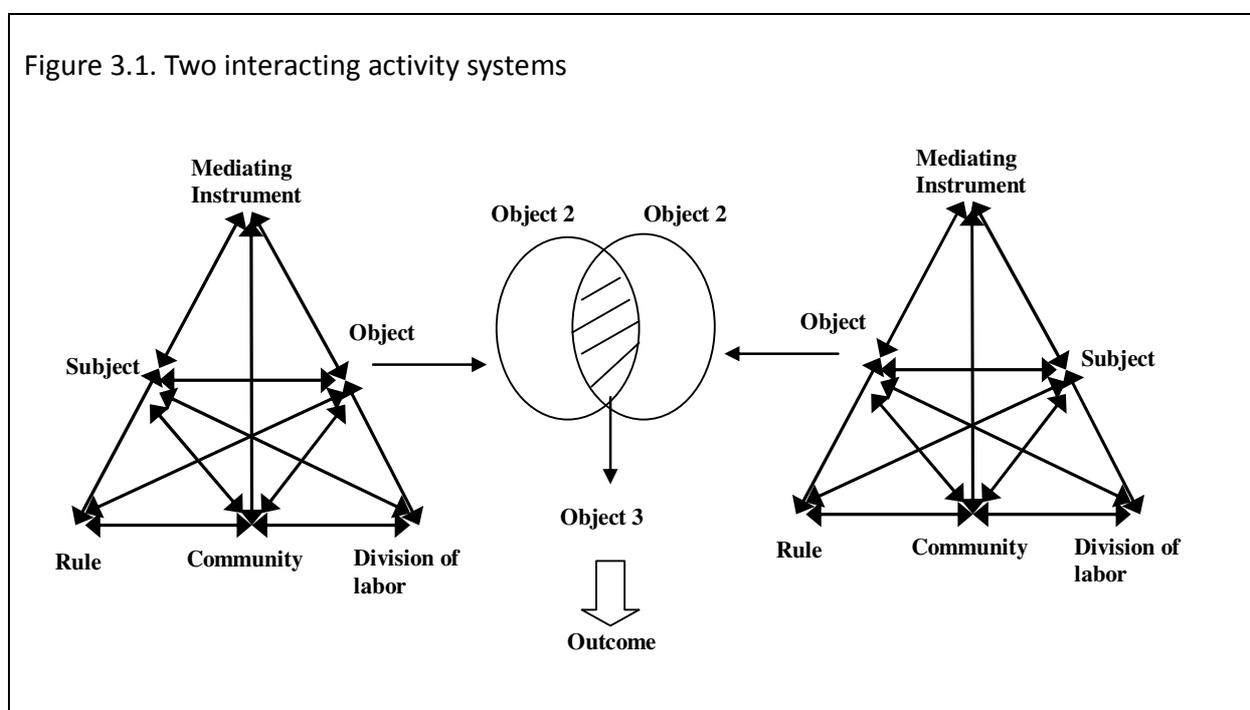
The three-level scheme of activity system interacts with each other, but their relationships are hierarchical. However, their concepts are too unclear to understand their vertical relationships. That is, although Leont'ev asserts that activity is a higher level than others, it is not easy to show that the position of activity is superior with action and operation. He did not explain clearly how they interact to each other in the vertical structure.

The third generation of activity theory was largely conceived by Engeström. Engeström combined former the cultural-historical approaches of two generations from Vygotsky to Leont'ev, and then expanded it to suggest that a network of activity systems, with a minimum of two systems, interacted with each other. He explained this process using triangles of multiple activity systems based on Vygotsky's simple triangle, and explained interactions between six elements and contradictions among two or more activity systems.

In the new triangular diagram, Engeström intends to develop conceptual tools to understand dialogue, multiple perspectives, and networks of interacting activity system (Engeström, 1999).

The elements of CHAT are subject, object, mediating instruments, rules, community, and

division of labor. These elements interact with each other so that “the subject forms the object through the mediation of the instruments against the backdrop of the rules, division of labor, and the community and, in turn, the object forms the subject” (Lord & Schied, 2007, p. 6). That is, CHAT illuminates the relationships between subject and object by analyzing the interactions between mediations and contextual elements (See Figure 3.1).



### Importance of Structural Contradictions

Moreover, as well as understanding the interactions between elements in an activity system, Engeström (1999) took into account the process of learning through analyzing the concept of contradictions between within one activity system or two or more activity systems. In a CHAT, contradictions are historically accumulated structural tensions between activity systems

not simple problems or conflicts, structural contradictions give rise to, structural problems but at the same time they can become the basis for new learning.

Such contradictions are not happenstance, idiosyncratic, or accidents, but they exist structurally (Lord, 2009), because they are generated from the elements in and between the activity systems. Therefore there are no correct or incorrect answers, although two elements diametrically oppose to each other and the disturbances continuously occur in the activity systems. Rather, contradictions aggravate the structural tensions as the form of temporary or permanent resolution (Lord, 2009). But the use of these concepts of contradictions is that “learning emerges as a result (one result out of many possible results) of the resolution of the contradiction” (p. 61). Accordingly, contradictions play a role to not only in providing the disturbances or conflicts in the activity system, but also giving rise to change and development, i.e., learning.

CHAT not only highlights the importance of elements in particular socio-cultural contexts (e.g., community, rules, division of labor, etc.), but also the possibilities of the relationships between the elements through interacting with each other. In addition, CHAT shows learning as the possible outcome of an activity system (or a network activity system) as a result of the resolution of contradictions. Through the process of resolution of contradictions, activity systems interact with and shape each other. The ability of contradictions to generate change and

development plays key role in understanding learning as an outcome (intended or unintended).

Under these characteristics of activity system, CHAT can be seen as an approach for analyzing learning. The activity system integrates and augments the new knowledge and ways of learning—expansive learning—through the resolution of contradictions (Lord, 2009). That is, the learning activity creates a new activity structure through resulting from several actions.

Therefore an expansive transformation can be achieved when the object and motive of activity are re-conceptualized to create new assumptions rather than be envisioned in a former activity (Youn, 2007).

Engeström offers five principles of the third generation activity theory that: (1) a collective, artifact-mediated, and object-oriented activity system, (2) the multi-voicedness of activity systems, (3) historicity, (4) the central role of contradictions as sources of change and development, and (5) the possibility of expansive transformations in activity systems (Engeström, 2001, p. 136-137). These principles play a role in deriving the implication of learning from practice of human activity.

### **CHAT's Strengths and Shortcomings**

#### **Strengths**

One of the biggest strengths of CHAT is its ability to understand learning activity in any

particular context. The distinction between activity and action by Leont'ev is helpful to shed light on the concept of learning which is shaped by various cultural and historical elements. That is, the process of learning can be analyzed by examining interactions between contextual factors. This shows that learning as an activity is not a simply visible change but a transformation within the internal and external elements.

As Leont'ev's (1978) famous example of an activity system among hunters, although beating is meant to frighten the animals for hunting them, it (beating) is an action included with the intentions to frighten animals. But hunting that includes frightening and beating is an activity as a result of all those actions. In this example, hunting as an activity cannot be achieved by precisely planned and intended preparations, but can be completed through several environmental and contextual elements. It can be understood that the division between activity and action might be derived from the attempt to interpret the complicated and diverse relationships which exists in human life. In other words, the concept of object-related activity is to illuminate interactions between an individual or a group and their life within a culturally and historically constructed society.

Moreover where there is a network of activity systems and there are contradictions between and among them this can be understood to provide the possibilities of learning as an outcome. In other words, through contradictions among two or more activity systems, the other

activity system is influenced, and after all the accumulating activity systems are resulted in the learning as an outcome. In addition, in this process there are several mediating instruments against the backdrop of the rules, division of labor, and the community. The perspective that the activity systems are continuously generated through unintended mediations provides the potential to overcome the limitation of psychological development that deals with just human internal changes. In other words, a psychological perspective focuses on human behavior changes through internal development procedures, but activity theory focuses on human learning based on contextual influences from environmental elements, incidental situations, and several contradictions.

Lastly, many people believe that theory is abstract and practice is concrete, and thus theory has been adapted as an abstract framework to interpret the concrete practice. But CHAT as a theoretical framework can be applied to very concrete and practical situations because CHAT as a theoretical framework already consists of several elements which exist in human activity, and those elements can be adapted to diverse practical situations and events. Therefore CHAT is especially appropriate to study and emphasize the role and the significance of contextual factors in human activities.

## **Shortcomings**

However, although various elements are categorized, such as subject, object, community, rules, division of labor, and mediating instruments, such categories are not enough to comprehend all human activities. In other words, human activities are hugely diverse in societal context, but the standard of items of CHAT is somewhat vague to cover all human activities.

In addition, the concept of contradiction in CHAT is a key idea for interpreting leaning activity. However, it needs to concretely shed light on the process how to generate learning through contradictions between and among activity systems. In a CHAT approach, through the resolution of the contradiction, the activity system expands the new knowledge and the ways of learning (Lord, 2009). In this process, however, it needs to depict and reify the process of the linkage between resolution of contradiction and formulating learning. The reason is that in the process of analysis, the resolution of contradictions might be overestimated as the new knowledge and the ways of learning, or it might be underestimated as simple actions and then might miss the authentic learning. Therefore it needs to consider to when the contradictions are not resolved as well as the case of resolving them.

Lastly, it tends to rely on the diagramming while analyzing data with CHAT. The diagramming largely helps to clarify complicated data that includes diverse elements, but sometimes it tends to concentrate on drawing triangles because of the clarification and efficiency.

However, CHAT plays role to theoretically analyze practical data based on academic perspectives of from Vygotsky to Engeström. Therefore it is necessary to use the diagram with theoretical analysis of CHAT approach.

### **CHAT as Theoretical Framework for Analyzing Workplace Learning**

In this study, I interpreted critical reflection that takes place in the workplace as informal learning using CHAT as the theoretical framework. The CHAT approach has the ability to investigate human learning and change located in a specific reality and not divorced from their socio-historical context (Lord, 2009, p. 51), and therefore the socio-cultural elements and the historical characteristics of CHAT approach provide usefulness and effectiveness for analyzing the workplace learning that occurs in the variety of contextual factors. In this section, I attempted to understand the specific features and aspects of CHAT for analyzing workplace learning.

#### **Six Elements of CHAT**

First, “subject” refers to the individual or subgroup whose position and point of view are chosen as the perspective of analysis (Engeström, 2010, p. 6). The subject can be either an individual or group, depending on the situation. The subject, in the traditional theory of learning, acquires some identifiable knowledge or skill that is reasonably well defined and thus there might be a “teacher” who knows what is to be learned (Engeström, 2001, p. 137). But it has

limitations when applied to workplace learning, because in working situations people and organizations are quite often learning something that is not stable, not even defined, or understood ahead of time (Engeström, 2001).

Second, “object” is hugely diverse, depending on the activity system. The type of object refers generally to the problem space toward which an activity is oriented (Lord, 2009). Most objects are practices to achieve the working goal. Thus I attempted to look for their informal learning from every aspect of their working life. At this moment, I need to discern between an activity as the informal learning and an action as the simple behavior change, because this is connected to appropriately looking for object and activity system.

Third, “rules” are “the explicit and implicit regulations, norms, conventions and standards that constrain actions within the activity system” (Engeström, 2010, p. 6). The meaning of rules in the workplace might be somewhat different from other places. The rules of workplace are made by management of company in order to control workers, set up order, make profits, and so on. Thereby workers cannot help but obey to the rules, because disobedience could be connected to layoff. However the rules may not threatening to workers, but rather they are helpful for adapting workers to changeable working environment as a standard. Moreover informal, unstated rules among workers provide a means by which workers may assert some control. For example unwritten, but commonly understood (among workers) rules such as at what point does one

report a problem to a supervisor, are ways in which workers create, at least partially, working and learning conditions.

Fourth, “mediating instruments” spread broadly everywhere. The mediating instruments can be both material object and more abstract objects, ranging from things such as technical tools, machines, or even workers’ chair to concepts like lean production (principle of working), informal explanations from colleagues, and so on. I needed to become familiar with various mediating instruments directly in the workplace or the culture, not through documents or indirect explanation. This way, I could analyze workers’ critical reflection only through their own language and culture in their (working) life. Nobody knew or informed me which material objects can become the mediating instruments. I had to discover them myself.

Fifth, “community” is “the collection of individual or groups who are all concerned with the same object” (Park, 2008, p. 33) and “an interdependent aggregate of individuals who share a social setting, and who has a common interest in the object under consideration” (Youn, 2007, p. 46). Therefore in my study, community includes workers from other factories and corporations because each corporation has a common philosophy and culture for successful management under same contextual object.

Sixth, “divisions of labor” refer to divisions of specific tasks of an individual or group between actors. The division of labor incorporates both vertical and horizontal position of the

actors, and it also allows both a conscious consideration and a solid understanding of interrelation between each other (Lord, 2009). Therefore, in my study there might be various divisions of labor such as engineers, suppliers, or managers. Through division of labor, I can understand the relationship between an individual worker or group of workers with other workers connected by specific tasks. At this moment, I need to discern several hidden elements permeated in their relations, such as how and why they are belonging, is there any hierarchical relation between them, what is their specific task, and so on.

### **Contradictions between and within Activity Systems**

An activity system can be comprised of these six elements, and it generates other activity systems through interactions and contradictions. In my study, contradictions are the most important element to analyze workers' critical reflection. As stated above, contradictions are not simple problems or conflicts but historically accumulating structural tensions that plays a role in promoting a new activity system (Lord, 2009). To analyze critical reflection, the concept of contradiction is useful to interpret workers' activity as informal learning. But I don't regard contradiction as having the same meaning as criticism or critical reflection. Contradiction might be a kind of an advance preparation or necessary condition to perform critical reflection as informal learning in my study.

In a CHAT approach, contradictions exist between the six elements in an activity system, and between other activity systems. Thus, in fieldwork, above all, I observed and understood workers' contradictions between and among six elements, and then I observed or perceived the contradictions especially in the process of how the subject (factory workers) obeys the rules, interacts with division of labor, and achieves to the object in an activity system. Although there were several other processes to generate contradictions, I focused on those three processes. This is because the rules, division of labor, and object are directly related to workers' own perspective about their working life.

Workers' perspectives could provide backgrounds to analyze their critical reflection, because there are various opinions, advice, recommendations, commentaries, and so on. Through picking up the contradictions in relations between rules, division of labor, and object, I could categorize workers' responses with the elements, such as the relationship of person to person, person to rules, and person to tasks. These categories are helpful for understanding the factors for performing critical reflection. Then, I could analyze contradictions between various activity systems. In this work, I realized the process of formulating learning.

In this study, I focused on contradictions that are "aggravated structural tensions constantly requiring some form of either temporary or permanent resolution" (Lord, 2009, p. 61). Although contradiction exacerbates the tensions, it always entails the resolution. This perspective

can be interpreted that if subject wants to continue current situation without any tension, then learning cannot occur any more. Therefore, when there are many of the contradictions in workplace, there is much potential to give rise to learning.

As stated above, the CHAT approach is largely useful to analyze informal learning in workplace. The reason is that above all it considers that incidental and accidental factors depend on contexts, and finally it is resulted in learning as an outcome. Informal learning is not easy to see or understand in people's lives, because it does not include strict boundary and is continuously changeable, depending on context. Nevertheless, CHAT is enough to derive informal learning from their life through features that various activity systems are continuously and accidentally generated by contradictions.

For this study, I collected and analyzed data using ethnography as a methodology. CHAT approach gave help to both works (collecting and analyzing data) as a theoretical framework. Under the background of CHAT, in fieldwork, I always kept the final "outcome" in the back of my mind. Likewise, I depicted and imagined various activity systems and categorized many of the elements based on CHAT, while observing participants' working. Especially, the particular elements of CHAT forced me to consciously consider contextual and accidental situations in the workplace. At this moment, I observed and recognized carefully their contradictions, and I considered the process how the contradictions are connected to learning.

CHAT provided the appropriate direction that informal learning can be analyzed through the CHAT's ability that derives contextual activity from accidental situations, and that critical reflection can be ruminated through its ability that is resulted in learning as an outcome.

Accordingly I used CHAT approach as a framework to collect and analyze based on ethnography as the qualitative methodology.

## **CHAPTER 4. DATA COLLECTION METHOD**

This study used a qualitative research approach to analyze workers' critical reflection as informal learning in the workplace. However it is hard to observe their culture concretely because critical reflection is not an identifiable and verifiable activity, the workplace (the shop floor) does not have much observable learning, and informal learning has no strict boundaries. Thus this study used ethnography to describe and interpret "the shared and learned patterns of values, behaviors, beliefs, and language of a culture-sharing group" (Creswell, 2007, p. 68).

### **Ethnography**

According to Wolcott (1999), culture is "the various ways different groups go about their lives and to the belief systems associated with that behavior" (p. 25). Therefore understanding cultures of particular people is to expose their normalness without reducing their particularity (Geertz, 2000), and analyzing the cultures is to be "not an experimental science in search of law but an interpretive one in search of meaning" (p. 5). To show a particular culture without any misrepresentation to readers is not easy unless one has the specific "eye" of seeing the culture. Ethnographic accounts arise through ruminating about the meanings derived from experience, not from the facts accumulated during fieldwork (Wolcott, 1999). Therefore ethnographic

research is the best method for probing the culture.

