Activity Theory and Fostering Learning

Developmental Interventions in Education and Work

Edited by Katsuhiro Yamazumi

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Introduction

Katsuhiro Yamazumi

Activity Theory and Fostering Learning: Developmental Interventions in Education and Work is based on the results of the 6th International Symposium 'New Learning Challenges' (NLC 2009), which was held by *the Center for Human Activity Theory* (CHAT), Kansai University, at the Kansai University Tokyo Center on June 12–13, 2009, in Tokyo, Japan. The six chapters of the book are newly written papers based on keynote lectures presented at NLC 2009.

The Center for Human Activity Theory (CHAT) was established at Kansai University in Osaka, Japan in April 2005 to focus on educational research and development based on cultural-historical activity theory and its interventionist approach to human education, learning, and development. CHAT was involved in a joint research project entitled "International Joint Research in Innovative Learning and Education System Development: The Creation of Human Activity Theory," which was funded by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) as an "Academic Frontier" Project, 2005–2009 [1].

Activity theory offers a conceptual framework that views a collective activity system as a unit of analysis of human practices and development and as a rich source of ideas and tools for modeling future innovative activities (Engeström, 1987, 2005, 2008; Leont'ev, 1978; Sannino, Daniels,

1 See http://www.chat.kansai-u.ac.jp/english/

& Gutiérrez, 2009). If conventional standard science purports to focus on "observation and analysis," activity theory instead allows researchers and practitioners to enter into the creation of change. The interventionist research methodology based on activity theory is a powerful tool kit for such active social science.

As Yrjö Engeström (2000) crucially points out, lessons from intervention research suggest that change and development imported from outside and implemented from above fail. Instead, we as intervention researchers must pay careful attention to the strong resistance by practitioners to interventionist conceptualizations that lead to new practices; these people naturally feel unease about disruptions to their work activity. Resistance from such practitioners simply indicates that their own will, engagement, and thus agency are functioning. Intervention can only succeed when the practitioners themselves learn about the promoted practices in a reflective, questioning, and critical manner.

For example, in the field of agricultural development, Jules Pretty (2002) contends that outside professionals (planners, developers, or scientists) who ask about problems and then identify standardized, technology-reduced solutions, too often overlook the fine-grained details about people's connectedness to a place. Such oversight explains why a standardized approach in industrial development does not fit well to the differing conditions, values, and constraints experienced by people in the cultural-historical contexts of their own real-life worlds. However, if people directly reject a prescribed, defined set of technologies and practices — because it does not fit their needs or is too risky — it is assumed that this rejection reflects their own shortcomings. In contrast, Pretty proposed the involvement of farmers in the social learning process as a key for agricultural development:

> Agricultural sustainability should not imply simple modes or packages that are imposed upon individuals. Rather, sustainability should be seen as a process of social learning. This centers upon building the capacity of farmers and their communities to learn

> about the complex ecological and biophysical complexity in their fields and farms, and then to act on this information. The process of learning, if it is socially embedded and jointly engaged upon, provokes changes in behavior and can bring forth a new world. (Pretty, 2002, p. 156)

In the framework of activity theory, intervention into practices must facilitate and support the process of "social learning." Here, the practitioners involved in and affected by the change take the initiative to reforge objects of their own current work practices (or activity systems) — that is, reforging what they are doing and why they are doing it. Unlike observation or analysis, intervention should not miss the "human potential for agency, for intentional collective and individual actions aimed at transforming the activity" (Engeström, 2006, p. 4). This *agentive layer* in human contexts focuses on the human potential for agents with initiative to create intellectual, emotional, and moral judgments in their own names as intentional transformative actions.

Such specific agentive action is a central thesis of Vygotskian developmental and activity theories. Lev Vygotsky's cultural-historical theory of human development is a classic radical source in building activity theory, and the main theme in his developmental theory suggests that "a new problem [is] associated with volition or freedom in human activity and consciousness" (Vygotsky, 1987, p. 349). This is the problem of agency as the genesis of voluntary actions, that is, the potential of "free will" in agentive human activity and consciousness. He sought to interconnect this problem with other higher mental functions, namely, thinking, imagination, and so on to analyze psychological systems as interrelationships and independences between different higher mental functions and their entire development. Also, he emphasized interrelationships and independences between both agentive and tool-mediated actions. "In the instrumental act man masters himself from the outside — via psychological tools" (p. 87).

The world of educational and professional activity is nowadays

increasingly organized in ways that require "horizontal movement" and "boundary crossing" between educational and social life activities, from work to family, leisure, play, and everyday well-being. These activities hybridize and form symbiotic relationships among themselves. In such hybrid and symbiotic forms of activity, humans and their organizations are challenged by hybridity, diversity, and dialogue between different traditions or perspectives.

Also, with *inter-professional collaboration* now a concept, intervention research based on activity theory presides over a new challenge. Within the renewed framework of "third-generation activity theory" (Engeström, 1996, pp. 132-133) and its focus on the networking and collaboration of various heterogeneous activity systems, a new generation of intervention research has taken on the challenge of defining the shape of new forms of work, reciprocal learning activities, and the expertise required by practitioners and professionals, as well as developing this expertise.

These new learning challenges will require models of activity that can continue to offer growth, self-renewal, development, and creativity for all those involved yet still be sustainable and avoid conflicting with individuals' inherent motivations and abilities. NLC 2009 addressed itself to further analysis and understanding of the problems involved in fostering sustainable human activities as new challenges in activity theory. It saw two full days of active discussions focusing on the theme "Fostering Sustainable Human Activities: New Challenges in Activity Theory." The authors of the six chapters of the book have offered their own unique approaches to this issue.

In Chapter 1, Yrjö Engeström, Anu Kajamaa, Hannele Kerosuo, and Päivi Laurila ask whether and in what ways a deep dichotomy between two important stages of transformation in organizations and activity systems — process enhancement and community building — might be transcended by using cultural-historical activity theory. The empirical case analyzed in this chapter is from a surgical unit of a public-sector university hospital in Finland. In 2006, the unit was in a near-crisis

situation, struggling to handle the care of an increased flow of patients with high turnover and alarmingly frequent sick leaves among its staff. After process efficiency and participatory community-building interventions, the participants, representing different professions and organizational levels, created a new organizational model that was subsequently implemented. In this chapter, the authors trace and analyze the construction and consequences of the new organizational model.

In the following chapter, Harry Daniels develops an account of institutional structures as cultural-historical products (artifacts) that play a part in implicit or invisible mediation. He seeks to bring the analysis of communicative action into a Bernsteinian framework in order to open up the possibility of studying the ways in which such action transforms institutional structures while also being shaped by it. Based on his own empirical research, he proposes an approach to modeling the structural relations of power and control in institutional settings theorized as cultural historical artifacts that invisibly or implicitly mediate the relations of participants in practices. Their communicative action may be analyzed for evidence of learning and new ways of working, thus giving insight into the shaping effect of institutions as well the ways in which they are transformed through the agency of the participants.

In Chapter 3, Annalisa Sannino examines the impact of researchers' interventionist work, which is not reducible to just acceptance or rejection, success or failure. Taking the case of the introduction of a computer-mediated activity system called the "Fifth Dimension" innovation in a school in Italy, she propose that during interventions obstacles, conflicts and sideways actions should be recorded and reflected upon within a specially organized second layer of the intervention. This is because utopian interventionist research discloses obstacles and raises conflicts, and some of those conflicts lead to new hybrids. If not recognized, these conflicts and sideways actions might be interpreted as evidence of failure. This chapter aims at providing a methodological tool for detecting such potential obstacles for the school

to more appropriately implement and sustain innovations.

In Chapter 4, Edmond Law reports experiences in using activity-theoretical approaches to understand a curriculum development project conducted in a Hong Kong primary school in 2005, as well as part of the project's data and findings. The chapter shows that the theoretical orientation of activity theory can assist researchers in unveiling the deeper meanings in the data, which have been previously reported in a couple of articles by the same author. He uses the sociocultural perspectives as "lenses" in understanding the videotaped data available to researchers, showing that distributed approaches to leadership development in the curriculum can be understood through different perspectives.

In the following chapter, Yew-Jin Lee focuses on the tensions and contradictions in schooling that has come with recent educational reforms in Singapore. In this critique of K-12 education in Singapore, which is influenced by ideas from cultural-historical activity theory and German Critical Psychology, he offers his personal interpretations of how young people and teachers here have to navigate being pulled in many different directions, of often being caught in double-bind situations. Lee then concludes that work that is informed by activity theory enables researchers and participants to collectively identify and solve problems together rather than one party taking dominance over the other. Moreover, this tact diverts blame from individuals; contradictions are correctly understood as inner contradictions that originate at the societal level rather than arising from the individual.

In Chapter 6, Katsuhiro Yamazumi proposes and develops the concept and application of *hybrid education* for school innovation from the perspective of a framework of third-generation activity theory. To make concrete this concept of hybrid education, he describes and analyzes an experimental hybrid educational project called "New School" (NS) as intervention research in Osaka. This intervention research aims to develop a hybrid activity system in schools that can transform the pedagogical activity of the traditional school, based on a partnership between a university and local elementary schools but also

involving other social actors and institutions. The significance of hybrid educational innovation and its potential to turn schools into active societal change agents are discussed based on a concrete case study within the NS project as an example of what this approach intends.

I wish to express my deep gratitude to our distinguished authors for their valuable contributions comprising the book's chapters. They definitely shine light on future potential for sociocultural and activity-theoretical research on developmental interventions and learning.

REFERENCES

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.

Engeström, Y. (1996). Developmental work research as educational research: Looking ten years back and into the zone of proximal development. *Nordisk Pedagogik/Journal of Nordic Educational Research*, *16*, 131-143.

Engeström, Y. (2000). From individual action to collective activity and back: Developmental work research as an interventionist methodology. In P. Luff, J. Hindmarsh, & C. Heath. (Eds.), *Workplace studies: Recovering work practice and informing system design*. Cambridge: Cambridge University Press.

Engeström, Y. (2005). *Developmental work research: Expanding activity theory in practice*. Berlin: Lehmanns Media.

Engeström, Y. (2006). Development, movement and agency: Breaking away into mycorrhizae activities. In K. Yamazumi (Ed.), *Building activity theory in practice: Toward the next generation*. Osaka: Center for Human Activity Theory, Kansai University.

Engeström, Y. (2008). *From teams to knots: Activity-theoretical studies of collaboration and learning at work*. Cambridge: Cambridge University Press.

Leont'ev, A. N. (1978). *Activity, consciousness, and personality*. Englewood Cliffs, NJ: Prentice Hall.

Pretty, J. (2002). *Agri-culture: Reconnecting people, land and nature*. London: Earthscan Publication Limited.

Sannino, A., Daniels, H., & Gutiérrez, K. D. (Eds.) (2009). *Learning and expanding with activity theory*. Cambridge: Cambridge University Press.

Vygotsky, L. S. (1987). Lectures on psychology. In *The collected works of L. S. Vygotsky. Vol. 1. Problems of general psychology*. New York: Plenum.

Vygotsky, L. S. (1997). The instrumental method in psychology. In *The collected*

works of L. S. Vygotsky. Vol. 3. Problems of the theory and history of psychology. New York: Plenum.

1

Process Enhancement *Versus* Community Building: Transcending the Dichotomy through Expansive Learning

Yrjö Engeström, Anu Kajamaa, Hannele Kerosuo, and Päivi Laurila

INTRODUCTION

There is a deep gap and mutual hostility between two important rhetorics of transformation in organizations and activity systems. The first one we call process efficiency rhetoric; the second one we call community building rhetoric. Process efficiency rehtoric is usually used by upper management and engineering consultants, reflecting external expectations directed to the organization, mainly concerned with the output and cost-effectiveness of the activities concerned. Community building rhetoric is often used by human relations consultants and human resource developers, aimed at reflecting internal experiences, need for participation and work-related wellbeing of the organization's practitioners. Beer and Nohria (2000) call the two approaches 'Theory E' and 'Theory O'. Correspondingly, Adler and Heckscher (2006, pp. 68-70) depict the history of corporate management as a zigzag path oscillating between two orientations, control and commitment.

The gap between these two rhetorics represents a challenging contradiction which cannot be easily resolved because neither one of the two sides can be eliminated. The two both require and repel one another. Efficient and rational processes are not sustainable if there is no community which owns and develops them. A human community is not

sustainable if it does not work effectively and produce results. Both approaches used alone commonly lead to only short-lived improvements. Yet combining them is like combining fire and water.

In this chapter, we ask whether and in which ways this dichotomy might be transcended. We use cultural-historical activity theory, especially the concepts of object and expansion, as our framework in this quest. We will propose a dialectical view which goes beyond the opposition between the process efficiency and community views by integrating them into a meta-level model based on the idea of expansive learning cycles.

The empirical case analyzed in this chapter is from a surgical unit of a public sector university hospital in Finland. In 2006, the unit was in a near-crisis situation, struggling to handle the care of an increased flow of patients with high turnover and alarmingly frequent sick leaves among its staff. A process efficiency intervention was conducted to improve a pilot care process. The effort did not lead to sustained improvement. Thereafter, a participatory community building intervention was carried out, providing a space for collective analysis of the activity system of the surgical unit. The participants, representing different professions and organizational levels, created a new organizational model which was implemented after the community building intervention. In this chapter we trace and analyze the construction and consequences of the new organizational model.

In the next section, we will summarize the key contours of the process efficiency view and the community building view and the opposition between them. After that, we will offer an initial reinterpretation of the concepts of process and community with the help of activity theory. We will then describe the context and data of our empirical case study. In the analysis of the data, we will first scrutinize the process efficiency intervention and its consequences. Our main analysis will then be focused on the community building intervention and its outcomes. We will also provide evidence of longer term consequences of the community building intervention and discuss the

built-in tension of the model it generated. Finally, we will discuss the lessons of our analysis in terms of transcending the dichotomy between the two approaches.

PROCESS EFFICIENCY, COMMUNITY BUILDING, AND THEIR OPPOSITION

Business Process Reengineering (BPR) is a prominent representative of the process efficiency view. Hammer and Champy (1993) define business process as "a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer" (p. 35). BPR is based on industrial management principles aimed at radical productivity, efficiency, cost-effectiveness and performance improvements (Hammer, 1990; Hammer, & Champy, 1993; Davenport, & Short, 1990). BPR methodology represents what might be called a 'big bang' strategy for organizational change (McNulty, & Ferlie, 2004). BPR methodology and its process efficiency rhetoric have gained an influental status as a radical change approach to improving organizational performance through transformation (O'Neill, & Sohal, 1999). Over the last two decades, process efficiency literature has questioned the functional principles of organizing and functional organizational models based on professional specialties, offering process organization as an alternative management approach using teams, outsourcing and cross-functional processes (e.g., Lillrank, & Parvinen, 2004).

Medicine and health services have been heavily influenced by process efficiency orientation since the mid 1990s (Sackett, & Rosenberg, 1995; Daly, 2005). The rationalization of care processes and process redesign have become standard elements in health care quality management. Numerous process-efficiency studies focus on how to reduce waiting times and idle times and work more effectively in hospitals and clinics (e.g., Cendán, & Good, 2006; Harders, Malangoni, Weight, & Sidhu, 2006; Karvonen, Rämö, Leijala, & Holmström, 2004; Peltokorpi, & Kujala, 2006).

The aspirations and effects of business process re-engineering and the process efficiency view more generally have been critically examined in several studies (e.g. Carroll, & Edmondson, 2002; Edmondson, 2004; McNulty, & Ferlie, 2004). Since the mid 1990s, BPR and process redesign methodologies have been debated and criticized for neglecting the inherent dynamics of existing practices, and for restraining creativity and innovation (Burke, & Peppard, 1995; Harrington, McLoughlin, & Riddel, 1997; Knights, & Willmott, 2000; Vakola, & Rezgui, 2000). Linear, top-down 'big bang' strategies of organizational change such as BPR have been perceived as problematic in professional public service organizations such as health care (McNulty, & Ferlie, 2004). It has been pointed out that streamlined processes requiring minimal patient variation and well described procedures cannot be seen as the universal answer to organizing complex health care organizations (Edwards, Nielsen, & Jacobsen, 2009).

A fairly complete neglect of community is characteristic to much of process efficiency literature. The index of Hammer and Champy's (1993) *Reengineering the Corporation* does not contain the term community. The authors define the process owner as "a manager with responsibility for a specific process and the reengineering efforts focused on it" (p. 102).

The notion of communities of practice was introduced by Lave and Wenger (1991). Wenger (1998) subsequently built a comprehensive conceptual framework around this notion. According to Wenger (1998, p. 47), communities of practice are the prime context in which we can work out common sense through mutual engagement. Wenger argues that communities of practice are a familiar phenomenon, yet taken for granted and not often articulated in organizations.

For Wenger (1998), communities of practice are not always well bounded and may have problematic boundaries. Such communities may be defined as complex constellations of interconnected practices. The intensity of participation in different communities of practice varies and some communities become more central than others to individuals. Sustaining mutual engagement in a shared enterprise, collective

ownership of meaning and collective learning are fundamental aspects that hold a community of practice together (Wenger, 1998, p. 209). Communities that widen the participants' understanding of the world, enable negotiation of meaning and mutual relationships, and support identity construction and learning are motivating for participants and have strong drawing power.

The concept of community of practice has spread and had significant impact on studies of organizational learning, organization design, and knowledge management. On the other hand, the notion of communities of practice has been criticized for providing quite an ahistorical view of communities and for glorifying a historically limited form of community as a general model for all times (Engeström, 2007a).

Wenger's (1998) *Communities of Practice* does offer a short discussion on processes. The author criticizes process redesign by stating that "proceduralized prescriptions align practice with the rest of the organization, but they do so by narrowing the scope of responsibility and localizing the activity" (p.260). According to Wenger, the purpose of 'localizing' is to atomize practices so that each location can make independent decisions. Instead, he advocates 'locating' which "nurtures imagination and expands fields of identification and negotiability" (p. 260).

Adler and Heckscher (2006) expand the community view by including an historical analysis in their notion of community. Their concept of collaborative community addresses the challenges of knowledge-intensive work. This new form is based on open dialogue and common orientation to a shared mission. The collaborative form of community differs from the two classic forms that are more familiar, namely the traditionalistic form of *Gemeinschaft*, based on status, loyalty, and deference on the one hand, and the contractual form of *Gesellschaft*, based on individual autonomy, financial incentives, and administrative authority. The collaborative form can be deliberately fostered through the creation of a shared sense of purpose, the communication of values focused on contribution to outcomes, the enforcement of strong

standards and jointly defined work processes that create confidence in the integrity and competence of others in the organization, open sharing of information, and consistent communication. Open dialogue on values and co-created organizational models are a crucial factor in reshaping and holding organizations together. Trust needs to be reconstructed and extended across organizational boundaries. This makes collaborative communities capable of coordinating a wide range of competencies and knowledge bases.

In contrast to Wenger's emphasis on the informal character of communities of practice, Adler and Heckscher emphasize that collaborative community requires deliberate and formal organizing of cooperation. Thus, the authors also endorse process management as a key component of a collaborative community.

> The language of process management can become a cover for coercive bureaucratic control; but when it is successful, people experience the rules of process management as enabling rather than constraining, as helping to structure new relations rather than limiting them. (Adler, & Heckscher, 2006, p. 44)

Adler and Heckscher's analysis may be seen as a rare attempt to overcome the opposition between process efficiency and community building. However, the authors seem to overlook the deep epistemological and ideological differences between the process efficiency view and the community building view. A foundational characteristic of process efficiency approaches such as BPR is linearity and belief in the power of explicit prescription of each relatively self-contained linear process. In contrast, the community view emphasizes reciprocity and lateral interactions which cannot be fully prescribed. If the deep difference between these foundational assumptions is not dealt with, it is unlikely that the two views can be smoothly combined or integrated.

The gap and opposition between process efficiency and community building views may be detected at multiple levels. In literature, process

efficiency approaches tend to ignore communities. In community building approaches, a corresponding neglect of process efficiency has been prevalent (e.g., Gozdz, 1995). The gap is also evident in methods of organizational change and intervention. Our empirical data collected over three years of field research in a hospital indicates that the gap also prevails in practice, among both management and staff. Figure 1 summarizes the gap between the process efficiency view and the community building view.

Representatives of the two sides historically deploy different languages and rhetorics to express their interests and achieve their goals. The left-hand side of Figure 1 presents some commonly used concepts of process efficiency rhetoric taken from the literature reviewed. The right-hand side of the figure presents some commonly used concepts of the community building rhetoric. In both theory and practice, the gap represents a challenging tension which cannot be easily resolved. To identify possible mediating instruments, we will now turn to the conceptual resources of cultural-historical activity theory.

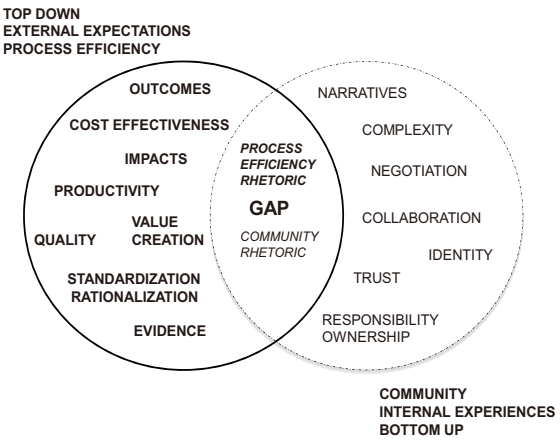


FIGURE 1

The gap between the process efficiency view and the community view

ACTIVITY THEORY AS A RESOURCE

Drawing on cultural-historical activity theory, we see an organization as consisting of activity systems oriented at objects. The concept of object is crucial in activity theory. The sense and meaning of actions are attached to the object of an activity, and the identity of any activity is primarily determined by its object (Leont'ev, 1978). Collective activity is seen as driven by a partly shared, partly contested object-related motive. An activity system may be represented with the help of a triangular model of an activity system (Engeström, 1987, p. 78) that consists of subject, object, outcome, mediating instruments (tools and signs), rules, community, and division of labor (Figure 2). An organizational unit may be analyzed as an activity system.