The focus of my study is to interpret workers' critical reflection as informal learning and to illuminate the potential of critical reflection as workplace learning. Ethnography consists of "fieldwork" which is gathering data at the research site and "mindwork" which is constantly reading and analyzing data (Wolcott, 1999), is an appropriate method for this study. In the fieldwork I observed their specific language, attitudes, climate, and so on, and I recognized the pattern of several behaviors and perspectives. I gradually permeated into their culture. In the mindwork I realize that critical reflection is differently expressed with various activities depending on the individual's personal contexts, and even workers might not become aware of their own critical reflection themselves.

### **Research Questions**

As stated earlier, the research questions driving this study were as follows:

1. How do factory workers perform critical reflection on the shop floor?
2. How does critical reflection as informal learning influence factory workers' working life and personal life?
3. Why do factory workers engage in critical reflection besides systematic training program?

4. What is the role of critical reflection as workplace learning for factory workers on the shop floor?
5. What is the relationship between factory workers' critical reflection and task performance on the shop floor?

### **Research Site and Participants**

The site for this study was the Daejeon factory of Pruge-Clark Corporation in South Korea. Pruge-Clark Corporation is a joint venture company between Pruge Corporation in South Korea and K-Clark in the U.S., established in 1970. The products of this company are toilet paper, diapers, sanitary pads, including such brand names as Kleenex, Poppe, Kotex, Huggies. In particular, the Daejeon factory produces diapers and sanitary pads (such as Magic panty and White).

Pruge-Clark Corporation is famous in Korea for supporting the employees' lifelong learning as well as emphasizing the social responsibility under the company goal referred to as ethical management and environment management (Choi & Lee, 2004). Although there are other company goals, my attention was focused on two corporate philosophies: supporting employees' lifelong learning and being socially responsible. The reason is that I was wondering how employees' life (working and personal life) is continuously developed under the notion lifelong

learning. Secondly, I wondered what connections employees made between their social status and social responsibility under the climate of corporate social responsibility (CSR). The first question is related to workers' workplace learning as an adult learning, and the second question is related to worker's critical reflection as informal learning. Of course, before those two questions I was, above all, wondering if the two corporate philosophies actually occur.

To gain access to the research site, I sent an email to the department of public relations (PR) asking the permission for my research, and I explained the purpose and the worth of this study for the company. They were sympathetic to my research subject because they also have wondered the present climate and culture due to supporting employees' lifelong learning. In particular, they were interested to see factory workers' actual thoughts and opinions through analyzing with ethnographic approach. Thus I was introduced to personnel department of Daejeon factory.

The head of personnel department of Daejeon factory allowed me to recruit participants and helped to collect potential participants. I visited factory workers' break time in the lecture room and staff lounge, asking them to participate in my research. I explained the research purpose, interview format, participant observation, and so on, and likewise the personnel department recommended a few potential participants. Thus I collected eight participants who are all males, over 18 years old, and have worked more than three years in Daejeon factory of

Pruge-Clark Corporation. They were favorable to my asking interview and four people had been interviewed before.

I made schedules for interviews with each participant. Daejeon factory adopts 16-day cycle of 4-team 2-shift system: factory workers work for 12 hours for four consecutive days and take the next four consecutive days off. Among the four days off, one day is for education provided by management (See Table 4.1). Pruge-Clark Corporation has implemented education programs to improve employees' capability through continuous learning and self-development. It is not obligatory, and employees can choose the programs in which they want participate. Therefore, I could make schedules with eight participants using their empty time of the training day.

Table 4.1. Shift work cycle

4 days	3 days	1 day	4 days	4 days
Day shift (12 hrs.)	Rest	Training	Night shift (12 hrs.)	Rest

The Daejeon factory shop floor is operated by rotations of four groups. Thus I selected two participants from each team and interviewed them 1 or 2 times per participant. (See Table 4.2.) The first interviews were conducted with all participants but the second interviews were conducted with five participants who needed more interviews or allowed time.

Table 4.2. Interview Participants

Team	Name (Pseudonym)	Working year	Task	Products	Interviews
1	Ki-hyun Kim	11 years	Loader	Diaper	60 min
	Jin-ho Song	9 years	Stacker	Diaper	75min, 60min
2	Jun-sung Park	10 years	Leader	Sanitary Pad	60min, 30min
	Kyu-ho Lee	14 years	Leader	Diaper	60min, 30min
3	Su-ho Choi	10 years	Inspector	Diaper	90 min
	Dae-jin Park	17 years	Leader	Diaper	60 min
4	Soo-hyun Jung	13 years	Leader	Sanitary Pad	50min, 60min
	Jin-woo Jo	10 years	Loader	Diaper	90min, 40min

In participant observation, I observed unspecified people who were working when I visited in the shop floor, but I explained my goal in visiting to workers who were wondering about me or who I interviewed informally. Likewise when I visited workers' official meeting and training program, I was allowed to participate by the head of the team, and I explained the goal of my visit to workers who participated there. Most unspecified participants were favorable and friendly to my participation but they concentrated seriously on their meeting and training regardless of me. Sometimes they questioned me about my research, other interviews, my personal issues, and so forth.

### **Data Collection**

Wolcott (1999) identified the ethnography as a way of looking (fieldwork) with three categories: interviewing, participant observation, and archival research. In my fieldwork, I interviewed participants once or twice. In the first interview I asked common questions of all eight participants, and in the second interview I questioned individual issues based on the first interview results of five participants. The reason why I had the second interview was for listening to more concrete experiences on the shop floor of factory workers. In the first interview, some workers of them did not talk about their story enough because somebody was shy to interview with me and the other was so talkative to answer for the various questions. Thus I had the second interview with workers who needed more talking. Likewise, I observed participants in their own spaces: I observed participants' working on the shop floor, lunch time in dining room, break time in lounge, discussing with colleagues, training education program, and so on. Lastly, for archival research I collected materials related to participants' working life and personal life such as posters on the bulletin board in dining room and banners on the shop floor, as well as materials and research in terms of Pruge-Clark Corporation's history, management philosophy, achievement as a top-ranked corporation, and so forth.

## **Interviews**

I conducted the first interview for participants' working and personal backgrounds and history, the second interview in terms of difficulties around them, and the informal interviews while conducting participant observation such as training class, break time, or lunch time. In fieldwork, interviewing is an active task of ethnographer, unlike passively observing, because words and expressions might become quite important clues for understanding various cultures (Fetterman, 1998). Thus, I recorded the first interview, the second interview, and a few informal interviews with voice recorder in order not to miss their words. They agreed with the interview recordings through signing in the informed consent forms, and I explained that I will use the pseudonym instead of their real name in this study, and I told them that if they do not want to answer any question they would not have to do so. All the participants are Korean, as am I, so we conducted the interviews in Korean. I transcribed the records in Korean and then translated the cited transcription to English by myself.

The first interview was conducted in the empty lecture room or study room for about 60-90 minutes. In the office building of Daejeon factory, there are several lecture rooms as well as offices to accommodate factory workers' training program on their education day, and moreover there is a study room just like reading room in the library to encourage workers' continuous learning as well as their working. I could use the empty lecture room or study room for the

personal interview without any other bothering. Sometimes when there were users, I asked them politely to leave the room, and they understood us.

In the first interview, I asked about participants' background and history in terms of their working and personal life. Most of them were not reluctant to talk about their working and personal life, and I could listen and understand their culture in the workplace without inducing answer. The ethnographer has to quickly learn to savor the informants' every word for its cultural and subcultural connotations as well as for its denotative meaning (Fetterman, 1998). Thus I tried to read and realize their thoughts from their answers in every moment without missing any word while interviewing. Although I already knew about their work environment and company's history due to directing interview questions, I could make new questions appropriate for the situation by obtaining information and experiences from them while interviewing.

The second interview was conducted with five participants who were available or who needed more interview; these were also conducted in the empty lecture room or study room. In the second interview, I asked about their difficulties in the working and personal situations. In the beginning of the second interview, I asked one question about their hard things around them in working and personal life, and a few questions appropriate for the context. Participants and I got more close and communicated in depth than before, probably because we had met in the first interview. Thus most of them were open about difficulties and problems related to working or

family life. Particularly, in the second interview I listened to more concrete and various experiences on the shop floor besides personal family issues that I couldn't hear in the first interview.

The informal interviews were conducted in various situations: in the cafeteria at lunch time, in the car to go out, in the staff lounge during break time, in the shop floor, in break of the class, and so on. In the informal interview, the interviewees were unspecified people and didn't know about me. There were a few people who I had interviewed but not many. I approached them and introduced briefly the reason I was there. Most of them kindly welcomed me. I could ask something of workers who were working on the shop floor, and I could listen to their real experiences about working in front of the real machine. Likewise I participated in workers' outing class that senior and junior climb mountain together for teamwork as well as regular class. In the outing class I could meet many workers and hear various opinions, unlike the formal interviews. Most of them gladly welcomed me. Probably because the workers who participated in the climbing all were male, they looked at me as a stranger with curiosity. Some people came and started talking or asking to me about my presence. Thus I could communicate naturally with them.

## **Participant Observation**

Participant observation is “immersion in a culture” (Fetterman, 1998, p. 34) and “founded on firsthand experience in naturally occurring events” (Walcott, 1999, p. 46). That is, the ethnographer needs to maximize the potential of fieldwork as the personal experience with subjectivity rather than with objectivity. However, while observing in the field, ethnographers have to play out almost entirely only through what they see and what they hear. Moreover, in participant observation, the ethnographer has to combine participation in the people’s lives under study with maintaining the professional distance that allows adequate observation and recording of data (Fetterman, 1998). Thus in the participant observation, I tried to understand their several cultures through workers’ words, gestures, behaviors, thoughts, and so on, while maintaining appropriate distance.

In participant observation, I couldn’t record a few things related to their working situations, because the company did not want to expose the working processes and environment. Thus although it was limited to write it down without missing, I wrote all things that I saw, heard, and thought at all of the moments down in my field note. However, I could record their training class, lunch time, outing, educational program, and so on with a voice recorder. Likewise I could make up a few missed things on the shop floor through asking to participants of the formal or informal interview.

I tried to participate in and observe as many different situations as possible. For example I participated in the program of “communication with head of the department” where product workers talk with head of the department about present management conditions. When I first saw this program on the board, I really wanted to participate in this program, because I thought I would hear product workers’ critical opinions or thoughts about management condition. So I the manager in the office, but he was concerned about it because of confidential information that might be discussed. I suggested that I would not record anything and that I would show my field note to manager after finishing the program. So the manager and head of the department allowed my participation.

When I did participant observation, I was trying not to intervene in workers’ situations because I had to see their natural scene without consciousness about me. Thus I received approval for the participant observation from the manager of education department in advance, and I entered the classroom shortly after class began and sat down at the end of the classroom without being noticed by workers. Because at the first section of the class they didn’t notice that I was there, I could observe their natural and general activities to participate in the class.

### **Documents and Materials**

Archival research takes place when the ethnographer turns attention to what has been

produced by others in times past. Sometimes, through documents, the ethnographer can get a valuable and vital source of participants' information, such as old letters, diaries, or photographs, and therefore ethnographer has to make good use of written records everywhere (Wolcott, 1999).

Before begin my fieldwork, I could find many of the materials related to Pruge-Clark Corporation because it has been highly ranked corporate in Korea. Pruge-Clark Corporation was "the winner of the Best Corporate Image Award for Ethical Management and was selected as one of the top five companies with the highest social contribution in 2001 by the Federation of Korean Industries" (Cho, 2005, p.5). Thus there are several academic research articles as well as press releases related to the success management of Pruge-Clark Corporation in Korea. Thus I was well-acquainted with the article and materials in advance, before making research questions and going into the company for interviews and observation. In addition, I got various educational materials that workers themselves had written in training class, found several banners in the shop floor and other places, saw informational writing on the bulletin boards related to workers' working or personal life, and so on. So I took a picture being allowed only of the materials.

### **Data analysis**

Because I gathered data through interviews, field notes of participant observation, and various materials, there was a vast amount of data. Thus in order to analyze the large amount of

data, I selected qualitative content analysis as an analyzing method. Qualitative content analysis is a research method “for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p. 1278), and therefore “reality can be interpreted in various ways and the understanding is dependent on subjective interpretation” (Graneheim & Lundman, 2004, p. 106). That is, qualitative content analysis is a research method to interpret text data subjectively with various processes. Thus I chose qualitative content analysis, because it can prevent ethnographic data that consists of participants’ particular culture. At the same time, it can be useful for analyzing large amounts of text data which is gathered from interviews, field notes of participant observation, and various materials. I used qualitative content analysis with five steps: (1) making a meaning unit, (2) condensing the meaning unit, (3) coding, (4) categorizing, and (5) creating a theme.

### **Making a Meaning Unit**

The meaning unit includes “words, sentences, or paragraphs containing aspects related to each other through their content and context” (Graneheim & Lundman, 2004, p. 106). In this step, I needed to read “all data repeatedly to immersion and obtain a sense of the whole” (Tesch, 1990, as cited in Hsieh & Shannon, 2005, p. 1279). Thus, for analyzing data I started to read

continuously all interview transcripts, field notes of observation, and various document and materials.

When reading the data, I used inserting memo into every sentence of the transcripts. The memo included my thoughts and reflections of the situation at the time as well as summary of the fact or the fact in itself. It was helpful for making a meaning unit, because many of the memos that were written with my thoughts of the situation were used as a meaning unit. In the process of making a meaning unit, I tried to write the comments through participants' words or their cultural language that was written in the transcripts in order not to distort the situations with my words. When it was needed, the sentence on the transcript was copied into the meaning unit.

### **Condensing the Meaning Unit**

The meaning unit in the first step was condensed with compressed meaning without straying from original meaning of transcript. In this step, I tried to distil the meaning unit with a shortening sentence that included the essential meaning of the transcript. Because this step is an intermediate process between making meaning unit and coding, the condensed sentence includes a brief explanation; simultaneously it is not long. This step allowed me to get the sense of long sentence of meaning unit at a glance.

## Making a Code

According to Graneheim and Lundman (2004), “the label of a meaning unit has been referred to as a code” and labeling with code “allows the data to be thought about in new and different ways” (p. 107). That is, making code is the “heuristic device” (Coffey & Atkinson, 1996, p. 32, as cited in Graneheim & Lundman, 2004, p. 107) to enable the researcher to think and interpret the situation in line with the key purpose of the study. Thus I tried to make codes considering entire purpose of this study. Although most of the code was one code in a meaning unit, there were two or more codes in one meaning unit.

Table 4.3. Example of meaning unit, condensed meaning unit, and code

Meaning unit	Condensed meaning unit	Code
he has insomnia because of 4-team 2-shift system	shortcoming of 4-team 2-shift system	4-team 2-shift system
they have to learn constantly in order to adapt to continuously changeable tasks	continuous learning related to tasks	continuous learning & worker’s task

## Categorizing

Codes are sorted into categories through understanding the relation and linkage with other codes (Hsieh & Shannon, 2005, p. 1279). Categorizing is the main feature of qualitative content analysis because “category refers mainly to a descriptive level of content and can thus be seen as an expression of the manifest content of the text” (Graneheim & Lundman, 2004, p. 107).

Category includes several sub-categories or sub-subcategories, and therefore, the researcher needs to combine or organize the larger number of sub-categories into a smaller number of categories through understanding the various relationships between sub-categories (Hsieh & Shannon, 2005). At this time, the sub-categories can be sorted into a category or a category can be divided into sub-categories (Graneheim & Lundman, 2004). In this process, to begin with I decided the larger number of sub-categories based on the variety of the codes, and then created the smaller number of categories. In this step, I tried to find out the concrete relationships and linkages between the large amounts of codes and to make category and sub-category that are implied the key points of the contextual theme.

Table 4.4. Example of categorizing

<b>Theme</b>	<b>CONTROLLING THE TEAM AS A LEADER</b>					
<b>Category</b>	<b>Working life</b>			<b>Personal life</b>	<b>Balance of working and personal life</b>	
<b>Sub-category</b>	<b>Communication with team members</b>	<b>Positive thinking</b>	<b>Educational activities</b>	<b>Family issue</b>	<b>Social contribution</b>	<b>Confidence as personality</b>
<b>Codes</b>	<ul style="list-style-type: none"> <li>◆Respect team members' opinion</li> <li>◆Various attempts to communicate with team members</li> <li>◆Effort for reducing the generation gap</li> </ul>	<ul style="list-style-type: none"> <li>◆Positive attitude toward team members</li> <li>◆Positive mind in the shop floor</li> <li>◆Making a positive climate</li> </ul>	<ul style="list-style-type: none"> <li>◆Leadership training</li> <li>◆Continuous learning for skill as a leader</li> <li>◆Sharing skills with team members</li> </ul>	<ul style="list-style-type: none"> <li>◆Listening to daughters' opinion</li> <li>◆Trying to think in the position of wife</li> </ul>	<ul style="list-style-type: none"> <li>◆Living as a social member</li> </ul>	<ul style="list-style-type: none"> <li>◆No fear to lead anywhere</li> </ul>

		on the shop floor				
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### Creating a Theme

According to Graneheim and Lundman (2004), “creating themes is a way to link the underlying meanings together in categories” (p. 107). That is, it is to find out the recurring and regular meanings within the categories. In this step, I tried to find out the latent content (p. 107) in the transcript based on the condensed meaning units, codes, and categories. Likewise, I made a sub-theme to embody the contents from various data in more detail. A theme interacts with a sub-theme because “a theme can be constructed by sub-themes or divided into sub-theme” (p. 107). Thus I used both a theme and a sub-theme for finding out recurring meaning and linkage between the texts, based on condensed meaning unit, codes, and categories.