Human activity always takes place within a community governed by a certain division of labor and by certain rules. A group of people responsible for a shared object form a community. Community is thus seen as the carrier or bearer of activity. How the community is defined and bounded depends of the concrete historical form of the given activity system. In today's world, communities are increasingly beginning to take the shape of weakly bounded and heterogenous mycorrhizae-like formations which rely on stigmergy, negotiation and peer review as coordinating mechanisms (Engeström, 2007a, 2008b, 2009; Heylighen, 2007). These developments may be regarded as advanced forms of the collaborative community put forward by Adler and Heckscher (2006).

From an activity-theoretical point of view, a process is a partially scripted string of actions on the object, influenced by and interacting with other parallel processes. In Figure 2, the lightning-shaped two-headed arrow represents interactions between processes. These interactions between processes can never be fully predetermined or planned. They are a source of disturbances and – perhaps more importantly – of new insights and innovations. Largely because of these partially unpredictable lateral interactions between processes, a

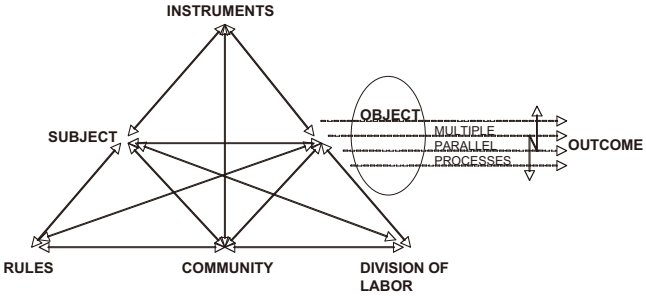


***FIGURE* 2**

An activity system and its processes (adapted from Engeström, 2008a, p. 257)

prescriptive representation of a process and the actual execution of the process are never the same.

The activity system model of Figure 2 depicts both processes and community as necessary components of a larger system. Thus, the model invites us to transcend the opposition between process and community. The crucial missing element in both process efficiency and community building literatures is the object. The object holds the community together and gives it long-term purpose (Engeström, Puonti, & Seppänen, 2003). On the other hand, the object is constantly molded, shaped and kept in movement by the processes which reproduce it (Engeström, & Blackler, 2005).

CONTEXT AND DATA OF THE CASE STUDY

A surgical operating unit (from now on called simply 'the unit') of a public sector university hospital in Finland provides the context for the case study that follows. The unit consists of approximately 200 nurses and 100 physicians representing surgical specialties and anesthesia. The unit belongs to the larger result unit of surgery and intensive care. Patients are transferred to the surgical operating unit mainly from the regular wards and from emergency units. The unit has 16 operating

rooms for surgical specialities. Patients are treated post-operatively in two recovery rooms. The work is highly demanding, and the unit conducts the most demanding operations in the hospital district, which covers northern Finland. Difficult and unexpected situations occur frequently.

The division of labor can be described as top-down directed and hierarchical in the result unit for surgery and intensive care. The upper management that designs change strategies is quite far removed from the frontline work. Different professional groups, most importantly the nurses and the physicians working in the unit, maintain their own professional roles and different identities. These professional groups are further divided into the domains of surgery and anesthesia.

In recent years the surgical operating unit has functioned under an increasing pressure to perform operations and demands for organizational effectiveness. By 2005, lack of personnel due to sick leaves and employee turnover had seriously eroded the unit's ability to respond to the demands and pushed the unit close to a crisis, signaled by closures of operating rooms and simultaneous threat of sanctions due to excessive patient cues and waiting times.

In 2006 the unit commissioned and went through two very different types of interventions, namely a process efficiency intervention and a community building intervention. The process efficiency intervention was carried out from the top down. It did not lead to sustained improvements. Thus, the management of the unit invited our research team to facilitate a participatory Change Laboratory process which we here call community building intervention.

The process efficiency intervention was conducted by external process efficiency consultants from Helsinki University of Technology. Data on the process efficiency intervention consist of a project report (Leppilahti, & Malmqvist, 2006) and a follow-up interview of the operations manager of the unit conducted by our research group in April 2009.

The first three authors of this paper were facilitators of the community

building intervention. The fourth author of this paper works in the unit as senior anesthesiologist and operations manager. She participated in both interventions in this capacity.

We used the Change Laboratory (Engeström, 2007b) as the method of the community building intervention. In the fall of 2006 eight intervention sessions were held. The appoximately 20 participants of the sessions were selected to represent the whole range of practitioners working in the unit, from the head doctor of the unit to surgeons, anesthesiologists, nurses, a porter and a secretary. The sessions were videotaped and transcribed.

After the actual intervention sessions we have followed the consequences of the intervention. Fieldnotes produced during ethnographic follow-up site visits (13 days of field observations) serve as data for this paper. The 17 interviews conducted in the research context before, during and after the intervention are used as supporting data. Also, observations of the actual care events of six patients who underwent different operations serve as complementary data for the analysis. In tracing the long-term consequences of the community intervention, we exchanged numerous e-mails and phone calls with the representatives of the surgical unit, which also serve as data for this paper.

We also have quite extensive quantitative data on the consequences of the community building intervention. These consist of statistics of the functioning of the surgical operating unit from the years 2006-2008 concerning the number and degrees of difficulty of conducted operations, the utilization rates of the 16 operating rooms, the closings of operating rooms, numbers of sick leaves, and results of a nationwide comparison of the performance of surgical units in Finland (Intensium®Benchmarking, 2008).

THE PROCESS EFFICIENCY INTERVENTION

The result unit for surgery and intensive care has in principle adopted a matrix structure which consists of eight medical units, the

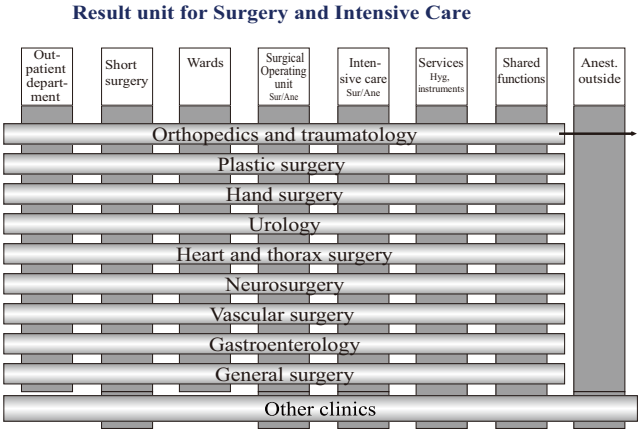


FIGURE 3

Idealized process-based matrix structure of the hospital result unit for surgery and intensive care

surgical operating unit being one of them. The eight units are shown as vertical bars in Figure 3. The care processes flow through the eight medical units and are organized according to surgical specialties (orthopedics and traumatology, plastic surgery, hand surgery, urology, heart and thorax surgery, neurosurgery, vascular surgery, gastroenterology and general surgery), shown as horizontal funnels in Figure 3. This kind of structure based on a process organization idea has been introduced to Finnish health care as an alternative to hierarchical functional structures. However, not many organizations have actually organized their activity around processes and diffused their strategic goals to goals of cross functional processes (Leppilahti, & Malmqvist, 2006, p. 6).

The process efficiency intervention was carried out in 2006 as a top-down change effort. External process efficiency consultants hired by the hospital management entered the surgical unit. The intervention focused on a single process, namely knee and hip surgery, which represents one of the orthopedics and traumatology care processes shown as one of the horizontal process funnels at the top of Figure 3. The aim of the

intervention was the intensification and rationalization of care processes of knee and hip surgery.

During the process efficiency intervention, the consultants timed care processes of knee and hip surgery, an important operation frequently performed in the unit, growing in numbers and causing longer waiting times. The aim of this effort was to reveal the 'grey time' (i.e., time wasted) in care processes, and to use that knowledge to eliminate slack and increase the number of operations. In the end the practitioners were given measurement results on the effectiveness of the care processes and guidelines on how to reduce the 'grey time' in the care processes of knee and hip surgery.

The main suggestion provided was to perform anesthesia in the recovery room, instead of in the operations theater. This arrangement was supposed to reduce wasted time by 28 minutes per operation and improve the productivity of the unit (Leppilahti, & Malmqvist, 2006). Anesthesia was performed in the recovery room for one week to test the suggestion in practice. However, the new arrangement was not continued after this short testing period. The idea of a new anesthesia protocol was never officially implemented, and the unit continued its old way of working. To our surprise the process efficiency consultants did not represent with visual models the existing and suggested knee and hip surgery processes that they measured and tried to improve.

The report on the process efficiency intervention (Leppilahti, & Malmqvist, 2006) does not deal with the overall complexity of work in the unit. Instead, it presents well-defined normative guidelines for a very specific and narrow process isolated from other parallel processes and from the rest of the activity system. In the first session of the Change Laboratory, held in September 2006, the charge nurse of the unit took up the broader picture of interacting processes.

> Charge nurse: *If one thinks about the whole care pathway of a patient, it can be described as kind of a big bowl into which everybody pours patients and out of that bowl leads a narrow pipeline which leads*

> *to the surgery and then after that eventually to the wards. I think in this flow of patients, there is a downward spiral which appears when patients wait for several days, even four days for surgery in the wards, in other words they do not get to the surgery. And the patients who have already gone through surgery are waiting to get to the ward, they do not get back to the ward because the capacity in the wards is insufficient compared to our number of patients.*

The above excerpt demonstrates the connectedness, interdependency and interplay of different functions and processes in the surgical unit and also between units as the processes flow across units. The doctors conducting operations at the surgical unit visit other units, such as short surgery. Their work sometimes requires moving between multiple processes as they are responsible for conducting different operations. Anesthesia provides services in and also outside the surgical operating unit. Multiple processes take place simultaneously and overlap. Going beyond a single process becomes a crucial issue in such a constellation.

In April 2009, in the follow-up interview the surgical unit's operations manager reflected on why the results of the process efficiency intervention evaporated.

> Operations manager: *This* [process] *thinking is introduced to us by force. The intervention came from the top down and it did not lead to any progress in our unit. It does not commit people to anything if you are only provided with strict time limits which need to be realized. The results of the process intervention were introduced to us and we saw it would be wise* [to implement them] *and so forth, but no one did it, no one was committed to it because we were not involved in the study, conducting it.*

According to the operations manager, the way the intervention was introduced and executed generated among the practitioners an overall feeling of compulsion and exclusion from the attempts to develop their

work. The resulting guidelines did not seem sensible to the practitioners and were experienced as useless in practice.

THE COMMUNITY BUILDING INTERVENTION

In 2006 the situation in the surgical unit deteriorated rapidly. The unit had to implement expensive closings of operating rooms, problems occured constantly in the recovery room, and many of the nurses took sick leaves. External expectations for patient waiting times coming from the press, health administrators and from a new law on access to care required that the unit should operate on more patients and clear the long waiting lists.

Before the community building intervention, the unit's leadership and organization were based on a hierarchical and functional model (Figure 4). In practice, the organization was divided into professional sectors: surgeons, surgical nurses, anesthetists and anesthetist nurses. The combination of people working in a surgical team in an operating theatre at any given time would constantly change.

The participants of the community building intervention were

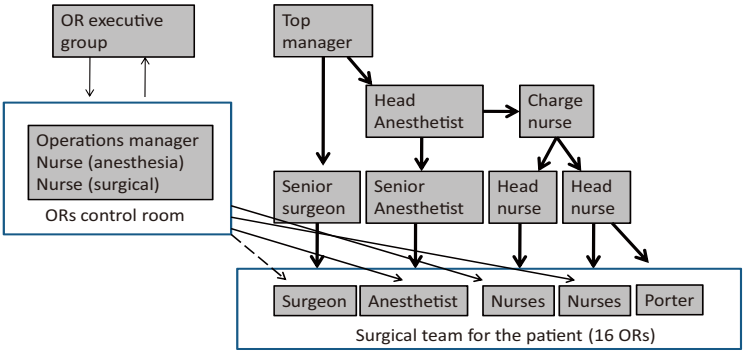


FIGURE 4

The organization chart of the surgical operating unit before the community intervention

preoccupied with experiences of loss of control of their daily work and overall feeling of chaos. Processes and efficiency were not the primary concerns discussed in the Change Laboratory. The participants talked about themselves and tried to reorganize their fragmented community.

> Senior anesthesiologist: *So you don't get to control your own work so that you would know what they have there. There we had it again, that I thought a little bit that is it like the chiefs in Asterix that they are afraid of the sky falling down, that they don't know what will be coming in through the door. Why be afraid, why should you be afraid of that? When you have the best professionals, who can keep the person alive, you are afraid of what comes in through the door. But it surely doesn't depend on that, that you would be afraid that you cannot do something to it, but that you don't know in advance about the day, so that takes it away* […] *That's how I see it anyway. Is it such a thing, that there is the scare, that it is the unknown. When you have no idea at all who the patient is going to be. When if you saw on some sort of a list that there we have our orthopaedic patients whom we are going to operate today, these come in through our recovery part and these we are expecting. We will have a look at the monitor screen of how the things will proceed, that we know who is going to come next and then here again.*
>
> Senior surgical nurse: *Those we do know. But then the ones, who come in through the central clinic or the ones that come from X-ray or who come in through the emergency room* […] *who come back from the ward when they cannot cope* […] *Or when it is a patient back there for three days when he should be in the ICU but they don't have the bed. And they won't take him in a corridor place in the in-patient ward and…*
>
> Senior anesthesiologist: *So you have no control over your own work and you cannot plan it beforehand, and these are probably what cause the…*
>
> Senior surgical nurse: *Yes, in a way they mess up our own operation.*

(First session of the Change Laboratory)

In the very first intervention session the participants made it clear that the large size, functional organization and complexity of the work made the unit extremely difficult to manage.

> Head nurse, anesthesia: *And the number of staff is large, and really as I said the area of responsibility is large* […] *management is hard and communicating is very difficult, getting the group together is really hard, motivating is hard* […] *knowledge management is hard. However, our degree of professionalism is first rate, so that is good. And the common spirit is good, this has come out.*
>
> (First session of the Change Laboratory)

The crisis was not only a matter of technical efficiency; it was about identity, self-respect and professional pride.

> Heart and thorax surgeon: *It is a downward spiral, isn't it? First we lose the people who lead the unit and then the patient work becomes harder and harder and then the atmosphere gets worse and worse and then nobody wants to come and work here.* (First session of the Change Laboratory)

> Operations manager: *It is a problem that many patients are on the waiting list for operations and there is a pressure* [from hospital management] *to have them operated. And we can also see that in the public media* […] *you are caught between a rock and a hard place all the time, and it creates a continuous sense of failure among us who are operating. Although we are operating more than ever. We feel that we are bad because we do not get the operations on the waiting list done.* (First session of the Change Laboratory)

Already in the first session of the community building intervention

the participants concluded that the unit needed to be divided into smaller, more manageable sub-units. The division of the unit into smaller areas was first articulated by the charge nurse. The idea was strongly supported and further specified by the surgeons.

> Charge nurse: *If we want to maintain emergency preparedness, in other words, if we want to make education and familiarization easier, we should absolutely divide people into smaller pools, or specialities, or whatever you call it. Like the surgeons have. In that way it would be easier to handle.* (First session of the Change Laboratory)

One of the surgeons came up with the idea that the division of the unit into smaller areas with a clearer organizational structure would also enhance identity creation.

> Heart and thorax surgeon: *Yes, like she* [charge nurse] *said, our unit is terribly large and it's difficult to manage because of that. So why don't we split it? Orthopaedics would get its own unit, soft surgery its own, heart surgery its own and we would divide it into three parts. Each area would have their own nurses, own doctors there, so that we would have smaller units, easier to manage, better to build such an identity for each and everyone and easier to recruit new people. The areas would be more like specialities, areas of expertise which each one would be roughly doing certain things and a clear identity would be formed in each area. Would that be more functional?* (First session of the Change Laboratory)

The notion of identity was elaborated further with the help of the notions of responsibility and 'the ability to see the whole'.

> Senior surgery nurse: *I feel that taking the responsibility would perhaps be-, or should I say, that there would be more people taking the responsibility when we would have such a smaller system. That now it is*

easy to throw everything to P [the operations manager] *and maybe some little goes to T* [senior anesthesia nurse], *too.*

Operations manager: *We live at the point of whether we drown or not. Each model or thing that we do puts more water into the boat. And then if we were divided into smaller units, then perhaps the ability to see the whole would grow among this group. Sometimes I feel that everyone just thinks that they aren't interested, I do exactly what I have been told to do and I don't care how this thing gets done as a whole. And seeing the whole is then left with the small group in the control room who try to fight the big current.*

(First session of the Change Laboratory)

The basic idea of the new community-based organization model was thus expressed in the very first session of the intervention. The remaining sessions were largely a process of painstaking elaboration, specification and justification of the new model. The new model was represented by the operations manager as a new organization chart (Figure 5). During the intervention the new organization chart was 'opened up' in written form, in a detailed document which the participants produced together in small groups. The new model was taken into use after the intervention at the beginning of 2007. The model follows the idea of the division of the unit into four smaller, more manageable activity areas organized according to the three main surgical specialities (gastroenterology-urology; thorax-vascular; and orthopedics, plastic surgery and hand surgery) with the recovery room (PACU) as the fourth activity area.

In the new model, much of the managerial responsibility was reallocated to the activity areas. All staff members were given an opportunity to apply for their desired activity area. A special emergency team consisting of skilled nurses from both anesthesia and surgery now got the responsibility to take care of unexpected situations. Interestingly enough, the new organization chart created by the practitioners was not based on the template of the process organization model presented

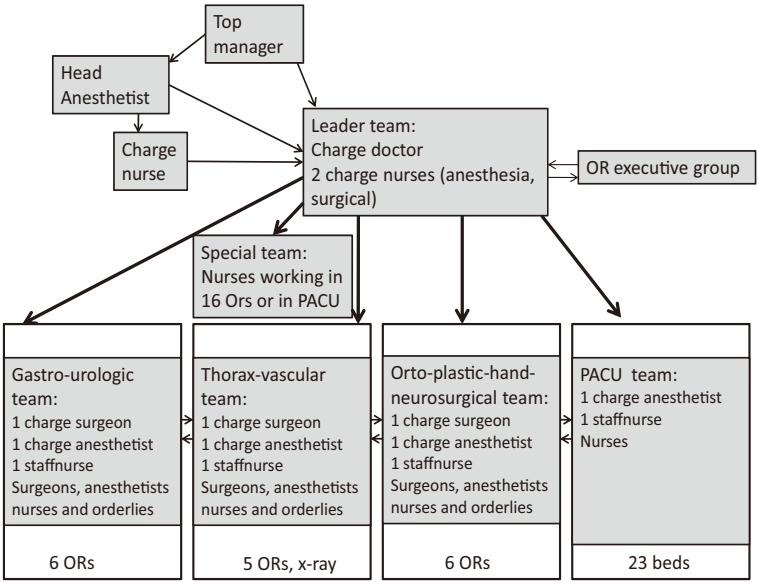


FIGURE 5

The new organization chart of the surgical operating unit

above in Figure 3.

Participants of the community building intervention functioned as local change agents spreading the idea in their work context. The first follow-up meeting was held in June 2007 to exchange experiences on the initial functioning of the new model and also to cultivate it further. Some details of the new model were revised during the testing phase to better fit the needs of the unit. Then the slightly revised model was fully implemented and a second follow-up meeting was held on February 2008. The following excerpts from the follow-up sessions illustrate some of the consequences of the new model. The following three excerpts are from the first follow-up meeting held on June 2007.

Head nurse of surgery: *I think that collaboration has increased. And perhaps gaining new knowledge on the nature of work of the*

different actors has created an overall understanding of the functioning of the whole unit.

Surgeon, gastroenterology: *It's terrific that the collaboration with anesthesia has substantially deepened. As a consequence we have started this pre-anesthesia activity which will be expanded soon. This will create more efficient collaboration with wards.*

Operations manager: *The continuity of our work has improved and we have found wise solutions to conduct work even with limited resources. Perhaps the change has affected the new management teams of the activity areas the most.*

In the second follow-up meeting held in February 2008 the participants reflected on some of the long-term consequences of the implemented new model.