Table 4.5. Example of creating theme

Meaning unit	Condensed meaning unit	Sub-theme	Theme
He experienced difficulties to adapt to the vertical relationship between junior and senior because he didn't know that before.	Experiencing difficulties to adapt to the relationship between junior and senior.	Difficulties to adapt to the vertical relationship	
There is a problem that in the team which consists of juniors and seniors, juniors are working more than seniors.	Juniors are working more than seniors.		

There is a situation that young people express their discontent, on the other hand old people try to discipline them.	Occurring of generation gap because of differences of perspective.	Intergenerational conflicts	Difficulties of human relationship
There are conflicts between generations because of old people who are not skillful unsuitably for a long working year.	Occurring of generation gap because of skills while working.		
In the process of ordering, there are small misunderstandings between team members because ordering worker doesn't exactly explain why other workers do it.	Occurring misunderstandings between colleagues because of less communication skill.	Lack of communication skill	
It needs to communicate between colleagues each other because personal family affairs influence working.	The importance of communication because of influences of personal affairs		
If one of the team members is not working his job, the other members have to work it.	Done in collaboration between team colleagues.	Necessity of cooperation on the shop floor	
Because not only doing his work but also each other's work makes a backup, the relationship between members is important.	Making a backup each other.		

The qualitative content analysis approach was helpful to analyze the large amount of data based on Daejeon factory workers' cultural and contextual life. In next chapter, I described the backgrounds of Pruge-Clark and the particular system of Daejeon factory.

## **CHAPTER 5. DAEJEON FACTORY OF PRUGE-CLARK CORPORATION**

In this chapter, I described the social background of Pruge-Clark Corporation in Korea and regional features of the Daejeon factory based on the analyzed research data and historical materials which were provided from Pruge-Clark such as *People are the Source of Hope* (2010) as company magazine and collected from economic magazine such as *Han 21* (May, 2010) and newspaper in Korea such as *Segye Daily* (May 2010), I then described my participations in the several fields of Daejeon factory. Finally, I introduced the specific systems of Daejeon factory based on my research data that is collected and analyzed with interviews, field notes, and various materials.

### **Background**

#### **Pruge-Clark Corporation in Korea**

Pruge-Clark is a joint venture company by Pruge Company, which is in Korea, and K-Clark Corporation, which is in the U.S. Currently, Pruge-Clark has been highly ranked and developed in domestic market share of the paper diapers, sanitary pads, toilet paper, and so on. In 1999, Pruge-Clark wrested the no. 1 position from P&G in sanitary pad, and its market share is growing. Moreover, after the IMF economic crisis of Korea in 1997, Pruge-Clark continued to

grow net profit, during the term, unlike other companies that were daunted by IMF crisis (Lee & Han, 2004); See Table 5.1). Then, the growth rate of sales and net income has been growing steadily (See Table 5.2). Thus Pruge-Clark has been selected as the company where Korean college graduates hope to work most, and that Korean consumers want most to repeat purchases (Cho, 2005).

Table 5.1. Domestic market share of Pruge-Clark (Lee & Han, 2004)

year	Paper diaper	Sanitary pad	Toilet paper
1998	45.9 %	32.5%	28.3%
1999	54.6%	41.8%	30.2%
2000	60.3%	48.2%	28.5%
2001	63.3%	54.2%	33.9%
2002	66.6%	58.8%	39.3%
2003 Jan.	68.5%	59.3%	38.7%

Table 5.2. Financial Data (Pruge-Clark 2010 Sustainability Report)

Key financial index	2006	2007	2008	2009
Growth rate of sales (%)	7.71	8.50	12.95	10.95
Growth rate of tangible asset (%)	2.34	3.81	9.64	3.20
Growth rate of net income (%)	1.6	16.28	9.33	29.30

### **Daejeon Factory of Pruge-Clark Corporation**

Daejeon is one of seven metropolitan cities in Korea, and it is a city of science and technology in Korea. In Daejeon, there are major expressways and railways connecting the country from the north to south, and thereby it is possible to travel to anywhere in the country

within half a day from Daejeon. Thus there are many factories for manufacturing, because of access to transport throughout the country as well as research centers are laid out such as Daedeok Techno Valley, because it is a city of science and technology. Daejeon factory of Pruge-Clark is located in the place where plants are concentrated.

Pruge-Clark established Gunpo factory in 1970, Gimcheon factory in 1980, and Daejeon factory in 1993. Gunpo factory manufactured the first domestic Kleenex, Poppy toilet paper, and Kotex sanitary pads. Gimcheon factory has practiced environment management with water-purity control system and using recycled papers. Daejeon factory has performed 4-team 2-shift system as an efficient way, and it has a continuing lifelong learning system for its workers in order to improve productivity and to strength their capability. I selected Daejeon factory, because it has practiced workers' continuing lifelong learning system since about 18 years ago. I was wondering how the lifelong learning culture is settled in the workplace, in particular in the shop floor. Thus I tried to see their learning culture that has been established for 18 years.

## **Participant Observation in Daejeon Factory**

### **The Shop Floor**

I could look around all over the place of the shop floor under approval of the department manager. Before going inside the shop floor, I covered my hair and shoes and wore a white gown

and earplugs because of machine noise. The shop floor was pretty spacious but there were not many of the factory workers—four to seven workers on one machine—because most of machines are automated.

The machines were divided into 1<sup>st</sup> and 2<sup>nd</sup> floors, and I could see various workers who were dealing with the machines. There were forklift drivers, workers who kept an eye on the monitor, workers who were inspecting fast-moving products with the naked eye, workers who were repairing the machine, workers who were watching the process packaging with machine, and so on. Sometimes I could talk with them and ask something about their tasks, and they kindly answered me.

There were separate meeting rooms for each machine. In the meeting room, I could see office equipment such as computers, a whiteboard, conference desk and chairs, a copy machine for meeting of work shift. Likewise there were smoking rooms for smokers and staff lounges that were equipped with a massage chair and massager for foot. In the ceiling of the plant, the national flags of Taiwan, Hong Kong, and China were hung in order to avoid confusing the box design of each country for packaging when manufacturing the export for the three countries.

I could see a banner hanging, which was written in English “Always young, fun, happy,” and photos of workers who are working on the shop floor. Likewise there was a family picture and watchword on the wall of exit. I heard from the department manager that the meaning of

family picture is to emphasize the importance of family.

### **Class and Lecture**

I could participate in a few classes under approval of department manager and lecturer. Daejeon factory workers have been provided various educational programs through company support for lifelong learning of employees one day for education during the four “off days.” Although participation in the education program is voluntary, most of workers of each team participated in the classes. In the classroom, I could see that workers reacted actively to the lecture and asked questions of the teacher, without hesitation.

### **Climbing**

In spring and autumn season, workers climb Kei-jok Mountain, which is near Daejeon factory of Pruge-Clark. I participated in the spring season climbing. The purpose of this climbing is to promote the meeting between office worker and factory worker or the meeting between senior and junior among factory workers, and then to lead to greater harmony. In the climbing, they walk and talk with high position and low position in pair or senior and junior in pair, but my participation was later. I accompanied them, and heard their conversation such as machine issues, colleagues' issues, good attitudes for human relationship, and I was talking with them about my issues such as my research, my interviews, my town where I'm living in Seoul, my age, and so

on.

### **Lunch Time and Break Time**

I often had chances to have lunch with factory workers in the cafeteria and to meet factory workers who had a break time in staff lounge. In lunch time, although they were initially shy, because I am a stranger and woman, they talked naturally about daily life in the shop floor and at home to me. Likewise in the cafeteria I saw the winner of idea award and various posters to collect members of club such as climbing, fishing, etc. on the bulletin board. In the staff lounge, I could easily meet with factory workers who were resting. They were reading newspaper, nodding off, or talking with colleagues. There were various kinds of lounges, such as the place that is equipped massage chair and foot massager, smoking room, a gym equipped sports facilities, coffee lounge with vending machine, women-only lounge, and so on.

### **Conversation with the Head of Department**

The head of department is the highest position in each product line. Factory workers meet him once a month in one day among the education days, and they receive reports about business showings from the head of department. I participated in the “conversation with the head of department” program under approval of the head and manager, but they did not allow me to record the discussion, because of confidential company information. In the presentation, the head

of department reported about the overall management situation and economic profit and loss of the month, and then he received questions from factory workers. A few factory workers had questions and expressed actively their opinion about the management situation of Pruge-Clark.

### **Representative Systems of Daejeon Factory**

#### **Vocational Ability Grade System**

The product line of Pruge-Clark has a vocational ability grade system that consists of seven steps unlike other companies. Although generally most workers of product line could not have the chance to promotion, Pruge-Clark created the vocational ability grade system to give workers of product line a chance to upgrade the position. There are freshman, ki-won, ki-sun (these are Korean words because there are not appropriate English words), technician, leader technician, senior technician, and chief technician (See Table 5.3).

Table 5.3. Steps of vocational ability grade system



For each step, workers need to learn specific abilities, and they can be upgraded by personal capability with absolute evaluation. Workers have to rotate through all tasks of the team to be technician, but if they don't accomplish job rotation they cannot be promoted institutionally.

Likewise allowance according to improvement of vocational ability is paid in accordance with each position. Pruge-Clark provided this system to factory workers to redeem the shortcomings of the existing HR system and to emphasize the compensation for improvement of ability (Song, 2004).

#### **4-team 2-shift System**

4-team 2-shift system is to promote to improve productivity based on workers' lifelong learning. 4-team 2-shift system is an adapted 16-day cycle where factory workers are working for 12 hours for four consecutive days, and then taking the next four consecutive days off. The first four days the team works in the daytime and the second four days the team works in the night time. Among the four days off, one day is for training, and therefore factory workers are provided 200-350 educational hours yearly.

Although, in the past, Daejeon factory of Pruge-Clark adopted 3-team 3-shift system which has been used generally for the product line in Korea, it was changed to 4-team 2-shift in order to overcome the vicious cycle of 3-team 3-shift system such as low-skilled – low-ability – low-quality – high-cost (Song, 2004, p. 77). As a result of Pruge-Clark's own investigation, the 4-team 2-shift system is said to decrease safety accidents through workers taking enough rest, to maximize human resource through job rotation and skillful teams, to contribute quality and

productivity through stability of process, to decreasing operating costs such as cafeteria and shuttle bus and so on (p. 79).

Table 5.4. Example of 4-team 2-shift system (Song, 2004, p. 78)

Jan.	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
day	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
Team A	H	H	B	B	B	B	H	H	H	H	A	A	A	A	T	H	H	H	B	B	B	B	H	H	H	H	A	A	A	A	H
Team B	A	A	H	H	H	T	B	B	B	B	H	H	H	H	A	A	A	A	H	H	H	H	B	B	B	B	H	H	H	H	A
Team C	H	H	A	A	A	A	T	H	H	H	B	B	B	B	H	H	H	H	A	A	A	A	H	H	H	T	B	B	B	B	H
Team D	B	B	H	H	H	H	A	A	A	A	H	H	H	T	B	B	B	B	H	H	H	H	A	A	A	A	T	H	H	H	B

A: day shift (07:00 am – 19:00 pm), B: night shift (19:00 pm – 07:00 am), H: day off, T: training day

## Job Rotation

In Daejeon factory, workers have to rotate through several jobs on the shop floor. They could learn various skills and techniques for driving machines and doing maintenance themselves through changing a job within a certain period. Thus the operating teams can prevent low morale that can occur by performing just one job (Song, 2004). Likewise in this process, workers can keep learning and developing skills, and they can be a competitive worker through performing multiple skills.

Table 5.5. Job rotation standard (Song, 2004, p. 73)

Job title		Rotation Path	Minimum term
Department of Housewares	Raw paper driving	Pulper1 → Pulper2 → Rewinder1 → Printing Machine (Ultra) → Rewinder2 → Dryer	5 years
	Processing driving	F.T#1 Converting → Packing ↔ F.T#2	4 years
Department of infant supplies	Huggies driving	Converting1 → Converting2 → MOP → Packaging → Quality	4 years
	Clean Bebe driving	Converting → MOP → Packaging → Quality	4 years
Department of women's item	Sanitary pad driving	Converting → MOP → Packaging(Quality)	4 years
Skill maintenance	Maintenance of infant part	Maintenance → Palletizer	1 year

### Workers' Lifelong Learning

As I stated above, Daejeon factory of Pruge-Clark has applied the 4-team 2-shift, with employees working for 12 hours for four consecutive days, taking rest for four consecutive days off, and training for one day among the four days off. I usually had the interviews at the training day, because participants had more flexibility on the training day. They voluntarily participated in the educational program but most of them said that they come to almost all classes if they do not have particular personal issue.

The training program is conducted 300 hours more for an individual factory worker for a year (Song, 2004, p. 79). It is spent relatively long time for factory workers. In Korea, Pruge-Clark Company has been familiar with workers' lifelong learning, and employee welfare is

included in the company's philosophies. Thus the training program has been conducted by mixing job training and liberal education based on the lifelong learning idea. In the early years of training program, the contents of education focused on the job training but gradually, the rate of liberal education has been increased (See Table 5 6).

Table 5.6. Rate of job training and liberal education (Song, 2004, p. 82)

	1999	2000	2001	2002	2003
Job training	90 %	80 %	70 %	65 %	60 %
Liberal education	10 %	20 %	30 %	35 %	40 %

The contents of educational program were very diverse, including learning English conversation, family relationship, visiting museum, investment techniques, medical issue as a liberal education and LEAN education, safety training, usage of six sigma, and so on as a job training.

Table 5.7. Example of training schedule (March 2010)

March 12 <sup>th</sup> Fri. (Team 1) Session 5		March 15 <sup>th</sup> Mon. (Team 3) Session 6	
08:00-09:00	VTR company magazine / communication	08:00-09:00	LEAN education
09:00-10:00	Article report review	09:00-10:00	Understand of sales and production planning
10:00-12:00	English conversation, Quality of product – Consumer complaints	10:00-12:00	English conversation, Meeting for managing company loss
13:00-14:00	Safety – Prevention of	13:00-14:00	Team building
		14:00-16:00	Value research

14:00-16:00    skeletal muscle disease My prime cost?	
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## **CHAPTER 6. ACTIVITIES IN WORKERS' WORKING AND PERSONAL LIFE**

In this chapter, I analyzed data by ethnographic method using Cultural Historical Activity Theory (CHAT) as a theoretical framework. The purpose of this study was to interpret and understand factory workers' critical reflection, which is invisible and abstract, through analyzing the contextual elements and various activities rather than individual psychological changes. CHAT is useful for interpreting human change through analyzing the activities of one or more with various historical, contextual, and cultural elements. According to Lord (2009), the triangular and associated diagrams provide "the structure to place the various data pieces in the respective CHAT elements (such as rules, mediating instruments, etc.) and analyze how interact with, shape, and transform data in other CHAT elements" (p. 152). Thus, in this chapter, I interpreted and understood the data using CHAT. But CHAT is just a specific theoretical framework for understanding data, not a methodological approach like the qualitative ethnographic method.

### **Continuing Learning for Working Ability**

#### **Workers Tasks on the Shop Floor**

In the product line of Daejeon factory, there are several technician positions based on the

vocational ability grade system (such as Ki-won, technician, leader technician, senior technician. See Table 5.3.) similar to the office worker positions, such as deputy section chief, section chief, department head, and so on. Under this system, Dajeon factory workers can be promoted within a certain period, but everyone cannot be a team leader, and thus most of them have continuously tried to work hard to be a team leader. In the shop floor, their tasks are divided: stacker worker, loader, inspector, packaging worker, team leader, and so on. But before being a leader technician they have to perform almost all tasks as a technician for about 10 years. Thus during that period they can learn various skills and techniques through rotating jobs.

Jin-ho Song who is working as a stacker said:

Although the task of stacker is driving a machine, the important thing is to stop it at some point. ... I am one of workers who distinguish whether it's a correct product or a defective product before proceeding to inspector and packaging. If some problem occurs in this product while distinguishing, [I] broadcast to the first floor workers for taking action and then to the second floor workers too. ... [Stacker workers] must be able to stop the machine [at the moment]. (Jin-ho Song, 1YM-1, L15)

That is, the stacker worker has to be able to catch the appropriate time to stop the machine and needs to have good judgment at the moment. In the determining moment, what can be the standard of judgment is the checklist and various experiences.

We have a checklist for daily work ... because the dimension is provided, [we] write it in the sheet [based on the checklist] and then write the check details. Because of the transition until next week [we] continue to check and check. ... We need experience, I think. ... Even if a genius comes here [he/she] cannot be accurate 100 percent at the situation. Although sometimes mechanical things are important, but rather interpersonal relationship is important for us. Robot cannot take step mechanically the troubles. The machine just informs us about some situation, but we, a person takes step it. So we have to see many times the vision systems. (Jin-ho Song, 1YM-1, L18- 19)

Although most of factories are operating with machines, because of automation and mechanization, a person must drive the machines, because the machine cannot make an appropriate judgment of the situation. Since problems can occur at anytime, anywhere along the production line with machines, factory workers have to be able to distinguish what machine can do and cannot do at the accurate moment based on contextual elements. Thus factory workers need to contemplate the context every moment while dealing with machines and to reflect continuously and deeply on occurring troubles. Daejeon factory workers have tried to develop such abilities through several activities such as educational programs, continuous personal learning, and interactions with colleagues.