Head of anesthesia: *Now we have proof that the sick leaves of anesthetic nurses have drastically decreased. And perhaps another thing explaining the progress is that we have paid a lot of attention to the development of skills and knowledge management. We have developed the familiarization of the work so that the nurses would find the work possible to manage. And also we now discuss more.*

Anesthesia nurse: *I think this new activity model has brought good things. A doctor and a staff nurse now take the overall responsibility for our recovery room. We are now able to view things on a daily basis, to decide how to transfer patients and in which exact order to the wards. We have also had collaborative meetings with all the crucial wards.*

The last excerpt speaks directly to the issue of efficient process management: Being able to decide how to transfer patients and in which exact order. However, this technical capability is subordinated to and

intertwined with strong umbrella notions of responsibility and collaboration. As the operations manager summarized it in an interview in April, 2009:

> Operations manager: *If we think about this, this* [community building intervention] *did not have focus on intensification of work. The starting point was to solve the experienced chaos in daily work. If something is to be intensified it would appear through this solving of the chaos* […] *this* [intervention] *started partly from within* […] *from the fact that something is so wrong with our community that soon none of us will be in condition to work there, so the starting point is different.*

LONG-TERM CONSEQUENCES OF THE NEW MODEL

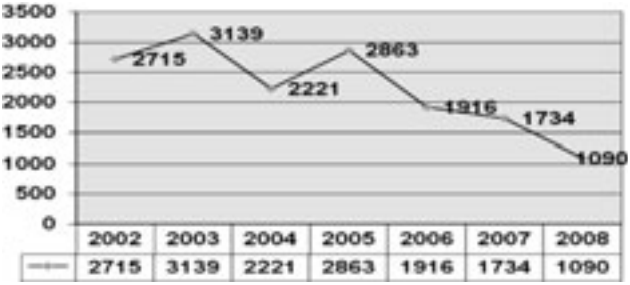
A critical symptom of the crisis in 2006 consisted in the closings of operating rooms for approximately 100 days during the year. By the year 2008, the unit had overcome this problem and had no closings. The total number of conducted operations in 2006 was 27030; it had risen to 28313 in 2008. The utilization rate (the hours each operating room is used) was in 2008 higher than ever before, both for elective and emergency operations. The switching times between operations had also improved significantly since 2006; 85% of the switches in 2008 took less than 30 minutes.

Sick leaves among the anesthesia staff formed a critical problem and paralyzed the units' functionality in 2005 and 2006. A significant decrease in sick leaves has taken place among anesthetic nurses after that (Table 1). During the years 2006-2008 the decrease was 30%.

A comparison of Finnish hospitals was conducted in 2008 (Intensium®Benchmarking). The surgical operating unit and 22 similar kinds of surgical units from hospitals in different parts of Finland took part in the comparative survey. The unit did extremely well in the comparison. In the nationwide comparison the unit was third in reaching the target time to begin work in the morning (in comparison with the

TABLE 1

Sick leave days among anesthesia nurses from 2002 to 2008



hours of operation). The unit was nationwide the best in the utilization rates of operating rooms on weekdays and during hours of operation (71.16% in 2008) compared to the consortium's mean. The unit also had the lowest rate of idleness for the operating rooms in the evening nationwide at 11%.

Despite these strong signs of success, in her follow-up interview conducted in April, 2009, the operations manager of the unit was very concerned about the problematic functioning of the regular wards and their impact on the unit. The wards are critical interfaces with the surgical operating unit in terms of care processes. The wards lack staff and patient beds, and some have even been closed due to lack of resources. They frequently become bottlenecks which directly slow down and disturb the functioning of the activity areas in the unit. In other words, the new model has a built-in tension related to the organizational boundaries between the unit and its neighbors, the wards. The unit and its neighbors have multiple parallel processes which are interdependent. Yet the new organizational model is confined within the boundaries of the unit.

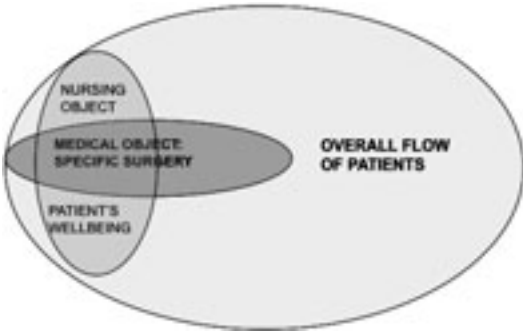


FIGURE 6
Toward an expanded object of hospital work

TRANSCENDING THE PROCESS-COMMUNITY DICHOTOMY

The case analysis presented above could be read as an atempt to prove the superiority of community building over process efficiency. Such a reading would be a serious mistake. To the contrary, we argue that process efficiency and community building views need to be brought into a dialogue. To improve processes, a strong community needs to be developed; processes must have collective owners. Correspondingly, when a community is built, it will eventually have to turn its attention to its processes. The key is to see processes not isolated but interacting and intefering with one another.

Even though the results reached in the hospital unit analyzed above have been impressive, they are also fragile. If the community of the unit is not able to step beyond its own boundaries and influence its neighboring communities, particularly the wards, the positive developments may quickly be overrun by larger-scale crises. This calls for the construction of a radically expanded object that can be shared by the interacting, yet fragmented units.

We have evidence that a first step toward such an expanded object has been taken in the hospital unit as the physicians and nurses, both

surgical and anesthesia, have started to integrate their respective objects. This is schematically depicted with the help of the two intersecting sub-ovals in the left-hand end of the large oval in Figure 6. The remaining big challenge is to integrate these objects with the overall flow of patients through the hospital. This has traditionally been the object of administrators and managers, outside the purview of practicing physicians and nurses. However, this kind of split leads time and again to the kind of crisis the unit we have analyzed has just overcome.

What would this kind of radical expansion of the object entail? As a first step, it will require that the entire staff are given tools for monitoring and assessing the overall patient flow and its ruptures and bottlenecks with minimum delay. Some tools of this nature are already at the disposal of the management. These tools need to be opened up to frontline practitioners. At the same time, they need to be made more specific and sensitive to local contexts, so that each unit and activity area can effectively monitor its own activity and see its relation to the overall flow of patients. Graphic displays of the patient flow with constantly updated numerical indicators that are meaningful for the practitioners need to be developed.

The expansion of the object depicted in Figure 6 is not a quick process. Our experiences and analysis of the case reported above lead us to interpret this challenge in terms of the cycles of expansive learning (Engeström, 1987; Engeström, & Sannino, 2010). Probably a community building intervention will in a successful case be a relatively complete cycle of expansive learning of its own. The same applies to a process efficiency intervention, provided that it does not treat processes as isolated entities but as interacting and interdependent lines of actions that need collective owners. The expansion of the object so as to encompass the overall flow of patients through the hospital is clearly an even more demanding effort, again needing an expansive cycle of its own. This opens up the possibility that expansive learning in a complex organization may at the macro level be conceptualized as cyclic interplay between three meso-level expansive cycles: community building, process

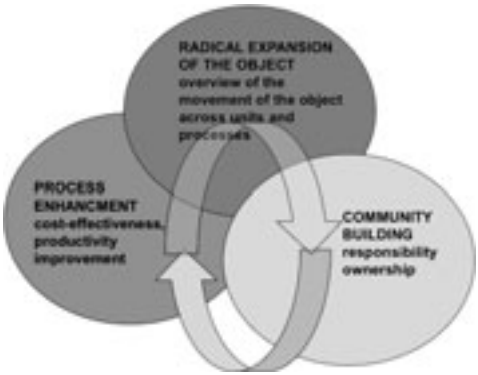


FIGURE 7

Macro-level view of expansive organizational learning as interplay of the expansive cycles of community building, process enhancement, and radical expansion of the object

enhancement, and radical expansion of the object (Figure 7).

REFERENCES

Adler, P. S., & Heckscher, C. (2006). Towards collaborative community. In P. S. Adler, & C. Hckscher (Eds.), *The firm as a collaborative community: Reconstructing trust in the knowledge economy*. Oxford: Oxford University Press.

Beer, M., & Nohria, N. (Eds.) (2000). *Breaking the code of change*. Boston: Harvard Business School Press.

Burke, G., & Peppard, J. (Eds.) (1995). *Examining business process re-engineering: Current perspectives and research directions*. London: Kogan Page.

Carroll, J. S., & Edmondson, A. C. (2002). Leading organizational learning in health care. *Quality and Safety in Health Care*, *11*(1), 51-55.

Cendán, J., & Good, M. (2006). Interdisciplinary work flow assessment and redesign decreases operating room turnover time and allows for additional caseload. *Archives of Surgery*, *141*(1), 65-9.

Daly, J. (2005), *Evidence-based medicine and the search for a science of clinical care*. Berkeley: University of California Press.

Davenport, T. H., & Short, J. E. (1990). The new industrial engineering: Information technology and business process redesign. *Sloan Management Review*, *31*(4), 11-27.

Edmondson, A. (2004). Leaning from mistakes is easier said than done: Group and organizational influences on the detection and correction of human error. *The Journal of Applied Behavioral Sciences*, *40*(1), 66-90.

Edwards, K. Nielsen Paarup, A., & Jacobsen, P. (2009). *Implementing lean in surgery: Lessons and implications.* Paper presented at the Nordic Summer Symposium 2009: Does size matter? Benefits and Consequences of Centralizing in Health Care. May 25-29, Nordic School of Public Health, Gothenburg, Sweden.

Engeström, Y. (1987), *Learning by expanding: An activity-theoretical approach to developmental research.* Helsinki: Orienta-Konsultit.

Engeström, Y. (2007a). From communities of practice to mycorrhizae. In J. Hughes, N. Jewson, & L. Unwin (Eds.), *Communities of practice: Critical perspectives.* London: Routledge.

Engeström, Y. (2007b). Putting Vygotsky to work: The Change Laboratory as an application of double stimulation. In H. Daniels, M. Cole, & J. V. Wertsch (Eds.), *The Cambridge companion to Vygotsky.* Cambridge: Cambridge University Press.

Engeström, Y. (2008a). Enriching activity theory without shortcuts. *Interacting with Computers, 20*, 256-259.

Engeström, Y. (2008b). *From teams to knots: Activity-theoretical studies of collaboration and learning at work.* Cambridge: Cambridge University Press.

Engeström, Y. (2009). Wildfire activities: New patterns of mobility and learning. *International Journal of Mobile and Blended Learning, 1*(2), 1-18.

Engeström, Y., & Blackler, F. (2005). On the life of the object. *Organization*, *12*(3), 307-330.

Engeström, Y., Puonti, A., & Seppänen, L. (2003). Spatial and temporal expansion of the object as a challenge for reorganizing work. In D. Nicolini, S. Gherardi, & D. Yanow (Eds.), *Knowing in organizations: A practice-based approach.* Armonk: M. E. Sharpe.

Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review, 5*(1), 1-24.

Gozdz, K. (Ed.) (1995). *Community building: Renewing spirit and learning in business.* San Francisco: Sterling & Stone.

Hammer, M. (1990), Reengineering work: Don't automate, obliterate! *Harvard Business Review*, *68*(4), 104-112.

Hammer, M., & Champy, J. (1993), *Reengineering the corporation: A manifesto for business revolution*. London: Nicholas Brealey Publishing.

Harders, M., Malangoni, M., Weight, S., & Sidhu, T. (2006). Improving operating room efficiency through process redesign. *Surgery, 140*(4), 509-516.

Harrington, B., McLoughlin, K., & Riddel, D. (1997). Business process re-

engineering in the public sector: A case study of the contributions agency. *New Technology, Work and Employment*, *13*(1), 43-50.

Heylighen, F. (2007). Why is open access development so successful? Stigmergic organization and the economics of information. In B. Lutterbeck, M. Baerwolff, & R. A. Gehring (Eds.), *Open Source Jahrbuch 2007.* Berlin: Lehmann's Media.