Likewise, the inspector needs the ability to make judgments at the moment. The task of

inspector is to determine whether “good or bad product is removed primarily from the machine, computer, and system, and then [inspector] judges waste which is overlooked [by the computer system] and decide overall whether this product is allowed to leave” (Su-ho Choi, 3SH-1, L1).

When I interviewed Jin-ho Song the second time, he had switched the task from stacker worker to inspector. So I could hear his new working life as an inspector, the connectivity with previous task, and the new difficulties.

The task of inspector is checking, final quality inspection. It is to inspect in the final step shortly before going products to customers. Literally, I require complete product to them (workers in the front) but I know well because I was a person who make machine, products through ordering, I know, I know why do happen this problem and the product defects, however after rotating job, because I move to inspection part and product quality management part, the opposite relations with leaders were raised. If something problem happens, I inspect it and I require to other leaders or other workers why it is a problem and then I said “please do it.” (Jin-ho Song, 1YM-2, L15)

Because he had worked as a stacker worker, he could know already where the trouble occurred frequently in the machines. Although there were differences of opinion with colleagues, because he has a duty to require perfect product from the other workers as an inspector, he tried to think and act in a way that respected the position of other workers. Because of the experience

of rotating through several jobs, Daejeon factory workers could understand each other's jobs, and they could figure out the current relationship between their own position and the overall manufacturing process on the shop floor. It enabled them to constantly develop the skills dealing with the machines through understanding the connectivity between several tasks. It also improved teamwork through perceiving other workers' jobs.

The role of team leader is to: "lead six team members through analyzing their personality and training them appropriate to it" (Kyu-ho Lee, 2JH-1, L4) and "manage members and to do 'troubleshooting' when machines are broken and stop because of occurring trouble on the shop floor" (Dae-jin Park, 3JM-1, L1). The team leader needs to supervise team members in order to manage the team well and to be equipped with higher skills and experiences than others. Most of team leaders had a strong sense of responsibility for managing and leading their team, because they are provided the high position and salary. A team leader is selected by technical ability and leadership, even if they are younger; they can be a leader if qualified. Team leaders have often experienced interpersonal problems with team members because they are the position to order. Therefore they need to try to learn communication skill to improve leadership as well as technical skills for managing machine.

The level system (vocational ability grade system) and the job rotation invigorates factory workers to try to be equipped with expertise in their own working, as well as enhances their job

satisfaction through increasing annual salaries, depending on the position.

In my case... A [new] machine came from the U.S., so I was trained in the U.S.A. for one month. If it was here, the training would be performed but... Because it's a new... After selecting a few personnel in advance, they have to receive the process training or quality training of the new machine. (Dae-jin Park, 3JM-1, L5)

Dae-jin Park has worked in Daejeon factory of Pruge-Clark for about 17 years, and his technical ability has been recognized, so he was given the chance to participate in the meeting for buying the new machine and to receive the training for the new skills in the U.S. The chance to go abroad was considerable motivation to try to improve his job ability and to increase productivity for him. He said, "Honestly, I am... how to say... Other jobs do not fit me I think. I like to work in the field (on the shop floor)" (Dae-jin Park, 3JM-1, L31). He is satisfied with his physical job based on the chance to be able to develop.

However even if they were not a team leader, there would not be a big gap of salary between team leader and technician, because their salary is decided by working years based on vocational ability grade system. As Jin-woo Jo stated:

Honestly, I think this is a good point of our company. Everyone cannot succeed at work.

Then a person who doesn't succeed cannot help but continue to stay the position and salary because everybody cannot be prompted. [But] a kind of technician or chief

technician is... This is connected to promotion, promotion system. Although everyone cannot be prompted to the deputy section chief or section chief, if the number of years is filled or if getting appropriate skills, [the salary] would go up. Of course, we are evaluated separately. (Jin-woo Jo, 4LH-1, L2)

As Jin-ho Song described it: “I graduated college, but at the first it’s difficult to decide shift work (factory work). ... But I cannot help but consider the retirement welfare, salary, future” (Jin-ho Song, 1YM-1, L1).

In particular, most of them seem satisfied to the salary system and the tenure system which is not dismissed. As in the above comment (L1), although Jin-ho Song had a prejudice against factory work as a college student, he could break it because of the salary and employee welfare after joining Daejeon factory of Pruge-Clark. Rather he has enjoyed to be acquired the abilities in his product job (as the stacker worker and the inspector). Most of Daejeon factory workers have been encouraged continuously their own development based on the productivity improvement using the systems. That is, the level system and the job rotation of factory workers have been the foundation for employment stability through increasing salary and providing several chances to develop themselves. Furthermore, they have gradually recognized their identity as a factory worker and realized the value of their own job.

## **Multi-skilled Workers**

Daejeon factory workers have to conduct the job rotation within a certain period, unlike other factories. A team consists of 3-7 workers, and each member has their own role and changes the task on the shop floor continuously within a certain period. Thus after some period they can have various skills of the production process on the shop floor. Su-ho Choi made this comment:

Basically, I don't know about other company, perhaps when other company is working something, for example when it makes cars, if someone is assembling then there are many of the cases that he continues to do the same job until retirement. But in the case of our company, if there are seven people in a team, their roles are different each other dividing seven parts. Seven people's working is different, but this person is not doing the job only but rotating it continuously. This working and that working. After about 10 years they can rotate the overall process. In a way, multi-skills. (Su-ho Choi, 3SH-1, L6)

According to him, Daejeon factory workers perform all tasks of the overall product process, unlike other factories where factory workers are doing continuously same work. Thus Daejeon factory workers can polish up their skills for working, rather than doing simple labor. They substantially preferred this system to simple working because they can learn continuously a new skill and improve their capabilities. However, there might be someone who doesn't want to keep going to learn something new and to change the task; it might be a burden for someone. As

Su-ho Choi described it:

If there are seven workers, there would be seven parts. Among them there might be evidently people who struggle to work and people who don't hard to do. Then absolutely worker who doesn't struggle to the task wants to be there still, but worker who hard it wants to move to other part. (Su-ho Choi, 3SH-1, L8)

Jin-woo Jo also described this type of situation, saying:

Perhaps learning a new task might be stressful itself, but simply speaking, if this person is continuous to bolt up and that person is continuous to make tires, then a person who makes a tire is hard but a person who bolts up is easy. They received the same amount of paying. I receive the same money to that person but that person bolts up every day and I hold tires. I think it's not good. (Jin-woo Jo, 4LH-2, L12)

They thought that although learning a new skill is hard, it is unfair to make everyone continue in the same job, because there are comparably easy working and hard working jobs on the shop floor. Thus, on the shop floor, regardless of working years and position, workers tried to solve problems together with the leader and all team members, cooperating to experience and understand the other job.

The job rotation system is followed for task rotation while working on the shop floor.

Since Daejoen factory workers work for 12 hours without stopping and they can take a rest by

turns, they have to take charge of different tasks for colleagues who go out to take a break. Thus they can master their own skills and techniques through practicing various jobs on the shop floor. In the sense of mastering multi-skills, although it is not easy to be continuously learning new skills and adapting to new tasks, they thought this system is profitable to both employer and employee. As Jun-sung Park described it:

If the problem occurs when colleagues go out to have lunch, then I become the job. I mean I am the person in charge because I take charge of the task instead of the colleague. In a way, I have the authority. In that case, I can stop the machine and take action, and when the colleague comes back I explain that I stop the machine because of this problem and then operated it. Then the colleague doesn't blame me why did I do because they know all. (Jun-sung Park, 2HW-2, L7)

Jin-woo Jo described a similar situation, stating:

In the position of company, when we have multi-skills the efficiency is somehow increased and the personal position is also so. For example, if the problem occurs in the front or the back, then in the back when a worker repairs it by himself someone can help him, but we can help him only if we know about it. If we help each other it's good because it's comfortable and can be solved quickly. (Jin-woo Jo, 4LH-2, L12)

Thus in the shop floor, they can naturally work and live in a learning climate, because

they realize that they have to be better than the status quo or than other people's ability through experiencing difficulties of operation and practicing various skills. They can learn something through the educational program, discussion with colleagues, or teaching from senior, because:

We perform OJT [on the job training] in the shop floor. Personally, because several people work, among them there might be a person who is doing well or a person who is doing bad. Likewise we have to pick up and... Because it occurs the case that is behind other workers, to not do so, I think, we have to learn. I have worked 10 years here. There are many colleagues, but as long as I'm working I want to do better than colleagues. I think we can get skills from such an invisible competition. (Su-ho Choi, 3SH-1, L9)

Jun-sung Park also described an outcome of this learning climate:

[If I am skillful] when some position occurs I can take the way to go to the position earlier. Because, although there are four teams per one machine, there are individual gaps of ability each other. Therefore if new machines increase, then who can be a leader?

Probably, the head would see this person's ability, because there are perspectives to see people. Although we are doing the same job, there would be a little bit gap of ability.

Every individual has different ability. (Jun-sung Park, 2HW-2, L9)

The atmosphere of the shop floor which encourages workers' skill improvement might be influenced workers to recognize their learning as a part of their life, i.e. they have regarded

learning something as an activity that has to be performed while working. Thus Daejeon factory workers have tried to be skillful and competitive workers through constantly mastering techniques and experiencing field working more. Thus most of them have skillful ability to solve the general problems which occur on the shop floor because their ability might be estimated by capability to deal with and understand the machine. Su-ho Choi stated:

I don't know you went other factories but, actually although we are working on the shop floor, we do not work only for product but do maintenance and repair machine if it breaks down. Probably, in the case of other company product workers are only manufacturing and separately there are people who repair the machine. Most of companies do so. [But this company] at the first when recruiting new employees, this company hires students who major in mechanical and electronic in such a school. Although there are not all, almost 80-90% of employees were who learned mechanic or electricity. So because such people are manufacturing if mechanical problem occurs we can fix it. (Su-ho Choi, 3SH-1, L14)

When I interviewed and observed them I didn't ask about their academic background, but a few workers told me their education history. There were workers who finished technical college and who graduated technical high school, but they majored mechanics or electronic. (In the technical high school, there are several majors to be a technician.) Thus, because almost all

had the ability to maintain and repair the machine, they have been able to acquire multi-skills.

### **Sharing Skills with Colleagues**

Daejeon factory workers acquired technical skills from various ways such as training programs, teaching from seniors and colleagues while working, OJT on the shop floor, observing solving problems on the shop floor, writing and reading job sheet, and an idea suggestion system. Their technical skills were being developed continuously and shared with all workers rather than covering respective skills for individual development. Thus they have acquired working skills through various systems which have been constructed by management. On participant described:

You know, if new employees enter in company they have to learn working skills. This company opens all things (skills). If I don't know some skill then I can learn from senior or colleagues. But in the case of my previous job [of other company], they didn't answer anything in spite of my asking. I glanced or pick up it myself through following them (seniors). But in this company, everything is documented. So if I ask seniors they explain in detail for example they teach me detailed the experiences that they have undergone.

There are many differences [between previous company and current company]. (Jun-sung Park, 2HW-1, L3, 4, 5)

A job-sheet is documented with computer system in order to be read by all employees

such as chief technician, engineer (researcher), as well as operators. Factory workers have to write in the job-sheet on the computer system what had happened on the shop floor for 24 hours. If problems occur, all of them (chief technician, engineers, and factory workers) read it to look for the solution together for current troubles. In this process, factory workers could undergo several cases of machine troubles and learn the resolution with new technical skills:

In the shop floor, we have to write job sheet hourly. There are leaders of four teams, but they have different idea that they think because all their perspectives are different. So they describe it with their own views. Although the phenomenon occurs in the same place, there might be different perspectives about the same phenomenon. So after combining them the engineer team is looking for the resolution through understanding the problem in the job sheet. So the job sheet is constructed in the contents of things that I saw, fact, next plan that I'd like to add something. (Kyu-ho Lee, 2JH-1, L22)

The contents of the job sheet that was drawn up by factory workers influenced resolution of problem on the shop floor and development of new skills for operators. The management and engineers could look for and find ways for operators' improvement through observing the variety of operators' opinions and experiences in the shop floor. That is, the vivid experiences of operators in the field helped to improve their working environment more comfortably and develop new skills for dealing with the machine. In addition, the job sheet helped to workers

concentrate on their working when returning to the shop floor after four days off, through reading and checking previous records. As Soo-hyun Jung said:

I can realize that when this problem occurred they (previous team) operated like this. ...

It's helpful. You know, we return [to the shop floor] after four days off. [Then] I skim through the sheet what problems happened when I take break. The reports are stored in computer. (Soo-hyun Jung, 4BW-1, L14)

In addition, they have actively suggested their opinions that they thought while working, to the management under the idea suggestion system. The idea suggestion system is that factory workers suggest good ideas for product development, product design, as well as environmental materials of the field when working on the shop floor. For example:

We have idea room that is operated monthly. ... A few team members give me some idea, and then I put the idea in [the idea room] everyday. ... When I meet with chief technician in daily meeting, I combined them, and then I talk about whether if the idea is possible to do or to be efficient with engineers (researchers). Then they say good or not good, and then I say to the suggester your idea will be performed or not. (Kyu-ho Lee, 2JH-1, L23)

(Q. Your idea was adapted?)

Yes, long time ago. We have to keep clean because of safety [on the shop floor]. We drive forklift for moving, but always the spot (where the forklift passed) broke. So

workers had to sweep there. So I suggested to spread steel plate there, then in next day [management] did it.

The adopted idea was conducted to the shop floor soon if it is worthwhile to utilize for them. But all ideas cannot be accepted because there are a lot of overlapped ideas with older one. In this case, they receive the feedback why their idea was not adopted to the shop floor without being ignored their opinions. Thus they didn't hesitate to suggest their opinions, regardless of place and time for working, rather than being frustrated or disappointed to the result of their suggestion. Their ideas have been suggested through the variety of ways that;

There are several ways of this suggestion system. There are many ways to suggest such as suggesting to company, suggesting to the shop floor, ... In the shop floor there is idea room that workers write in the computer, and then they give it to leader. (Kyu-ho Lee, 2JH-1, L42)

Daejeon factory workers have been encouraged to suggest ideas continuously using various ways, and they have practiced it actively. This system inspires their ideas; they make constantly new assumptions related to their working, and consider continuously how they can do better than the status quo. Thus they have become used to making new assumptions without maintaining the status quo, and to sharing their new idea and skill with colleagues. That is, they have been improved through listening to the colleagues' various ideas and thoughts as well as

making their own assumptions.

In the shop floor, the seniors' experiences and thoughts played an important role in solving problems, and thereby there were many interactions between senior and junior. They were accustomed to teaching each other and learning about job skills on the shop floor. That is, they were used to sharing working skills with colleagues in order to develop technical skills and make a more comfortable working environment in the shop floor. In other words:

There are senior workers who talk more analytically the problems that occurred while manufacturing products with their own perspectives and so far know-how. Then I go to check such things and I talk about it with current workers who are working there. I tell them that let's do the other way that he told. (Jin-ho Song, 1YM-1, L13)

They were sharing the new skills that received from senior with the colleagues without hesitation.

They indicated that sharing working skills and ideas is more helpful to their personal improvement and collective development for increasing productivity. This system for sharing skills played important role in promoting teamwork between team members as well as improving working skills.

### **Educational Programs**

Daejeon factory workers have been provided various educational programs from the

company, because they have one day for training among four days off based on 4-team 2-shift system. Although the participation in the training is voluntary, most of my participants said that they usually attend to the classes if there is not a special occasion. Most of them were quite active participants in the educational programs, because they could learn technical contents for enhancing working skills and liberal arts issues dealing with politics, society, culture, and so on, as well as they could be paid overtime. But above all they were interested in learning something.

Since its establishment in 1993, Daejeon factory has conducted the educational programs with two focuses—job training and liberal education—under the management objectives to encourage workers' lifelong learning. At first, there was more job training than liberal education because most of factory workers were new recruits, but gradually the rate of liberal education has been higher. Jin-woo Jo said:

In the beginning of my joining in this company, [we] were in need of job training in this Daejeon factory because of the situation that new employees were continuously entering at the time I was joined. At that time the job training was the mainstream. But now although there are new employees, because 4 or 5 years have passed [for the new workers] it seems the education system has changed. Recently it seems there were many programs for social common knowledge and building a character. I like such things. (Jin-woo Jo, 4LH-1, L16-17)

Primarily the job training focuses on enhancing skills for dealing with machines, because factory workers can find the causes of problems as they know about the machines on the shop floor. The department of education in Daejoen factory has supported factory workers to improve workers' skill based on productivity. In addition:

When switching the job we receive OJT about the new tasks. ... Maybe it would be nice if we study a lot. [But] It depends on people. The more we constantly study and know many things, the more the stop time of machines would be decreased because when problem occurs we can narrow the causes as we know. If lack of skill, although the machine could stop for just five minutes, nevertheless it becomes to delay 1 minute.