Intensium®Benchmarking, http://www.intensium.com/web/english/

Karvonen, S., Rämö, J., Leijala, M., & Holmström, J. (2004). Productivity improvement in heart surgery: A case study on care process development. *Production Planning and Control, 15*(3), 238-246.

Knights, D., & Willmott, H. (Eds.) (2000). *The reengineering revolution: Critical studies of corporate change*. London: Sage.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

Leont'ev, A. N. (1978). *Activity, consciousness and personality*. Englewood Cliffs: Prentice-Hall.

Leppilahti, J., & Malmqvist, S. (2006), *Tekonivelpotilaan hoitoprosessin kehittämisanalyysi*. [*Analysis for developing the care process of the artificial joint patient*]. Unpublished final report of the process study of knee and hip surgery at Oulu University Hospital, 31. 08. 2006 (in Finnish).

Lillrank, P., & Parvinen, P. (2004). Omistaja, prosessi, potilas [Owner, process, patient]. *Suomen Lääkärilehti*, *59*(10), 1052-1055 (in Finnish).

McNulty, T., & Ferlie, E. (2004). Process transformations: Limitations to radical organizational change within public service organizations. *Organization Studies*, *28*(8), 1389-1412.

O'Neill, P., & Sohal, A. S. (1999). Business process reengineering. A review of recent literature. *Technovation*, *19*(9): 571-581.

Peltokorpi, A., & Kujala, J. (2006). Time-based analysis of total cost of patient episodes: A case study of hip replacement. *International Journal of Health Care Quality Assurance*, *19*(2): 136-145.

Sackett, D.L., & Rosenberg, M.C. (1995). On the need for evidence-based medicine. *Journal of Public Health Medicine*, *17*(3), 330-334.

Vakola, M., & Rezgui, Y. (2000). Critique of existing business process re-engineering methodologies: The development and implementation of a new methodology. *Business Process Management Journal*, *6*(3), 238-250.

Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. Cambridge: Cambridge University Press.

2

Analysing Communicative Action in Institutions as It Brings about Change: Where the Cultural Historical Shapes the Interactional

Harry Daniels

INTRODUCTION

In this chapter I will develop an account of institutional structures as cultural historical products (artefacts) which play a part in implicit (Werstch, 2007) or invisible (Bernstein, 2000) mediation. I will seek to bring the analysis of communicative action into a Bernsteinian framework in order to open up the possibility of studying the ways in which such action transforms institutional structures whilst also being shaped by it.

In what Minick (1987) refers to as the second phase of Vygotsky's work to be found in parts of 'Thinking and Speech,' he discusses the process of development in terms of changes in the functional relationship between speaking and thinking. He asserts that 'change in the functional structure of consciousness is the main and central content of the entire process of mental development' (Vygotsky, 1987, p. 188). He illustrates the movement from a social plane of functioning to an individual plane of functioning. From his point of view the 'internalisation of socially rooted and historically developed activities is the distinguishing feature of human psychology' (Vygotsky, 1978, p. 57). I do not wish to embroil myself in the 'internalisation - appropriation' debate at this juncture. Instead I wish to start from his assertion that interpersonal processes are transformed into intrapersonal processes as development progresses

and move to question the way in which interpersonal processes are theorized and described. Vygotsky provides a theoretical framework which rests on the concept of mediation by what have been referred to as psychological tools or cultural artefacts. This has found expression in the study of mediating role of specific cultural tools and their impact on development as well the mediational function of the social interaction that gives access to specific tools. From this point in the development of his work the challenges that confront us are at least twofold: firstly, have we developed an account of mediation that is both necessary and sufficient for a satisfactory account of the social, cultural, historical formation of mind and secondly have we developed a sufficiently robust understanding of the ways in which mediational means are produced? In respect of the first challenge Wertsch (2007) is developing an account of implicit mediation which echoes some of Bernstein's (2000) work on invisible mediation which can also be thought of as tacit mediation. It would seem that a similar challenge has also been noted by Abreu & Elbers (2005):

> ... the impact of broader social and institutional structures on people's psychological understanding of cultural tools. We argue that in order to understand social mediation it is necessary to take into account ways in which the practices of a community, such as school and the family, are structured by their institutional context. Cultural tools and the practices they are associated with, have their existence in communities, which in turn occupy positions in the broader social structure. These wider social structures impact on the interactions between the participants and the cultural tools. (Abreu, & Elbers , 2005, p. 4)

In respect of the second challenge Wertsch (1998) has advanced the case for the use of mediated action as a unit of analysis in social-cultural research because, in his view, it provides a kind of natural link between action, including mental action, and the cultural, institutional, and

historical context in which such action occurs. This is so because the mediational means, or cultural tools, are inherently situated culturally, institutionally, and historically. However as he had recognised earlier the relationship between cultural tools and power and authority is still under-theorized and in need of empirical study (Wertsch, & Rupert, 1993). This recognition is an important step forward from the original Vygotskian thesis which as Ratner (1997) notes did not consider the ways in which concrete social systems bear on psychological functions. He discussed the general importance of language and schooling for psychological functioning; however he failed to examine the real social systems in which these activities occur. The social analysis is thus reduced to a semiotic analysis which overlooks the real world of social praxis (Ratner, 1997).

CATEGORIES AND THE REGULATION OF INSTITUTIONAL ACTIVITIES

Makitalo and Säljö enter into the challenge of accounting for the breadth of social, cultural and historical influences through the study of categories arguing that an important window on the creation of social orders may be gleaned from the study of processes of categorization. They suggest that once produced, categories become an important feature of the regulation of institutional activities.

> we have argued that language categories are produced within collective practices to serve as mediational means (Wertsch, 1991). They are also used by people as constitutive resources in such practices. Through the sedimentation of traditions of argumentation, categories have been produced to form collective ways of understanding people, actions, events, and social practices. Institutionalization implies that categories serve as tools in the process of accounting for the relation between the collective and the individual. Categories are manifested in the concrete infra-

> structure of organizations – in documents, administrative routines, databases, and other tools. In this sense, they are embedded in political, economic, social and material circumstances. (Makitalo, & Säljö, 2002, p. 64)

At the individual level these processes may well operate at a tacit or relatively unobservable or unseen level as described by Bernstein (2000) and Wertsch (2007). Horne and Säljö (2004) argue that categorisation is a form of work that people often do in order to cope with the demands of their job. Their emphasis is also on the study of categories as they are deployed and function in institutions. In addition they are concerned with the material consequences of these categories, whatever their ontological status, in institutions such as schools. They see the category as a form of institutional argumentation irrespective of the validity of the claims that are made about its knowledge base or status. This form of argumentation is seen as a resource that is actively used for dealing with problems within the sociocultural processes of schooling.

They also studied institutional reasoning, and how events and people are categorized. They considered categories as historically emerging tools for co-ordinating social action and for mediating between collectives and individuals and examined argumentation in institutional settings. One of Horne and Säljö's (2004) conclusions was that the classification carries with it significant consequences for children and their participation in schooling. This research provides a way of thinking about interpersonal processes as they are enacted in institutions. The question remains as to whether the way in which institutions are structured requires mores analysis both at specific points in time and as they change through activity with time.

The point of departure I wish to mark is that it is not just a matter of the structuring of interactions between the participants and other cultural tools, rather it is that the institutional structures themselves are cultural products which serve as mediators in their own right in this sense they are the `message' that is, a fundamental factor of education

discussed by Ivic (1989) because, as an institution and quite apart from the content of its teaching, it implies a certain structuring of time and space and is based on a system of social relations (between pupils and teacher, between the pupils themselves, between the school and it surroundings, and so on" (Ivic, 1989, p. 429). When we talk as Mäkitalo and Säljö (2002) argue, we enter the flow of communication in a stream of both history and the future (Mäkitalo, & Säljö, 2002, p. 63). When we talk in institutions history enters the flow of communication through the invisible or implicit mediation of the institutional structures. Engeström et al (2003) adds to this view of mutual constitution of organizational and individual features by arguing that historically formed aspects of an organization and the immediate social actions of individuals co-construct each other. They both shape and are shaped by each other.

> Historical analysis implies a broad institutional and societal framework and a long time perspective. Situated analysis implies focussing on the here-and-now, typically on what can be captured on tape in a given situation or single encounter. Acknowledging that the two are mutually constitutive only opens up the challenge: How does this mutual constitution actually happen and how can it be empirically captured? (Engeström, Y., Engeström, R., & Hannele, 2003, pp. 286-7)

My suggestion is that there is need to analyse and codify the mediational structures as they deflect and direct attention of participants and as they are shaped through interactions which they also shape. In this sense I am advocating the development of cultural historical analysis of the invisible or implicit mediational properties of institutional structures which themselves are transformed through the actions of those whose interactions are influenced by them. This move would serve to both expand the gaze of Vygotskian theory and at the same time bring sociologies of cultural transmission such as that developed by Bernstein (2000) into a framework in which institutional structures are analysed as

historical products which themselves are subject to dynamic transformation and change.

UNDERSTANDING DISCOURSE AS A CULTURAL HISTORICAL PRODUCT

If activities are to be thought of as 'socially rooted and historically developed' how do we describe them in relation to their social, cultural and historical contexts of production? If Vygotsky was arguing that formation of mind is a socially mediated process then what theoretical and operational understandings of the social, cultural, historical production of 'tools' or artefacts do we need to develop in order to empirically investigate the processes of development?

As Bernstein (1993) argued, the development of Vygotskian theory calls for the development of languages of description which will facilitate a *multi-level* understanding of pedagogic discourse, the varieties of its practice and contexts of its realization and production. There is a need to connect the theory of social formation of mind with the descriptions that are used in the activity of research. This should provide a means of relating the social cultural historical context to the form of the artefact. If processes of social formation are posited then research requires a theoretical description of the possibilities for social products in terms of the principles that regulate the social relations in which they are produced. We need to understand the principles of communication in terms derived from a study of principles of social regulation.

As Bernstein noted in a discussion of sociolinguistics:

> Very complex questions are raised by the relation of the socio to the linguistic. What linguistic theories of description are available for what socio issues? And how do the former limit the latter? What determines the dynamics of the linguistic theory, and how do these dynamics relate, if at all, to the dynamics of change in those disciplines which do and could contribute to the socio. If

> 'socio' and linguistics are to illuminate language as a truly social construct, then there must be mutually translatable principles of descriptions which enable the dynamics of the social to enter those translatable principles. (Bernstein, 1996, pp. 151-2)

Different social structures give rise to different modalities of language which have specialised mediational properties. They have arisen, have been shaped by, the social, cultural and historical circumstances in which interpersonal exchanges arise and they in turn shape the thoughts and feelings, the identities and aspirations for action of those engaged in interpersonal exchange in those contexts. Hence the relations of power and control, which regulate social interchange, give rise to specialised principles of communication. These mediate social relations.