There might be these occasions. I mean, it might be the differences between individual abilities because all people are not the same. Thereby we receive the job training in order to decrease such differences. ... The department of education studies [new machine] in advance and considers ways to be able to teach easily for operators. They teach us the translated [document in Korean] if it was in English. (Jin-woo Jo, 4LH-1, L24)

Likewise the job training has included the contents related to business or management such as LEAN and 6 Sigma. Although these business contents were not closely related to factory workers' practical job, they could gradually understand, even dimly, why they learned such things related to overall product proceed. Ki-hyun Kim described this:

Now, I experienced many educational programs that were recommended by company such as the Six Sigma or LEAN something like that. Although we have had almost all programs that have been provided from the other advanced leading companies, there might not be much help for us. In the position of an operator, it's different from office workers in the tasks, so it's different understanding it. So at the first time, we were so hard, it's so hard to fully understand. However, now I understand the overall issues. So we know the concept of Six Sigma, how should we do, what is the direction something like that. So when working on the shop floor, it (concept of Six Sigma) could be helpful for me. (Ki-hyun, Kim, 1BH-1, L12)

Although he did not find it easy to study such a business issue and didn't find out the actual relations, gradually he has realized its simple concept through repetitive learning. Likewise even though he didn't intend to learn such issues, this learning has influenced his working on the shop floor a little bit. Daejeon factory workers have received various educational programs related to their working on the shop floor from skills for driving machine to business issues for managing company. However, regardless of learning contents, when I participated in their class I saw that most of them have an active attitude such as voluntarily questioning, assertive answering, or various gestures toward lecturer's teaching.

In particular, they have enjoyed the liberal education because of the diverse contents. The

liberal education has been conducted in various fields such as learning English conversation, family relationships, visiting museums, investment techniques, medical issues, and so on. Kyu-ho Lee described this:

Actually, there are many that I don't know such as stock, economic conditions, or what happens in domestic something like that. Honestly, I rarely read the newspaper, book neither. But ... professors have collected materials like that. Then, every time we come to class they provide such things us and information exchange. Then I have reflected on myself many times. Ah, I have to read books, what should I read. (Kyu-ho Lee, 2JH-1, L16)

In Daejeon factory, workers who are working in the department of education are called a professor. Although there were few factory workers who know why they are called professors, it seemed that they regarded the educational workers as a supporter who helps them learn something rather than an office worker or a colleague. That is, it was to emphasize making learning environment of factory workers. Among the educational workers (professors), there were a few people who had worked in the shop floor. They were selected by the department of education because it needed workers who know well about the characteristics of the product job. (One of the professors from product line is currently in graduate school, working on a master's degree.) Thus there have been various educational programs as the liberal education that is able

to satisfy product workers. Jun-sung Park also described this education, saying:

When I came to class, I was taught the overall situation of company or the issue in domestic something like that. And investment techniques, I learned it. When the investment techniques were popular, the outside lecturers did it for us. Then we received consulting about financial management related to me and household from them. At that time, it was so impressed because when learning something that I actually need I'm planning to work out for future. I'm nourishing my children, we have educated about that. And then, when I learned the relationship with wife I was planning how I'm going to act for wife and children at home. (Jun-sung Park, 2HW-1, L14)

In the liberal education program, Daejeon factory workers were educated in both information related to real life and contents for cultural life. Most of them were satisfied with learning both of them because those educational contents were helpful for planning the future and for reflecting on themselves. In particular, one of the most popular classes was English. Although several educational programs were continuously changing, the English class was conducted every time on training day. As Jun-sung Park described:

Since joining this company, I have studied so far English in the every educational day.

There has been always English class. I really like it. But I don't speak English fairly good.

I am still nervous when I meet foreigners. As most of Korean people, I cannot say a word,

that's my level, but I really like what I come to learn it and what I can speak once with English teacher because there are few such chances [to speak English] for general people. If not a particular job or working with foreigners, there are no chances that talk simple words or communicate in English, even greetings. But when we work on the shop floor, [sometimes] foreigners come. Then although I cannot understand their words 100 %, I can listen to [a few] words occasionally. In such a case, I can combine and understand it. (laughing) (Jun-sung Park, 2HW-1, L22)

When I participated in their English class taught by Korean lecturer, they studied conversation for business trips and various sentences for working in English. In particular, they concentrated on the sentences for using directly on the shop floor, for example "your head may touch the machine." Although they were low level of English, they repeated the lecturer's words slowly and questioned actively when they had difficulties. But they were less active comparable with other classes; there were a few workers who were not confident. The Korean lecturer tried to lead their speaking with easy and interesting example sentences. In the middle of the class, the lecturer caught the workers' attention using information related to children's English education.

Daejoen factory workers have acquired various knowledge and information out of educational programs as well as from communication with colleagues on the shop floor. Thus they were always learning something, anywhere, in places like the workplace, classroom, or

cafeteria, and moreover, the learning activities have brought out their various changes. Beyond just the portion of learning contents, they have been improved gradually through their overall abilities including everything such as working skill, cultural knowledge, and foreign language:

If we learn working as knowledge, it would be changed not only ‘working’ but also ‘person’ more and more. I don’t know what is the meaning that I go this way, but the abstract mind that anyway it’s better to go this way [for me]. I think the correct answer is that a little by little I’ve changed. I’m not acting after learning some knowledge, but adding [something] little by little at the moment. (Jin-woo Jo, 4LH-1, L27)

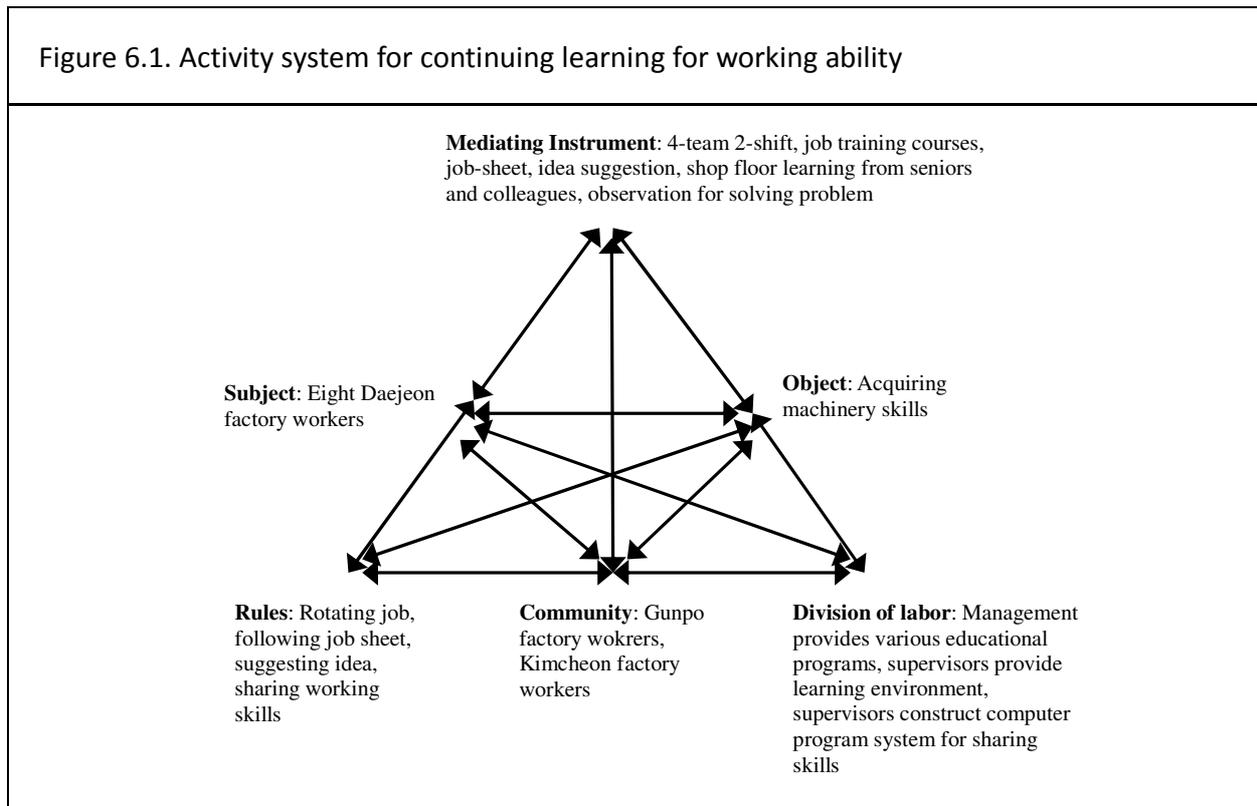
As Kyu-ho put it, “Suddenly, I have already come up. I stated before, I was in the bottom (the lowest level) related to knowledge. Although I was the bottom, I came up through practicing continuously such things (learning contents) without realizing it” (Kyu-ho Lee, 2JH-1, L32).

### **Continue Learning for Working Skill as an Activity System**

The aforementioned contents of “tasks of workers on the shop floor,” “multi-skilled workers,” and “educational program” can be examined as “continuing learning for working skill” as an activity based on Cultural-Historical Activity Theory (CHAT). The Daejeon factory workers (as the subject) have tried to acquire the machinery skills (as the object) through 4-team 2-shift, job training courses, job-sheet, idea suggestion, shop floor learning from seniors and

colleagues, observation for solving problem (as the mediation). Currently, Daejeon factory has performed rotating job, following job sheet, suggesting idea, and sharing working skills (as the rule) to factory workers. They have tried to acquire machinery skills (as the object) through practicing such mediations and rules. The management provides various educational programs, supervisors provide learning environment, and supervisors construct computer program system for sharing skills (as the division of labor) in order to enable them to acquire machinery skills. This learning environment system has been proceeding for Gunpo factory workers and Kimchen factory workers (as the community) as the other plants of Pruge-Clark. Thus they have been encouraged their continuous learning through interactions between above elements (See Figure 6.1).

Figure 6.1. Activity system for continuing learning for working ability



## Positive Human Relationship

### Difficulties of Human Relationships

In the product line of Daejeon factory, cooperation between team members on the shop floor is important, because the machines should not be stopped for 24 hours when they work for 12 hours day and night. Thus, the product line has been operating through backing up each other when factory workers are going out to take a rest or eat something. As Soo-hyun Jung described:

It has to operate organizationally because if this worker goes out to take a break then the other worker has to come to work, and don't stop. The position rotates them like backup.

It's divided. If one person goes out, this person enters into there, and then if this person goes out, the other person enters. If they have some time then they help each other, and despite the same part if there is harder part, less hard part helps it. (Soo-hyun Jung, 4BW-1, L5)

Therefore, cooperation between team members has been quite important on the shop floor. They have to solve the various problems that occur while manufacturing by discussing with each other the skills, knowledge, experiences, and so on, because each of the position could have an influence on the other positions' problem. Thus they need the ability that can understand overall manufacturing process in each of the position. Jun-sung Park described it:

[If] there are no particular causes, nevertheless if the machine stops frequently we discuss each other because when problem occurs, there are many cases to occur problem in back part because of the problem of front. Practically, the problem is occurred continuously here. ... First of all, we check where the trouble occurred. After checking, there are the front where gives the causes of trouble, we are checking all things. After checking all, then we restart the machine and check it. We check both here and the problem of the front, if it seems the front then we do trouble shooting at the front or if here is problem then we do trouble shooting here. (Jun-sung Park, 2HW-2, L5)

However in the product process, with cooperation on the shop floor, there cannot help but

be large and small conflicts between team workers, because they have common responsibility. That is, occasionally someone might think “why do I have to work more than others.” When I interviewed, most of participants confessed that although cooperation with multi-skills is good for them, there are many difficulties related to human relationship. For example, one participant said:

I think it cannot be ignored the conflicts between colleagues. What we are working is person to person, i.e. shift working. Because many people work in just one part with exchange working, there are a lot of conflicts with colleagues. ... Because we are working together unlike office working something like that, for example when I was coming back from taking a break, actually I expected that my colleague was done to some degree because [if he was done] I'm easy. But there was a colleague who didn't do that because all people are different. Then, after taking a break I'm so busy. Then, it can occur that I don't want to work for him. There are such vicious circles. (Jin-woo Jo, 4LH-2, L1-2)

In this second interview, Jin-woo Jo poured out the difficulties that he had undergone because of the failure to promote. He had thought that just technical ability is the most important to be recognized as a competent worker, rather than human relationship. However, he had failed to be selected as a leader operator (team leader) a few times because seniors didn't like his

selfish and impolite attitudes toward colleagues. At that time, he couldn't understand the situations, but gradually he has realized the importance of human relationship for cooperating work. As he described it:

Although I was hard at that time, I adapted to the situations. I have tried to change with mental attitude. I'm still trying in particular I'm trying not to make conflict. Because I know how hard it is when conflict occurs. (Jin-woo Jo, 4LH-2, L10)

In addition, there have been the conflicts based on the generation gap and the relations between senior and junior. In Korea, there is the culture of polite attitude; younger person should respect older person, but the later should give merciful advice to the former. Likewise, in the relationship between senior and junior there are polite attitudes just like younger and older person. However as times change, there has been increased intergenerational conflict that has not been occurred in the past. In the words of Kyu-ho Lee:

In the past there was no this kind of conflicts, but currently there are intergenerational conflicts. They [younger people] have different dimension of thinking. Older people like me teach, I don't know teach [laughing] is right word, teach them behind of them [younger people], [we do] not show it them [younger people]. We take care of them invisibly, but on the other hand the younger people express directly their dissatisfaction. Then in the position of senior because he didn't intend like that... so conflicts occur.

When I [senior] was young I was generous, but you [junior] dissatisfied it. (Kyu-ho Lee, 2JH-2, L3)

Because Daejeon factory workers have been conducting in the cooperating system with multi-skills based on job rotation and competitive level system, the relationship of person to person has been so important. Thus in the almost of the interviews, most of participants who are both team leader and team member talked about the difficulties of human relationship and cooperating work. They have had the willingness to solve conflicts in their respective area, and they have been provided various educational programs and activities for cooperation and balance by company. That is, because the management has seen conflicts of relationship, they have tried to improve human relationships through creating an environment of human respect, providing various programs such as communication skills, conversation with senior and junior, leadership training, team discussion, and so on.

### **Horizontal Relationships**

The Daejeon factory building includes the office building and the manufacturing building, and both are connected by a passageway to go to plant. When I first visited in Daejeon factory, I was guided to the office building and I saw that all workers were wearing same uniform: dark blue and green (Pruge-Clark's symbolic color) jumper and grey pants. When I visited during the

summer, they were wearing the same clothes: sky blue shirts and navy pants. The office workers and the product workers were all wearing the same uniform—even the plant manager, who is the highest position in Daejeon factory. In fieldwork, I asked a few office and factory workers why all the workers were wearing the same clothes. Most of them said that it is in order not to divide factory workers and office workers with clothing. They answered that it is not a special thing, because all treatments for office and factory workers are almost the same.

I found other efforts not to divide office and factory from the building structure. When I arrived at the main gate of Daejeon factory in the first time, I couldn't find where the plant is because there was a big and wide building. But the big and wide building included the plant and the office. In the building, there were rooms for relaxation, studying, computer usage for factory workers next to working rooms for office workers. The office and factory workers were friendly each other and learned each other's names.

In Daejeon factory, the horizontal relationship was emphasized by the workers themselves as well as management. Most of Daejeon factory workers are satisfied in the horizontal environment that gives them respect, equally with office workers. Dae-jin Park who has been working in Daejeon factory for about 17 years said that:

Long time ago I went to [another factory] for practical training, but there were too much differences between operators and office workers. [But in this company] the most my

favorite was the atmosphere free of discrimination when I came this company. (Dae-jin Park, 3JM-1, L19)

Likewise, this atmosphere influenced the relationship between team leader and team member or senior and junior. In particular, most of leader operators showed the willingness to give respect to their team members, like office workers who were respectful of them. That is, I saw their positive attitudes to overcome by themselves the interpersonal conflicts which occur inevitably while cooperating on the shop floor, based on the horizontal relationship as the cultural characteristics. Jun-sung Park described this:

My team is a family-like atmosphere. If our team members including team boss have difficulties or inconvenient details and improvable details, we can easily go to talk about worries [each other]. [In this company], there is much horizontal organizational atmosphere not vertical organization unlike other company. Now I am a leader. Likewise my team members don't have difficulties toward me, they think and talk to me like a brother. Likewise I am not the position to order something to them, but I talk them "are you ok to do this?" Then we are comfortable each other and it's comfortable to work with talking and discussing each other rather than ordering. (Jun-sung Park, 2HW-2, L1)

As Soo-hyun Jung said:

If I'm not interesting with my working, all members become harder. If any of the same

members doesn't fit into the team, the other members are harder. Although works are hard, I think the interpersonal relationship has to be comfortable and interesting while working. I heard such things many times in the class. I'm trying to do so. (Soo-hyun Jung, 4BW-1, L4)

The horizontal atmosphere between workers has been practiced with linkage to "human respect" as one of the several management philosophies (human respect, customer satisfaction, social contribution, creating value, leading innovation). When I asked which philosophy is the most impressive for them, almost all participants answered "human respect." When I asked who is the human (i.e., who is the subject of respect), most of them answered themselves or employees and all humans including them, and they thought that they have been respected in the company. They thought that customer satisfaction (another one of the several management philosophies) is possible after they receive respect from company. That is, if they get respect they can respect others. They emphasized that they are working in this company because they like this job, and therefore, they can manufacture the best products for customers' satisfaction based on human respect. They thought that when they are working in the optimal environment, at last they can manufacture the quality of products, leading to customer satisfaction, out of human respect.