EMPIRICAL WORK

The Learning in and for Interagency Working project (LIW)[1] was concerned with the learning of professionals in the creation of new forms of practice which require joined-up solutions to meet complex and diverse client needs. We studied professional learning in children's services that aim to promote social inclusion through interagency working. Working with other professionals involves engaging with many configurations of diverse social practices. It also requires the development of new forms of hybrid practice. The call for 'joined up' responses from professionals and stress the need for new, qualitatively different forms of multiagency practice, in which providers operate across traditional service and team boundaries. In this context the LIW Project is concerned with examining and supporting the learning of

1 TLRP-ESRC study ESRC RES-139-25-0100 'Learning in and for Interagency Working' was co-directed by Harry Daniels and Anne. Edwards. The research team included Paul Warmington, Deirdre Martin, Jane Leadbetter, David Middleton, Steve Brown, Anna Popova, Apostol Apostolov, Penny Martin, Ioanna Kinti, Mariann Martsin, and Sarah Parsons.

professionals who are engaged in the creation of new forms of multiagency practice.

Vygotsky's central concern was to study human functioning as it developed rather than considering functions that had developed. He referred to this methodology in a variety of different ways. I will use the term 'dual stimulation' in this paper. The essence of this approach is that subjects are placed in a situation in which a problem is identified and they are also provided with tools with which to solve the problem or means by which they can construct tools to solve the problem. When it is applied to examining professional learning, it directs attention to the ways in which professionals solve problems with the aid of tools that are provided by researchers. We study professional learning in workshops which were broadly derived from the 'Change Laboratory' intervention sessions, developed by Engeström and his colleagues in Helsinki (Engeström, 2007). In the most recent phase of the research we have conducted six workshops in each of our three local authority research sites. Each workshop lasts about two hours. The central tool of the Change Laboratory is a 3×3 set of surfaces for representing the work activity (see Figure 2). Practitioners participating in the Change Laboratory process face the surfaces and also each other. One or more researcher interventionists are present to guide the process. A video projector is important since videotaped work situations are typically used as material in the laboratory sessions. Each session is also videotaped for research and to facilitate the reviewing of critical laboratory events in subsequent sessions. In these sessions current working practices of team members are discussed, tensions and dilemmas are highlighted and alternative ways of working proposed. One way of interrogating practice is for a practitioner to be invited to present an overview of a case based on a pupil trajectory. This will have been prepared in a prior meeting with a researcher from the LIW team. The purpose of these sessions is that the practitioners discuss the objects of professional activity. This work is supported though the use of a range of devices and procedures. These include templates of calendars

(to summarise important events in the trajectory), maps (to depict the key parties involved), and agreements (to summarise the division of labour amongst the parties). Practitioners may also employ support devices (agreements, calendars, and maps) to highlight and remediate the temporal aspect, the sociospatial aspect, and the relational negotiational aspect of the work (Engeström et al., 2003). The *mirror* surface (see Figure 1) is used to represent and examine experiences from work practice, particularly problem situations and disturbances, but also novel innovative solutions. Videotaped work episodes as well as photographs, stories, interviews, quotes, narrative accounts can be used as mirror data. Engeström (2007) describes the essence of the process of dual stimulation in the laboratories

> … the *model/vision* surface is reserved for theoretical tools and conceptual analysis. The complex triangular model of an activity system (Engeström, 1987, p. 78), displayed schematically in [Figure

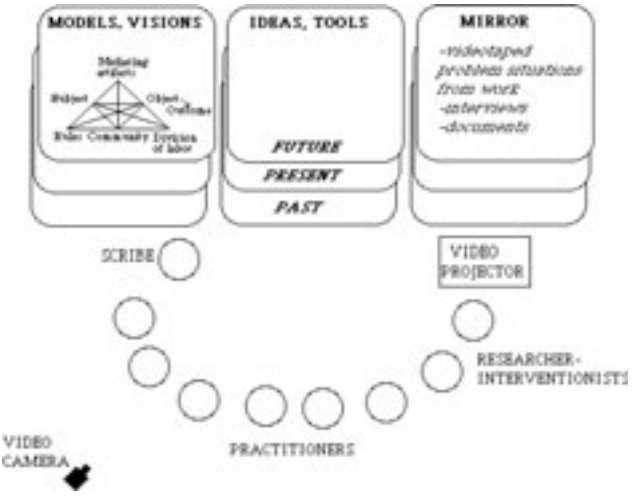


FIGURE 1
Change Laboratory (Engeström, 2007)

> 1], is used to analyze the development and interconnections of the work activity under scrutiny. Systemic roots of specific but recurring problems and disturbances are traced and conceptualized as inner contradictions of the activity system. In addition to the general model of activity system, more specific conceptual models are often used. The third surface in the middle is reserved for ideas and tools. (Engeström, 2007, p. 10)

In later laboratory sessions the participants are facilitated to envision and draft proposals for concrete changes to be embarked upon. These actions will be guided by notions of professional learning informed by reflections on the tensions and dilemmas raised by data. In this way critical incidents and examples from the ethnographic material are brought into Change Laboratory sessions to stimulate analysis and negotiation between the participants. We predicted that different professions will often initially interpret these objects differently.

We worked in three multiagency settings: (a) Liberton, a school whose remit has been extended to act as base for other agencies (b) Wildside, a children in public care team (c) Seaside, a multi-professional team that originally was comprised of education professionals but expanded to incorporate social care and health practitioners. We organised 6 Developmental Work Research (DWR) workshops at each site. Prior to the workshops interview and observational data were used as a base from which to select mirror data which embodied tensions, dilemmas and structural contradictions in the practices of each site. The aim was to build upon professionals' 'everyday' understandings of multiagency working, juxtaposing these with reflective, systemic analyses of the ways in which current working practices either enable or constrain the development of innovative multiagency working. The stated aim of the workshops was to address the challenges of multiagency professional learning by:

- encouraging the *recognition* of areas in which there is a need for

change in working practices.

- suggesting possibilities for change through *re-conceptualising* the 'objects' that professionals are working on, the 'tools' that professionals use in their multiagency work and the 'rules' in which professional practices are embedded.

One of the defining features of the settings in which we have worked is distributed expertise. Joined up service provision means that the case of an 'at risk' child will rarely be the province of one 'team' but will entail diverse professionals from education, social care, health and other agencies coalescing around the child's case. Therefore, issues of how expertise and specialist knowledge are claimed, owned and shared are extremely important and can be problematic. Clearly, it is not only how expertise is distributed between professionals that is key in multiagency functioning; there must also be examination of philosophies and beliefs about being a professional and about working with other professionals whose values, priorities, targets and systems may be different (Engeström, 1992). A model of description of the sites was developed with this understanding in mind.

ANALYSING AND DESCRIBING THE SITES

We argued that there was a need to refine a language of description which allows us to 'see' institutions as they do their tacit psychological work through the discursive practices which they shape. We needed a way of describing, what were essentially, the pedagogic modalities of the settings in which we were intervening. That is the most likely institutional practices that would be sustained in those settings. On the basis of the central CHAT assumption that development is driven through engagement with contradictions we were also keen to try and identify points at which communicative action will engage with the transformation of the institution. In addition, minded by the understanding that different social structures give rise to different

modalities of language which have specialised mediational properties we recognized the importance of developing an approach to the analysis and description of our research sites that could be used to monitor changes that took place over the course of our intervention. This was part of our development of an account of institutional structures as cultural historical products (artefacts) which play a part in implicit (Werstch, 2007) or invisible (Bernstein, 2000) mediation. Werstch (2007) outlines his case for such an understanding as follows:

> ... is part of an already ongoing communicative stream that is brought into contact with other forms of action. Indeed, one of the properties that characterizes implicit mediation is that it involves signs, especially natural language, whose primary function is communication. In contrast to the case for explicit mediation, these signs are not purposefully introduced into human action and they do not initially emerge for the purpose of organizing it. Instead, they are part of a pre-existing, independent stream of communicative action that becomes integrated with other forms of goal-directed behavior. ... implicit mediation typically involves signs in the form of natural language that have evolved in the service of communication and are then harnessed in other forms of activity. Because the integration of signs into remembering, thinking, and other forms of mental functioning occurs as part of the naturally occurring dialectic outlined by Shpet and Vygotsky, they do not readily become the object of consciousness or reflection. (Werstch, 2007)

Hasan (2002) argues that Bernstein paid very close attention to invisible semiotic mediation – how the unself-conscious everyday discourse mediates mental dispositions, tendencies to respond to situations in certain ways and how it puts in place beliefs about the world one lives in, including both about phenomena that are supposedly in nature and those which are said to be in our culture. She asserts that

discourse is not treated as simply the regulator of cognitive functions; it is as Bernstein (1990, p. 3) states also central to the shaping of 'dispositions, identities and practices.' Hasan (2001, p. 8) also suggests that Bernstein's analysis of how subjects are positioned and how they position themselves in relation to the social context of their discourse, offers an explanation of hybridity, in terms of the classification and framing practices of the speaking subjects. The invisible semiotic mediation is to be found in the relations of power and control which give rise to voice message relation in which identities are formed and social positions are bequeathed taken up and transformed. In Hasan's empirical work she has evidenced this effect: 'What the mothers speak, their selection and organization of meanings is a realisation of their social positioning'(Hasan, 2002, p. 546).

In order to understand social mediation it is necessary to take into account ways in which the practices of a community, such as school and the family are structured by their institutional context (Abreu, & Elbers, 2005). We argued that these have arisen, have been shaped by, the social, cultural and historical circumstances in which interpersonal exchanges arise and they in turn shape the thoughts and feelings, the identities and aspirations for action of those engaged in interpersonal exchange in those contexts. There is a need to connect the theory of social formation of mind with the descriptions that are used in the activity of research. This should provide a means of relating the social cultural historical context to the form of the artifact, in our case the patterns of talk understood and analysed as communicative action. If processes of social formation are posited then we suggest that research requires a theoretical description of the possibilities for social products in terms of the principles that regulate the social relations in which they are produced. We need to understand the principles of communication in terms derived from a study of principles of social regulation at the institutional or organizational level.

Thus from our standpoint the relations of power and control, which regulate social interchange, give rise to specialised principles of

communication. These mediate social relations and shape both thinking and feeling: the 'what' and 'how' as well the 'why' and 'where to' of practice. We were concerned with the ways in which wider social structures impact on the interactions between the participants and their patterns of communicative action.

Bernstein's (2000) model is one that is designed to relate macro-institutional forms to micro-interactional levels and the underlying rules of communicative competence. He focuses upon two levels; a structural level and an interactional level. The structural level is analyzed in terms of the social division of labour it creates (e.g., the degree of specialisation, and thus strength of boundary between professional groupings) and the interactional with the form of social relation it creates (e.g., the degree of control that a manager may exert over a team members' work plan). The social division is analyzed in terms of strength of the boundary of its divisions, that is, with respect to the degree of specialization (e.g., how strong is the boundary between professions such as teaching and social work). Thus the key concept at the structural level is the concept of boundary, and structures are distinguished in terms of their relations between categories.