Ki-hyun explained this:

If the purpose is just money, honestly it's so hard to work day and night shift. If I

considered just [money], I couldn't work here so longtime. Maybe almost workers quit this job. But first of all, I like people, company, and management philosophy, not money. ... They regard me as not a machine which makes money through manufacturing products, but a human. ... Some other company does not pay the salary because of exploitation. But this company makes the atmosphere that we can work because we like here. Above all, when interesting it we can continue to work. (Ki-hyun, Kim, 1BH-1, L23)

As Jin-woo Jo said:

We cannot live for other people. [But] the reason why I'm living [working] based on company's philosophy is that it can be possible to do customer satisfaction based on human respect when we make quality of products and we do our best. ... When we manufacture suitable product, it can be accorded to customer satisfaction and human respect. (Jin-woo Jo, 4LH-1, L13, L15)

When I observed Daejeon factory workers in class, climbing, break time, cafeteria, meeting, and so on, they talked a lot with each other about many issues such as family, health, colleagues. They have tried to communicate much with colleagues in order to overcome the interpersonal conflicts that can occur while working, so that they can manufacture the optimal products based on quality and safety. In the shop floor, because the small things in the front can become big problems, communication with colleagues is so important. Thus they communicated

constantly, inside or outside of the factory, and checked respective body and mind condition,

based on respecting each other. Jun-sung Park highlighted this:

We are working with person and person for 12 hours. Thereby although I work with machine, practically I work with person and person. We are trying to know much about colleagues through much communication. Above all, we should do not hurt and do not make waste, personally first of all my body condition should be good and healthy.

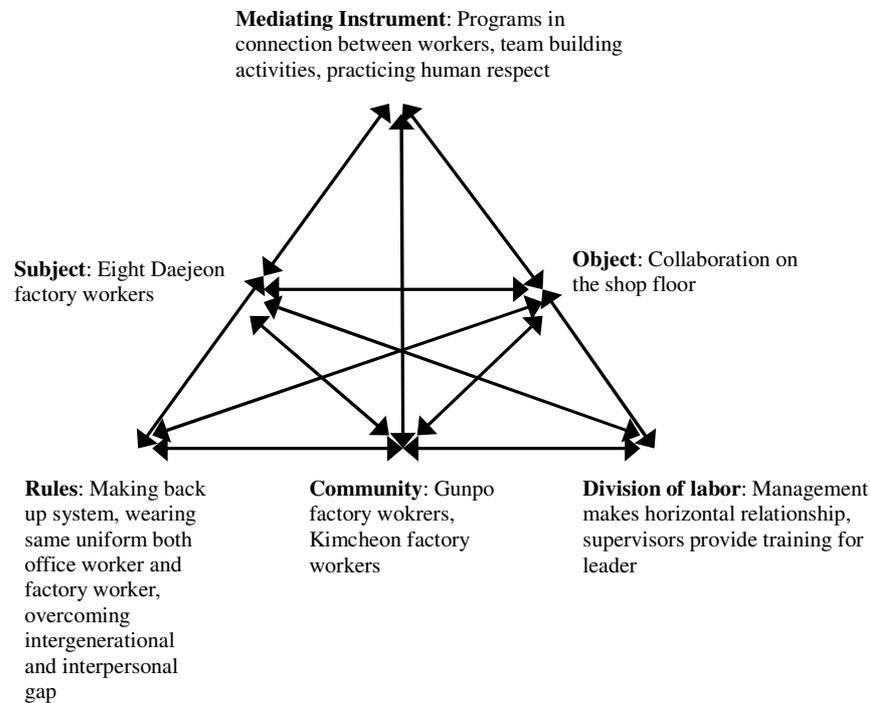
Because of such things we communicate much with colleagues. (Jun-sung Park, 2HW-1, L31)

### **Positive Human Relationship as an Activity System**

In Daejeon factory, the “positive human relationship” (as the activity system) that is derived from the efforts to overcome the “difficulties of human relationship” based on “horizontal atmosphere” is an activity based on CHAT. Daejeon factory workers (as the subject) are needed collaboration on the shop floor (as the object) because they have to back each other up (as the rule) with cooperation while working. However in the shop floor, there cannot help but be the interpersonal conflicts because of the backup system, and thus they have tried to overcome them through conducting programs to create connections between workers and teambuilding activities (as the mediation) in order to make collaboration on the shop floor (as the object).

Currently, human respect has been practiced actively, in various ways such as factory workers and office workers are wearing the same uniform in order not to divide or placing the factory workers' room next to the office room (as the rule). The management has made the horizontal relationship in order to emphasize human respect and provided the training for communication skills (as the division of labor). The horizontal relationship based on human respect has been proceeding for Gunpo factory workers and Kimchen factory workers (as the community) as the other plants of Pruge-Clark. Thus they have tried to intentionally make and continue the positive climate in the workplace through interactions between all elements for collaboration between workers on the shop floor (See Figure 6.2).

Figure 6.2. Activity system of positive human relationship



## Family Affairs

### Linkage of Workplace and Home

Most of Daejeon factory workers have enjoyed time with family for much time of their four days off. They can hardly meet other friends besides working colleagues, because many of their off days are weekdays rather than weekends, unlike other occupations. Thus they have spent more time with family. Someone did not like that he could not meet friends often, but most of them were satisfied with extended family time.

Among the Daejeon factory workers who I met, many were married, regardless of the age

and the position. Thus in their talking, their family story was inevitable issue, such as relationship with wife, parents, and children. In talking about family, I saw that they have tried to make happy family as a good husband, son, and father. In particular, they applied to their family what they realized from relationship with colleagues and what they learned in the class, to improve the relationship with family. As Jin-ho Song said:

My position as a stacker task was to arrange their [other workers] tasks and order someone to clean, maintain and change with microphone. Now I rotated my job to an inspector. But in my ordering position, although I was tiresome I said “let’s do it together,, “let’s clean together, if you can go air gun then I can clean with a mop” rather than “you [junior] do it” or “please you [senior] do it.” I considered many things that we can do together. In former days, I adapted this way to my family. It is comfortable that I do something with my daughters rather than “do it, do that” with a forceful voice tone.

(Jin-ho Song, 1YM-2, L9)

Although Jin-ho Song switched his task from stacker worker to inspector, he has still considered communication skills for interpersonal relationship that he has realized while working as stacker worker, and applied it to his daughters in order to close to them. His communication skills were not from other people’s idea but from his own acquirement through undergoing trial and error. As Soon-hyun Jung described it:

I think, what I am considerate colleagues is a human respect toward colleagues. Likewise, my family too. ... Actually, I supposed to think in the position of my children, but there are many times to fail. [But] I'm always considering that I have to give respect to children, but you know. Although they were acting similar with my younger time and I knew I should give a good talking to them, sometimes I rebuked them firstly. So I was regretful. (Soo-hyun Jung, 4BW-1, L8)

Soo-hyun Jung tried to apply human respect, which is corporate philosophy, to his children in order to educate them, because as a team leader he knew already how important human respect was to building good interpersonal relations in communicating with people. Thus because he could know his children's thoughts when he rebuked them, he has been considering human respect. It seems that they showed clearly their continuing learning attitude derived from the balance between working life and personal life.

### **Improvement of Relationships with Family**

Three days off and one day for training based on 4-team 2-shift considerably influenced the improvement of family relationships for Daejeon factory workers. In the day off, most of them spent time with family:

In the day off, I have to take care of my babies. [smiling] The eldest child is the second

grade, the middle child is seven years old, and the baby is seven months. People said me that it is a loyalty to the nation [laughing]. (Ki-hyun, Kim, 1BH-1, L11)

Many of the Daejeon factory workers I met have two or more children, even though currently, in Korea low fertility is a serious problem. When I asked why they have many children, a few workers answered that the reason might be the employment stability. That is, they can plan their future due to the tenure system. In addition, their three days off has been influential; they are taking care of children with their wife. They have established the family-centered atmosphere at home as well as in the workplace through spending time with family during the three days off.

Jin-ho Song described it:

We [he and his family] have been increased the time for family travel with my parents due to 4-team 2 shift. Generally, it's easy to go to trip with my family, I mean it's easy to go on a trip with my wife and children, but it's not easy to go with sibling and parents. ... Because I can go on a trip at weekday as well as weekend, we have enough time. (Jin-ho Song, 1YM-1, L34)

He also said:

I had many the times for take a rest due to 4-team 2-shift. So I gave her personal time to my wife through helping her and taking care of baby. So she is now attending the Korea National Open University. ... I can give her personal time at the same time I have more

time to be with family. (Jin-ho Song, 1YM-1, L31)

Their three days off played a role to increase spending time with their family, even their parents and siblings, and this influenced their family's life. Jin-ho's wife could start university study due to his long day off and some worker helped at his father's orchard. That is, such a family-centered culture has been led even the changes of their family.

The changes of perspective toward their family brought out the changes of their family's life as well as their own life, and such changes influenced each other in the workplace. Thus they could reflect and change the current their own attitudes toward respective family at the sight of each other. For example, Kyu-ho Lee said:

Someday, my wife said me that I am inflexible. ... I got shock to hear that. ... It was so hard to understand. So I asked colleagues, there are many of the workers who do well for family and there are many colleagues who are loyal to their wife. ... They said help housework something like that. So after heard, I'm helping all housework and taking care of children's study ... Now I'm loyal to housework. [smiling] (Kyu-ho Lee, 2JH-1, L28)

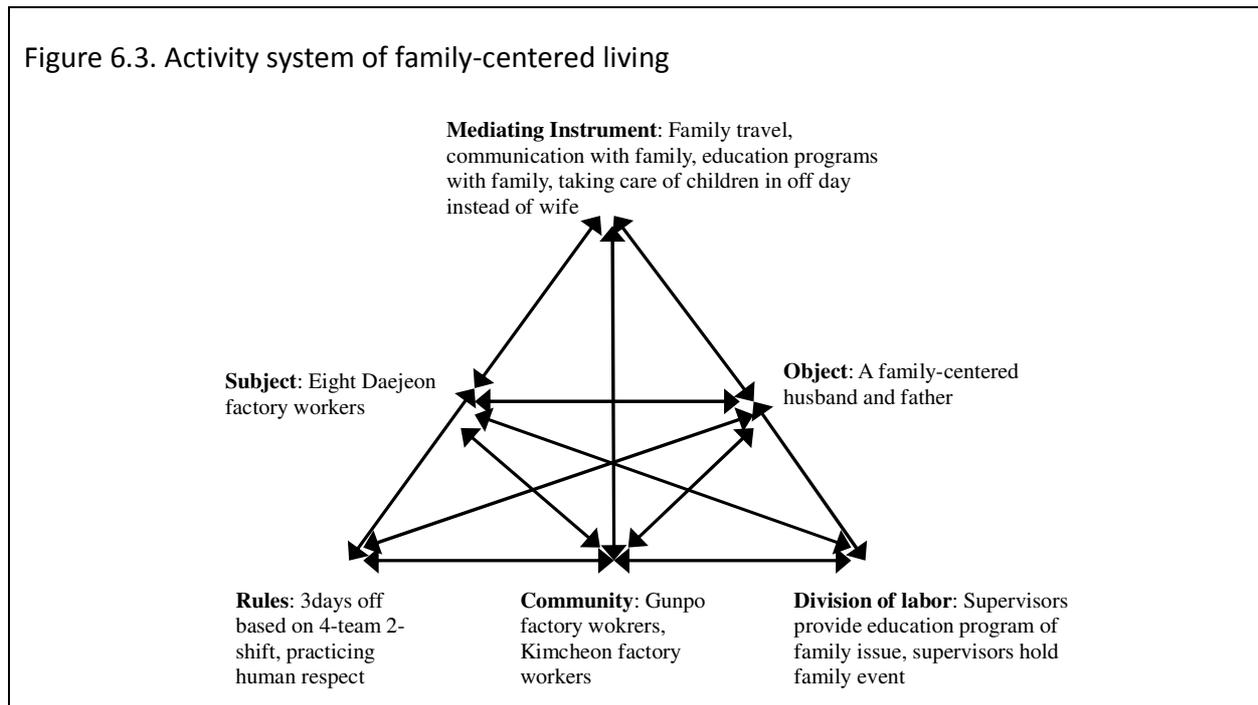
The family-centered culture has led their personal life toward being a good father, son, and husband, i.e. a good family man. In particular, this culture is not limited to just their personal family life at home, but rather it has been influenced and connected by their working life such as human respect, communication skill, discussion of family with colleagues, training, and so on.

Their life was the practice of balance between working and personal life by itself.

### **Family Affair as an Activity System**

The ‘family-centered living’ (as the activity system) can be examined as an activity based on CHAT by “linkage of workplace and home” and “improvement of relationship with family.” The Daejeon factory workers (as the subject) have been increased the family time because of three days off based on 4-team 2-shift (as the rule). They have adapted human respect or communication skill that has been learned in the workplace (as the rule) to their wife and children in order to improve the relationship between them. Thus they gradually have become a good father, son, and husband (as the object) through improving the relationship between family through family travel, education programs with family, and taking care of children in the three days off instead of wife (as the mediation). In addition, their family’s life has been changed (as the division of labor) by their efforts to improve the relationship with family. The family-centered culture has been permeated in Gunpo factory workers and Kimchen factory workers (as the community) as the other plants of PRUGE-CLARK. They have continuously tried to be a good family man through interacting between above all elements (See Figure 6.3).

Figure 6.3. Activity system of family-centered living



### Creating Identity as a Factory Worker

#### Corporate Positive Image

As I stated, Pruge-Clark has been popular, with a positive image based on the ethical and environmental management for job seekers in Korea. Such a positive image has influenced factory workers' working life and personal life. Most of Daejeon factory workers are proud to be a member of Pruge-Clark, and they have a strong attachment to their job and Pruge-Clark. Thus most of them have thought that they should act in a way that is fitting to the positive image inside or outside of company. Because many of the Daejeon factory workers were the founding (or around that time) members, they thought that they have played an important role in developing this company, and they believe they should continue to have responsibility further.

Ki-hyun Kim described it this way:

There are few people who have hostility to Pruge-Clark.

(Q. How do you feel about that?)

I feel really great. When we are working, we think we have developed this company.

Because this company has been developed, we have pride. ... We don't think this company is conglomerate, still small and medium business or a little bit big small and medium business. We would be going far. (Ki-hyun, Kim, 1BH-1, L19-20)

Jun-sung Park described it another way:

The products of this company are green products. We have discussed environment something like that and worked socially for environment. ... All our products are recognized internationally as the green product as well as in Korea. Thereby, unbeknownst to me such things are in my mind. Conserving water at home or reducing disposal products, I am practicing it without realizing. When I went out to play, I collected my garbage and brought it at my home. Such things are in my mind. (Jun-sung Park, 2HW-1, L26)

They have conducted continuously their roles as a member of Pruge-Clark in working life and personal life in order to keep going the externally positive image at present. Thus they regarded Pruge-Clark as a companion who should have been developed with themselves rather

than as a company which gives salary to them. In other words:

I think we need more efforts for survival of company. Although we can have bigger efforts, we need to conserve anything on the shop floor and to manufacture anything well. ... I think company and I are going together. I think company and I are community bound together by a common destiny. So I'm trying to conserve office supplies on the shop floor.

(Soo-hyun Jung, 4BW-2, L11-12)

When I met Daejeon factory workers, most of them tried to emphasize that the external positive image is consistent with internal conditions. It seemed that they have been proud of that. In the “conversation with the head of department” program, I saw that they actively questioned about what is the current crisis, how is going to be solved it, what should they do on the shop floor, and so on, to the head of department who holds the highest position in their part of the factory. The head of the department sincerely answered, describing various plans and emphasizing that he trusted them. Substantially, they were used to talking and listening, or questioning and answering. Jin-ho Song said:

This company has shown externally many things. ... But if there are internally problems [for example] they don't invest us, provably other company might do it. But do you know employee turnover rate of this company? It's almost 0%, pretty low. The reason is that our opinions get respect much in the workplace. The section chief, deputy head of

department, and head of department try to listen to other's opinions. ... Because the external contents are the same to internal things, employees recognize this company and want to work continuously in this company. Because that person tries to give respect me.

(Jin-ho Song, 1YM-1, L20-21)

### **Social Contribution as a Social Member**

In the corporate atmosphere based on human respect, Daejeon factory workers believe they have contributed to this company and this society through manufacturing good products. They focused on the fact that currently they are growing out through being faithful to their role, rather than getting annoyed the social prejudice toward factory workers. They are interested in how they are able to contribute to this company and this society through considering that what they have to do in the workplace and what they can do to develop company. Jun-sung Park described his experience:

Although I have worked here for earning money, now I have different thinking. Because I have got many things while working here, it seems such thoughts are changed. As I stated before, my life has been changed much due to education, people, and much information. What I'm working in factory is, people said us as a 'Gongdori' [Korean word; it means factory worker with slang. It is a belittled word] with old word. But I have started to think

I am a social member rather than such a thing [Gongdori]. What can I work in this company? Thinking so has increased more and more. When I joined firstly I had a purpose of earning money, but now I'm considering more that how do I have to work for this society, this company, and my family. (Jun-sung Park, 2HW-1, L24)

Among Daejeon workers I met, there was no worker who belittled himself or herself as a 'Gongdori' or who was pessimistic about social reality. Rather they regarded their job as a social contribution and were satisfied with the role as a member of society through manufacturing qualified products. That is, they have established an identity as a factory worker through developing the expertise of their work and doing their best for qualified products. Ki-hyun Kim said, "As producing of diapers, women's employment was increased, and thus they became comfortable. I recognize that I contributed somewhat to this. If there were no diapers, the cloth diapers had to be washed and boiled. It's huge" (Ki-hyun Kim, 1BH-1, L22). Dae-jin Park expressed a similar thought:

Diapers are needed because there are babies. Although in the past people used the cloth diaper, in recent years they have used disposal diaper more. So someone has to make it. I have been in charge of it. Honestly, how to say, I have been contributing a lot to take care of babies. I am an indispensable man [in this society]. (Dae-jin Park, 3JM-1, L33)

They thought that they have contributed to women's social participation as a social

change through manufacturing diapers. Although there is not much relation directly between their small tasks while producing diapers and many women who are taking care of baby, they see their job as an important element for driving social change rather than as a trifle. In Korea, there have been still unavoidable prejudices toward product worker, but they were not shaken too much. Rather they thought that they have a kind of responsibility to encourage women's social action.

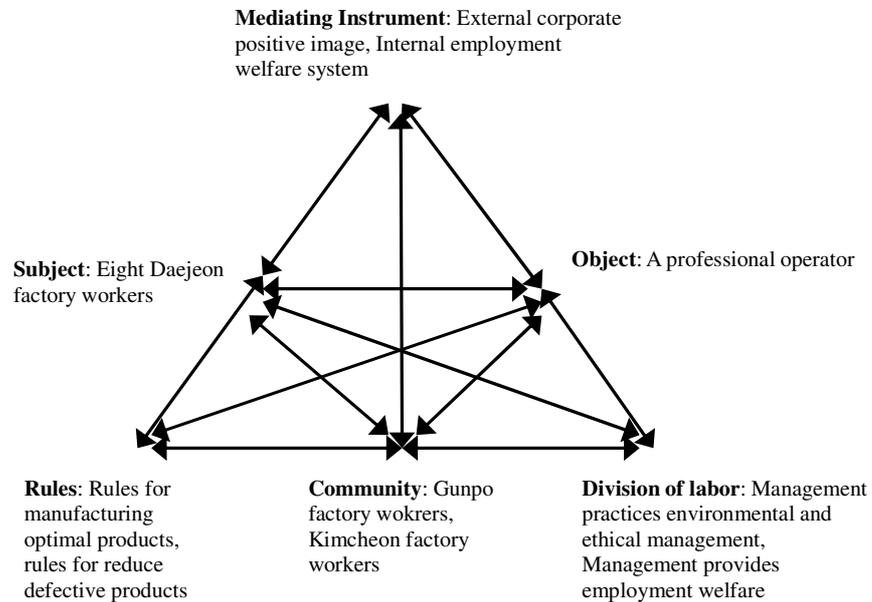
They could grow up as a social member who contributes to developing society through the external positive image of the company and through the internal employment welfare suitable for corporate reputation. They tried to maintain externally the corporate positive image through reducing defective products, and they did not want to be harmful to the corporate reputation due to their small mistakes. No one has imposed this sense of social responsibility on them, but they have established their identity as a social member themselves, based on the external corporate positive image and various internal welfares. To be given the responsibility as a social member for them played a role as a driving force to be faithful to their job which manufactures qualified products.

### **Social Contribution as an Activity System**

Daejeon factory workers' "social contribution" (as the activity system) can be examined

as an activity based on CHAT based on the “corporate positive image” of Pruge-Clark and their “identity as an operator.” Daejeon factory workers (as the subject) have been trying to be a qualified operator (as the object). They have been proud that Pruge-Clark is practicing environmental and ethical management and satisfied that they are provided employment welfare (as the division of labor). They have gradually established the identity as an operator due to external corporate positive image and internal employment welfare system (as the mediation). Thus they realized that their role for this company and society is manufacturing optimal products and reducing defective products (as the rule). Gunpo factory workers and Kimchen factory workers (as the community) have been created identity as a social member who contributes to social change through manufacturing products on the shop floor.

Figure 6.4. Activity system of social contribution



### Expansive Learning through Resolving Contradictions

As I stated above, I divided Daejeon factory worker's working and personal life with four activities: "continuing learning for working skills" (A1), "positive human relationship" (A2), "family affair" (A3), and "identity as a factory worker" (A4). These four key activities continuously interacted with each other with various contradictions, which occurred between them. In this section, based on CHAT I depicted the expansive learning that was derived from the relationships between them through understanding the gradually expanded phases with drawing triangles.

### **Interacting with Contradictions between Four Activity Systems**

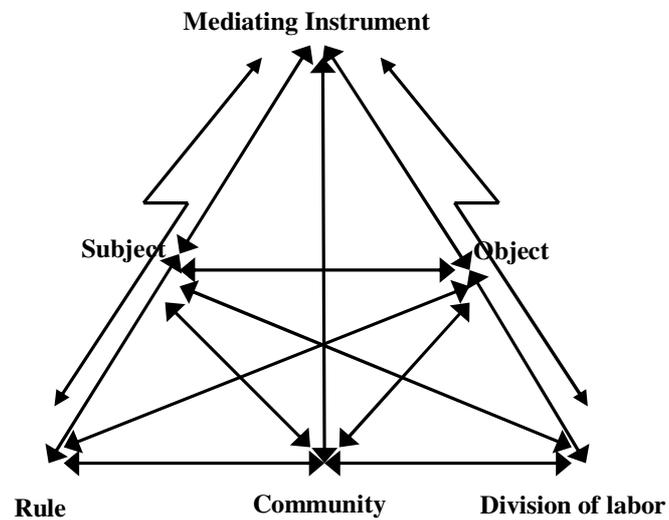
In CHAT, the contradiction's key role is to investigate learning (Lord, 2009). As I mentioned in Chapter 3, contradictions are not only historically accumulated structural tensions between activity systems unlike simple problems or conflicts, but they also enable the activities to develop or change (Engeström, 1999), because contradictions aggravate the structural tensions that are constantly requiring temporary or permanent resolution (Lord, 2009). That is, contradictions arise continuously to bring about the solution of tensional situations. In other words, they would be the structural tension situation where the solution is embedded. Therefore, when this concept of contradictions is applied to education and training purpose, learning emerges as a result of the resolution of the contradictions.

In the four activity systems of Daejeon factory workers, there were various contradictions, and the contradictions played an important role in workers' improvement. As I mentioned in Chapter 3, contradictions can occur between internal elements of one activity system and between two or more activity systems (See Figure 6.5). Firstly, in the first activity system "continuing learning for working skills" (A1), there were a few contradictions between internal two elements. Daejeon factory workers (as the subject) had contradictions that they have to learn new skills (as the mediation) due to job rotation system (as the rule). Some workers have experienced difficulties with continuously learning new skills for various personal reasons, but

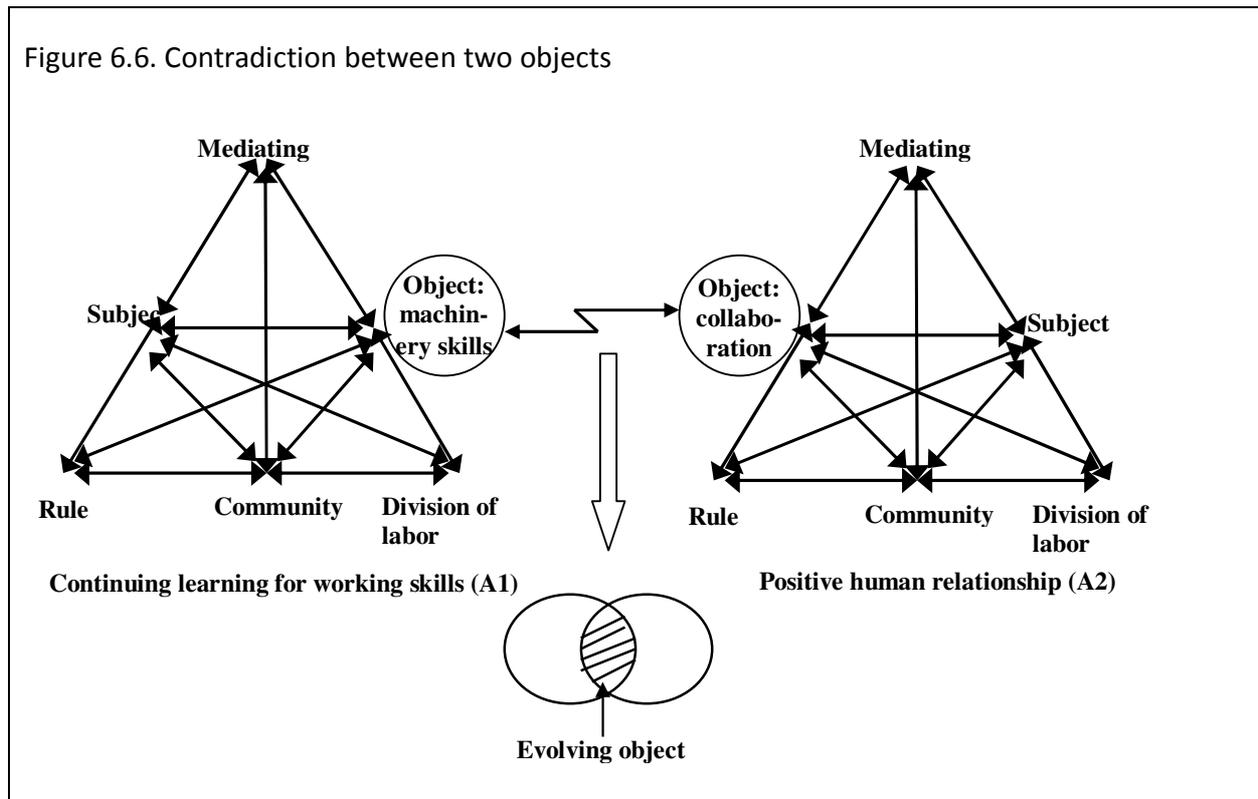
they must move to the new task on the shop floor within a certain period. Another contradiction was that sometimes they (as the subject) have experienced difficulties to understand training contents such as LEAN or Six Sigma (as the mediation). The management of Pruge-Clark has provided the business training programs to factory workers as well as technical training (as the division of labor). However because the contents of such business training do not relate directly to their job, they were not easily able to learn it. In the first activity system, there were contradictions between mediation and rule, and between mediation and division of labor.

Likewise in the second activity system “positive human relationship” (A2), there were some contradictions: Daejeon factory workers were working with a backup system (as the rule) for dealing with absences on the shop floor, but sometimes there were difficulties in interpersonal or intergenerational relations because of the communication skills (as the mediation). They talked or didn’t say their thoughts to colleagues due to their own preference for treating other people, but sometimes such communication strategies brought out the interpersonal and intergenerational opinion gap.

Figure 6.5. Contradiction between inside elements of activity system



Secondly, contradictions occurred between two activity systems “continuing learning for working skills” and “positive human relationship” (A1 and A2). Jin-woo Jo tried to develop his skills to be a team leader, rather than human relationship, because he had already recognized his technical abilities. However he was not promoted to the leader operator because the existing leaders did not like his selfish attitudes toward colleagues (Jin-woo Jo, 4LH-2, L8). That is, there was a contradiction between “machinery skills” as the object in the first activity (A1) and “collaboration” as the object in the second activity (A2). He supposed that the individual machinery skills were the most important requirement to be a leader, rather than collaboration with colleagues.



However those contradictions were solved with the other elements inside the activity system or with interactions between the other activity systems, and thereby learning occurred there. The resolution of contradictions plays a role that “the activity system integrates and augments the new knowledge and ways of learning created leading to expansive learning” (Lord, 2009, p. 64). That is, the activity systems gradually have been formed expansively learning through constantly solving the contradictions.

In the first activity system (A1), although some workers didn’t understand why they had to acquire new skills within a certain period, they realized that all workers cannot conduct easy working through interactions various elements such as human respect or horizontal relationship

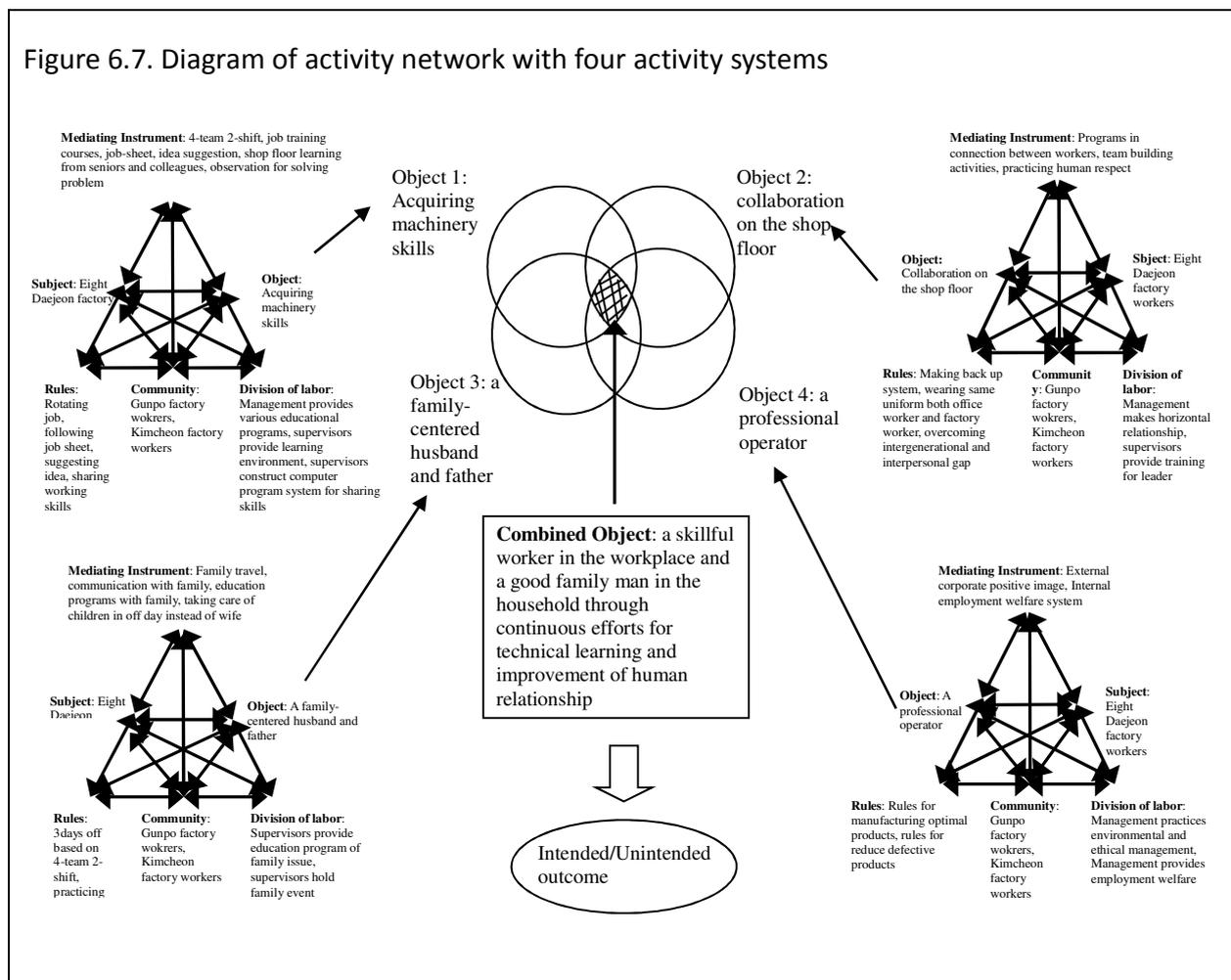
from the second activity system (A2), and after all they recognized the importance of collaborations on the shop floor. Likewise, although there were factory workers who initially had difficulties with studying the business training program, eventually they understood and adapted it to their working, as a result of the continuous education class. They have continuously changed their thoughts, behaviors, and perspectives due to gradually resolving their difficulties. That is, through constantly solving contradictions, the activity systems have formed expansive learning. Likewise, in the second activity system (A2), although they had undergone difficulties in working system based the system for backing up each other, they eventually realized the communication skills for treating colleagues on the shop floor through practicing human respect as well as educational programs.

Between the first activity system (A1) and the second activity system (A2), many of the Daejeon factory workers have undergone the difficulties of human relationship because they needed to simultaneously be equipped with personal machinery skills and then adapt them to collective working based on cooperation. It was not easy to balance between the collective responsibility and personal working skills, because of various perspectives toward the manufacturing process. However, they have constantly tried to overcome interpersonal difficulties through various efforts, such as educational programs for communication skills, making horizontal climates based on human respect, or many changes for communicating with

colleagues, because human relationship influences much the daily manufacturing process. That is, the first activity system (A1) and the second activity system (A2) interacted to resolve the contradictions, and thereby, there occurred factory workers' improvement (learning) that they realized the importance of interpersonal relationship based on human respect.

### **Expansive Learning between Working and Personal Life**

According to Engeström (2001), "expansive learning activity produces culturally new patterns of activity" (p. 139). That is, Daejeon factory workers' expansive learning through resolving contradictions between A1 and A2 or inside A1 and A2 based on their working life made a new activity (A3) related to their personal life with family.



The first activity system (A1) and the second activity system (A2) as working life influenced Daejeon factory workers' family life (A3) as their personal life. Many of them were not used to disciplining their children or communicating with their wife because they had considered just making money; they thought making money is just their role for family (Kyu-ho Lee, 2JH-1, L27). Kyu-ho Lee said that he didn't understand why his wife was dissatisfied with him. However he could realize his wrong thoughts toward his family through communication with colleagues, educational programs, and so on. Thus, they have changed to family-centered

life through family travels during the 3 days off (based on 4-team 2-shift), disciplining children and doing house work with his wife. In addition, they adapted the communication skills that they had gained while working and learned in educational class to disciplining children and talking with wife. That is, the two activities (A1, A2) in their working life interacted with their personal life as the third activity (A3), and then there occurred the improvement (learning) of family relations through resolving the contradictions.

The expanded three activities of Daejeon factory workers produced the fourth activity system, “social contribution” (A4). Although some of them had prejudices toward product working, they could overcome the social bias through improvement of skills based on internal welfare such as educational programs, practicing human respect, horizontal relationship, and so on, and through their pride in the external corporate positive image. They could change to regard themselves as a social member who has contributed to social development (A4) rather than to belittle their job through the expanded learning based on interactions between A1, A2, and A3. Their activity started in working life (A1 and A2), because I observed them in their workplace, nevertheless I saw their personal life (A3), because their family affairs were influenced by working life, and then they came to view themselves as a member of society (A4) who contributes to society through balancing their working and personal life. That is, their learning gradually has been expanded by various activity systems.

My study began with observing, listening, and communicating about their working life in their workplace. They talked predominantly about the working story that occurred in the workplace such as their tasks on the shop floor, relationship with colleagues while working, several training courses, and so on. They have learned continuously in order to acquire skills for new jobs, promotion to higher positions, or be recognition for ability due to the job rotation system and vocational ability grade system. In their working life, there were interpersonal and intergenerational conflicts between workers as well as difficulties of acquiring skills. They were overcoming difficulties and conflicts through interacting environmental elements such as various educational activities, teambuilding programs, communicating with colleagues, practicing human respect, horizontal climate. Likewise, they were practicing what they realized in the process of overcoming the difficulties in the workplace for their personal life with family. Although I observed and asked about their working life, they also mentioned and reflected on their family affairs as personal life. In addition, they have realized their position and role in workplace and household, and they have tried to perform faithfully it. Furthermore they have believed that they have contributed to social development through practicing their role in workplace and household. The various activities that occurred in their working life have been expanded gradually to the activities of personal life due to environmental contexts, and finally through balancing both of them (working life and personal life) they have realized that they were contributing to social

development themselves (See Figure 6.7).

In the process of expanding learning there occurred a combined object created from the four activities, and then the outcome of the activities can be derived by the combined object. The four objects of respective activities were: (1) machinery skills or sophisticated personality, (2) collaboration or harmony, (3) a good family man, and (4) a qualitative operator. Between interactions with those elements of the four activity systems, the combined object was produced. Daejoen factory workers' object is "a skillful worker in the workplace and a good family man in the household through continuous efforts for technical learning and improvement of human relationship." Such a combined object can make several intended and unintended outcomes that were occurred by several expansive learning out of the four activity systems. (See Table. 6.1)

Table. 6. 1. Examples of intended and unintended outcomes

Intended Outcome	Unintended Outcome
Learn multi-skills for job rotating	Learn the way of saying to wife and children
Learn how to back up the other tasks	Learn how production of diapers contribute to this society
Learn the way of decreasing waste on the shop floor	Learn the way of control intergenerational gap
Learn how to lead team members	Learn use of interactions between colleagues for cooperation
Learn communication skills with colleagues	Learn the way of ordering to colleagues without discomfort
Learn the way of distinguishing defective product	Learn how to improve the interpersonal relationship

In this chapter, I understood and analyzed my data with Cultural Historical Activity Theory (CHAT) as the theoretical framework in order to see Daejeon factory workers' expanded learning through various cultural elements. In next chapter, I described how critical reflection could be related to expansive learning, how critical reflection could play a role as informal learning in the workplace, and how the meaning of critical reflection could be implied in workplace learning.

## **CHAPTER 7. CONCLUSION AND IMPLICATIONS**

### **Critical Reflection as an Expansive Learning**

In Chapter 2, I described critical reflection based on critical theory of Habermas.

Although Mezirow (1990) defined critical reflection as “a critique of the presuppositions on which our beliefs have been built” (p. 1), I added the idea of changeable situations in the relationships between individual and society based on critical theory of Habermas. In other words, critical reflection is to be improved and expanded from the status quo through interacting constantly in various contextual elements and situational factors with questions and critiques to the taken-for-granted, rather than staying there. The changeable situational elements play a role in gaining thoughts and perspectives in order to be expanded. The expansive learning based on CHAT was enough to explain critical reflection, because it can result from efforts for solving the various contradictions between several environmental elements. Thus I tried to understand critical reflection through depicting the process of occurring expansive learning based on CHAT. That is, in this study I attempted to define critical reflection that is considered in the interactions between the subject and unspecified contextual elements, unlike the planned cognitive steps.

### **Factory Workers' Critical Reflection**

I selected factory workers as the subject for this study for two reasons. First, the factory shop floor is a workplace where there is an elaborately planned repetitive task; factory workers might perform repeatedly the job. Second, there is the social prejudice that factory workers might be simple working people who are unsophisticated. That is, critical reflection could be further from them.

However, in this study I examined factory workers' critical reflection by showing the process of occurring expansive learning with analyzing their working and personal life based on CHAT. They have constantly learned something unwittingly at every moment while working on the shop floor or breaking in the lounge related to various things such as job skills, culture, economic, and interpersonal relationships. Their learning was not limited to simple problem solving, but rather it generated new activities for other learning. Their critical reflection was being conducted every moment and everywhere: they realized the appropriate moment to stop the machine through various experience or colleague's advice while working on the shop floor; leader operators devised communication skills for ordering to team members without misunderstanding through personal experience or leadership programs; they found out the way of disciplining children based on human respect; they realized how social changes occur due to their product working, and created identity as a social member. Such their changes were all

critical reflection. Their critical reflection could constantly be conducted by cultural and historical contexts around them. Critical reflection can take place in anywhere and anytime through interacting between situational elements. Therefore, all human beings can critically reflect on the status quo using various contextual elements around them in every moment.

### **Critical Reflection in Adult Education**

As classifying and categorizing of Brookfield (2000) and van Woerkom (2008), the definition of critical reflection has been studied based on the variety of theories such as ideology critique, psychotherapeutically inclined tradition, analytic philosophy and logic, pragmatist constructivism, and so on. However, in this study I attempted to define critical reflection as adult learning in the adult education rather than to combine the categorized meanings based on several theories. Thus I attempted to find the concept of critical reflection founded on emancipatory dimension of adult learning that enables learners to become free from paradigm or cultural canon (Mezirow, 1998) based on critical theory of Habermas. Although Mezirow (1981) and Brookfield (1987) are defined critical reflection based on critical theory of Habermas, they have suggested that critical reflection can be fostered by adult educator. Thus they have emphasized the role of adult educator in encouraging the adult learner to critically reflect on something (Brookfield, 2005b; Mezirow, 1990; Welton, 1995). However, in this study I regarded that critical reflection

can occur in anytime and anywhere as informal learning, and suggested the potential of critical reflection as lifelong learning. Critical reflection is not a skill or technique that can be fostered with developmental steps, but a way of learning. In other words, it cannot be taught by other people. Therefore in order to define critical reflection as informal learning in adult education field, it is necessary to elaborate how critical reflection occurs in people's life. Thus in this study I attempted to suggest the potential as adult learning through examining critical reflection from factory workers' working and personal life based on critical reflection of Habermas.

### **Critical Reflection as Informal Learning in the Workplace**

#### **Critical Reflection as Informal Learning**

In this study, I defined critical reflection as expanded learning out of the status quo through interacting between contextual elements and situational factors. I attempted to interpret critical reflection that is occurring by contextually changeable conditions as informal learning that can take place in everywhere and at any time through various contextual elements.

In the existing researches (Coombs & Ahmed, 1974; Garrick, 1998; Marsick, 1988; Schugrurenky, 2000), informal learning has been explained as a type of opposite to learning in school or in the alternative educational institutions. However it is problematic to regard informal learning as a limited type, separately unlike school or institutions. This is because informal

learning can take place anywhere and anytime—it will occur in school or institutions, too. For example, when students are taught by a teacher in class, they can learn something during communicating with friends, playing soccer, walking alone, or having lunch through various environmental elements aside from the teaching by teacher. That is, although it is true that informal learning is a type of learning, it cannot be an opposite type of other learning because it can occur even in different types of learning regardless time and place. Therefore informal learning has to be understood as a way for learning rather than a type which is categorized by particular criteria.

I focused on this point of informal learning in order to illuminate critical reflection as learning. To critically reflect is not a curriculum or educational program which is planned by others, but is a way to be improved or enhanced by environmental events. Critical reflection is to be expanded out of status quo through interactions between contextual factors in anywhere at anytime. Therefore critical reflection is enough to be regarded as learning (i.e., informal learning because of being expanded constantly with situational elements).

### **Critical Reflection as Informal Workplace Learning**

All human beings can critically reflect on their taken-for-granted assumptions through constantly questioning and criticizing environmental elements. However, most people are not

aware of their critical reflection because it is invisible and abstract. Nevertheless, people are constantly critically reflecting on something. Of course, although they are not aware of their own critical reflection, they still continue to reflect critically.

However, in this study, I attempted to suggest critical reflection as informal learning of factory workers while working on the shop floor. I could see that their expansive learning has occurred through analyzing Daejeon factory workers' working and personal life. They are constantly conducting critical reflection during working on the shop floor, taking a break time, having lunch, communicating with family—in spite of themselves. That is, they continue to be improved and enhanced through questioning and criticizing to the taken-for-granted in every moment. In addition, their expansive learning has been continuously helpful for their working and personal life.

In this regard, I attempted to suggest the potential of critical reflection that can be a way of workplace learning for workers' development, besides systematic training programs. That is, we need to consider workers' informal learning in the workplace as well as their vocational learning. Workers' informal learning plays a role in continuously promoting their improvement without regard to hours, unlike vocational training program which is in the class. Therefore it is necessary to acknowledge and encourage their continuing learning without overlooking it. In other words, their critical reflection as informal learning has to be recognized as continuing

learning in the perspective of adult education. In the workplace, workers are not a simple hired man but a social member, and thereby their learning has to be conducted in the perspective of lifelong learning based on adult education rather than vocational training under a particular corporate goal. Therefore, in the perspective of adult education, workers have to be recognized as a human being in this society, and it is necessary to encourage critical reflection as lifelong learning in the workplace.

### **Implications**

Although critical reflection has been discussed by many of the prominent adult education theorists such as Mezirow (1990), Brookfield (1998), Welton (1995), there have been terminological and conceptual confusions to be established as a form of adult education. Thus in this study, I found out the meaning of critical reflection in emancipatory dimension that enables learners to make new assumptions continuously from the status quo based on critical theory of Habermas, and then examined the concept of critical reflection as informal learning of the workplace from factory workers' working and personal life.

That is, I attempted to find out critical reflection's theoretical concept as adult learning and its practical usage as informal learning in the workplace. Firstly, I suggested that the concept of critical reflection is necessarily understood as being adult learning through theorizing it based

on critical theory of Habermas because human beings can be continuously enhanced by reflecting critically on their current situations. That is to say, through critical reflection they can critically understand and interpret the contemporary ideology such as political, economic, social, and cultural issues, and continuously make new assumptions from the status quo. Secondly, I examined that critical reflection can occur in anywhere at any time of human beings' life through analyzing the data of Daejeon factory workers' working and personal life with ethnography approach of qualitative methodology. Moreover I could illuminate practically critical reflection of factory workers through seeing various contextual and cultural elements of their life in detail based on Cultural Historical Activity Theory (CHAT) as a theoretical framework.

Through describing critical reflection's theoretical concept and practical usage, this study attempted to suggest the importance of critical reflection as adult learning in human being's life and its usage as informal learning in the workplace.

### **Further Research**

Because it is included employees' lifelong learning as corporate philosophy, Pruge-Clark has built learning environment for factory workers such as opening educational courses, managing library, conducting idea suggestion system, and so on. That is, the Pruge-Clark managements have supported employees' continuing learning with various ways to enable

Daejeon factory workers to be improved continuously. In this study, it was analyzed that such a learning environment influenced to occur their critical reflection as informal learning, i.e. learning cultural context played role to enable them to critically reflect on their life.

Therefore, in future, it will be necessary to examine critical reflection of factory workers who is not provided the learning environment by the management. That is, it is necessary to find out that they continuously make new assumptions from the status quo through interacting with their given environmental elements because critical reflection can occur in the variety of situations.

But if it needs to study the usage of critical reflection as informal learning in the workplace, then it is necessary to point out on the influence of learning context because critical reflection can be occurred by the environmental elements. That is, it is necessary to find out how the learning context influences employees' critical reflection or whether if it can be helpful to enable them to critically reflect on their working and personal life. When understanding the definition of critical reflection, it would be possible to be utilized as the workplace learning.

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## **Appendix A: An example of the first interview guide**

### **1. Background** (focused on history)

- 1) Workers' profile and history
- 2) Workers' tasks on the shop floor

### **2. Working life**

- 1) Workflow on the shop floor
- 2) Relationship between personal working and corporate philosophies
- 3) 4-team 2-shift system
- 4) Educational programs in class
- 5) Job description
- 6) Goal for working

### **3. Personal life**

- 1) Relationship between family life and three days off
- 2) Personal life with family or friends
- 3) Enhanced personal ability besides job skills

### **4. Critical reflection on working**

#### **<Existential>**

- 1) The reason why you are working in this society

#### **<Relational>**

- 1) Relationship between other people in this society
- 2) Thoughts of relationship between factory workers and political or social climate

#### **<Praxis>**

- 1) Critically reflecting on working
- 2) Relationship between other position's people
- 3) Role of critique for changing

## **Appendix B: An example of interview questions**

### **The First Interview Questions**

#### **1. Background** (focused on history)

- 1) What is your name?
- 2) Which department do you work?
- 3) What are your position and role in your team?
- 4) How long have you worked in Pruge-Clark?
- 5) What's the reason why you chose Pruge-Clark as your workplace?

(\*In this question, I supposed to ask why they choose factory worker, but I didn't use directly the term 'factory worker'.)

- 6) Please explain me your position's role in detail.
- 7) Please tell me other organization connected to your job.

#### **2. Working life**

- 1) Please tell me from work to go home?
- 2) As I heard, Pruge-Clark's philosophy of management is special and many, among them what are you coming across your mind now?
- 3) When you are working on the shop floor, have you reminded the management philosophies?
  - 3-1) If so, when?, and Are they affected to your working?
  - 3-2) If not, why didn't you care about it?
- 4) As I know, Pruge-Clark is familiar with '4-team 2-shift'. Please explain me about it.

5) What is the strength and weakness of '4-team 2-shift'?

6) Although every time will be different, what are you strongly thinking after training?

7) Are you writing job description? If so, what do you write in it? If not, why do not write it?

8) What is your ultimate goal in the near future?

### **3. Personal life**

1) You have three days for rest. Does the time for family, friends or personal time increase for you? What is the good or bad?

2) How does your family think about that you are the workforce in Pruge-Clark?

3) Have you ever thought about the connection between your job and social life (life with your family or daily life)? (For instance, when you change your son's diaper, you might think some uncomfortable things. Then you might devise a new way to be comfortable, etc.)

4) Do you have any enhanced ability besides job skills through training program? (e.g. foreign language, social and cultural perspectives, etc.)

5) How are the abilities affected to your life?

6) Do you have unsatisfied training program? If so, how did you do? If not, what is your satisfied program?

### **4. Critical reflection on working**

#### **<Existential>**

1) While working, have you ever thought:

a) who am I in this workplace and this society,

b) what kind of person do I want to be in this society,

c) why am I working here?

**<Relational>**

- 1) How do you relate to others and to the world around you?
- 2) How do they (others around me in the workplace) affect my making new assumptions while working?
- 3) Have you ever discussed about the relationship between factory workers' job and political or social climate with your working colleagues in the workplace? If so, give me a few instances of the conversation.

**<Praxis>**

- 1) What is your ultimate goal to work? (e.g. Have you ever consider your job between as means of making money and the way of self-reflection?)
- 2) While working, have you ever critically reflected about your working?
- 3) If so, have you ever suggested your critiques to others, especially to your boss? How was their response?
- 4) If not, why didn't you suggest your critiques to others?
- 5) While working on the shop floor, despite different area have you ever considered about designing or engineering?
- 6) If you need to change right now, what is it?

**The Second interview questions****<Contradictions while working>**

1. Are there problems or contradictions along with your working life? What is it? Please tell me your experiences.
2. Why does the problem or contradiction generate while working?
3. How do you solve the problem or contradiction?

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