The interactional level emerges as the regulation of the transmission/acquisition relation between teacher and taught (or the manager and the managed), that is, the interactional level comes to refer to the pedagogic context and the social relations of the workplace or classroom or its equivalent.

Power is spoken of in terms of classification which is manifested in category relations which themselves generate recognition rules. Possession of which allows the acquirer to recognize as difference that is marked by a category as would be the case of the rules which allow a professional to be recognized as belonging to particular professional group such as an Educational Psychology Service. This is not simply a matter of finding out which service someone belongs to, it also refers to the ways in forms of talk and other actions may be seen to be belonging to a particular professional category or grouping. When there is strong

insulation between categories (i.e., subject, teachers), each category is sharply distinguished, explicitly bounded and having its own distinctive specialization, then classification is said to be strong. When there is weak insulation then the categories are less specialized and there distinctiveness is reduced; then classification is said to be weak. Professional groups, for example, may be more or less specialised and therefore differ in their classificatory principle.

Different institutional modalities may be described in terms of the relationship between the relations of power and control which gives rise to distinctive discursive artefacts. For example with respect to schooling, where the theory of instruction gives rise to a strong classification and strong framing of the pedagogic practice it is expected that there will be a separation of discourses (school subjects), an emphasis upon acquisition of specialized skills, the teacher will be dominant in the formulation of intended learning and the pupils are constrained by the teacher's practice. The relatively strong control on the pupils' learning, itself, acts as a means of maintaining order in the context in which the learning takes place. This form of the instructional discourse contains regulative functions. With strong classification and framing the social relations between teachers and pupils will be more asymmetrical, that is, more clearly hierarchical. In this instance the regulative discourse and its practice is more explicit and distinguishable from the instructional discourse. Where the theory of instruction gives rise to a weak classification and weak framing of the practice then children will be encouraged to be active in the classroom, to undertake enquiries and perhaps to work in groups at their own pace. Here the relations between teacher and pupils will have the appearance of being more symmetrical. In these circumstances it is difficult to separate instructional discourse from regulative discourse as these are mutually embedded. The formulation of pedagogic discourse as an embedded discourse comprised of instructional and regulative components allows for the analysis of the production of such embedded discourses in activities structured through specifiable relations of power and control within institutions.

A MODEL OF DESCRIPTION

A model of the setting in which the development of such multiagency functioning develops must refer to the group of professionals who were involved in the workshops, the wider local authority and the clients who were to be served by emergent multiagency practices. The basic elements of the model were thus:

- DWR group
- Local Authority
- Clients

Bernstein's (2000) concepts of boundary strength (classification) and control (framing) can be applied to many aspects of such a model. Here we use the terms instrumental or instructional practice to refer to the pragmatic actions within practice. Within the workshop group the strength of classification (horizontal division of labour) in the practices of professional agencies and control (framing) over the membership of these groups was examined. The strength of distinctions in the vertical division of labour, the strength of the marking of hierarchy and the associated relations of control within this hierarchy was also seen to be a central facet of the structuring of the workshop groups. The strength of control over the regulative practice (matters of order, identity and relation) was also noted. In many respects this shows similarities with Engestrom's (1992) discussion of the 'why and where to' aspects of activity in that the reference is to the values and beliefs which underpin practice. The features of the practices within the DWR group were modelled as follows:

Instrumental or instructional practice Horizontal	Classification and framing
Instrumental or instructional practice Vertical	Classification and framing
Regulative Practice	Framing

In the local authority the vertical division of labour between members of the workshop and their colleagues in the wider authority was also taken as a key feature of the research sites as was the extent to which boundaries were maintained between the professions in the local authority. The control over the boundary relations between the workshop groups and the local authority was modelled, somewhat awkwardly, as the framing of those relations where strong framing was taken as a boundary maintained by the authority, weak framing as a boundary relation in which the workshop group maintained control and an intermediary position in which a relatively fluid two way flow of communication was maintained. The features of the practices within the local authority were modelled as follows:

Instrumental or instructional practice

Horizontal	Classification
Vertical	Classification and framing
Control over boundary	Framing

The extent to which clients were classified as belonging to a particular category of need (strong classification) or as the 'whole child' (weak classification) was also noted. This was taken as the division of labour within the client community.

The overall model became:

DWR group

Instrumental or instructional practice Horizontal	Classification and framing
Instrumental or instructional practice Vertical	Classification and framing
Regulative Practice	Framing

Local Authority

Instrumental or instructional practice Horizontal	Classification and Framing
Instrumental or instructional practice Vertical	Classification and framing
Control over boundary	Framing

Clients

Instrumental or instructional practice	Horizontal
Classification	

Each aspect of this model was described for each site through data gathered through extensive observations and interviews. A coding grid was developed for each aspect. The codings were independently validated by two researchers.

	1C--	2C-	3C+/-	4C++	5C++
seaside	X				
wildside X	X				
liberton X				X	

FIGURE 2

Example of coding grids applied to model of description
Model Feature -- Division of Labour (Vertical) Exemplar interview question - How hierarchical is the management in your work ?
Coding
1. C- - =All members of a 'flat' team
2. C++=Strong hierarchy (director, dep director, principal, senior, junior)

The codings were the full model for each site were as shown in figure 3

We also noted the means by which attempts were made to coordinate services in the wider local authority as well the form of any recent disruption in the order of the local authority. These features are given in figure 4.

At a very general level there are stronger values of classification and framing of the instructional practice in Liberton and progressively weaker values in Seaside and Wildside. In addition, a consideration of the nature of the regulative practice in each site suggests strong framing

	Wildside	Seaside	Liberton
DWR group			
Horizontal	C- F-	C+/- F+/-	C++ F++
Vertical	C- -F-	C- - F+/-	C+ F++
Regulative Practice	F+/-	F++	F- -
Local Authority			
Horizontal	C + F+	C+ F+	C+ F+
Vertical	C- F -	C++ F+/-	C++F++
Control over DWR group boundary	F+/- Free flow	F++ Control with LA	F- - Control with DWR
Clients			
Horizontal	C-	C- -	C+ +

FIGURE 3

	Seaside	Wildside	Liberton
Coordination of agencies and agents	Perceived lack of response to perational staff views (at several levels)	Strong strategy	No strategy which impacted on case study site. Strategy developing within rest of LA
Disruptions	Several major reorganisations Radical localisation of services		Recent leadership changes and reconfigured systems

FIGURE 4

Features of the local authority

in Seaside, weak framing in Liberton, with Wildside occupying an intermediary position. Thus, in Liberton the instructional practice (which is strongly classified and highly framed) predominates over the weak regulative discourse. Whereas in Seaside the relatively weak boundaries witnessed in the weaker values of classification of the instructional practice are embedded in the regulative practice through which common values and meanings have been the object of much of the early work of the team. In Wildside an intermediary position is witnessed in the embedding of the instruction and regulation.

A crude typification of these sites in terms of a general application of

Bernstein's model of the embedded features of pedagogic practice in which instructional practice (I) and regulative practice (R) are mutually embedded but in which one may predominate

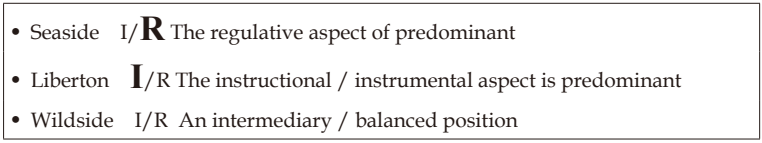


FIGURE 5

Representation of the structure of pedagogic practices at each study site

In this way we arrived at condensed codings of what may be seen as the historical legacy presented at the moment when we sought to engage with groups of professionals at each site. In each case study we carried out six two hour developmental workshops over one year. Workshops were comprised of the practitioners who were working together or were moving towards working together. A key concept in DWR is dual stimulation. We used activity theory and cognate concepts to stimulate their reflections on the contradictions that emerged from a consideration of the ways in which the histories of their work had shaped the present and potential for future work.

ANALYSING COMMUNICATIVE ACTION AT EACH SITE

In order to handle the diversity of material gathered at the empirical sites, and to coordinate multi-centred analysis, it was necessary to develop accessible archiving of the primary data and clear protocols for maintaining the coherency of the analysis across the centres. Analytic protocols were developed to support in-depth communicative analysis of the audio and video-tape recorded empirical. The aim was to provide an analytical evidence base to substantiate CHAT based analysis. David Middleton proposed an approach to analysis which focussed on the

forms of social action that are accomplished in talk and text and the sorts of communicative devices that are used. Middleton et al (2008) suggested the use of a conceptual bridge for textual analysis across cases. The particular focus of what became known as the 'D-analysis' grew out of a concern to examine the emergence of what-it-is-to-learn in multi-agency settings as an analytic object across the workshops. A minimal model of learning as the introduction of a difference was adopted and stages of learning related talk were formulated:

1. **Deixis –** indication, pointing
This stage involves making a start on a subject during a conversation to draw the audience's attention towards a particular problem.
2. **Delineation and definition**
This involves a reaction to what has been said in the conversation indicating that sense has been made. When another person moves on to explain the point from their own perspective by: a) acknowledging and qualifying that point; b) explaining further that point by drawing on their local context; or c) emphasising a different view (that may serve as a basis for expanding the conversation to explore what has just been seen as important).
3. **Deliberation**
This involves narrowing down the thinking process towards reaching an agreement. This is actioned through either giving or asking for consent in the conversation: a) building a consensus by evoking *local situation/knowledge*; or b) building a consensus based on *general knowledge*.
4. **Departure**
A departure could be seen as a shift towards a qualitatively different stage in communicative interaction. At this stage we can see progress in the group's conceptualisation of the problem.
5. **Development**
This involves finding a tool from within the previous conversation that enables people to discuss a solution to an identified problem and moving the conversation to a more "action" oriented level. In this way the conversation reaches the level of "recognition" of a particular issue (Middleton et al., 2008)

Sequences of communicative action were analysed in the transcripts of the workshops. Some sequences progressed to departures others remained at other stages within the model. Each sequence was coded and described as shown in figure 6.

Short description of the topic as it occurs in the discourse VERTICAL RELATIONS	Workshop	Transcript page
Understanding, recognising and accepting others' expertise is related to their power and authority (vertical division of labour)	DS1	p. 17
Rule conflict between operation, strategy and monitoring	DS1	p. 38
Professional confidence in the light of power and hierarchy (it takes a lot of confidence and experience to be a lonely voice expressing a different opinion)	DS2	p. 40-42
Researcher intervention: How do strategists learn about problems operation faces?	DS4 DS5	p. 10, 12, 27 p. 41, 43
Ideas how to communicate with strategists	DS4 DS5 DS7	p. 28-29, 32, 41 p. 44, 48, 52 p. 37

FIGURE 6

Related sequences were identified and these were grouped into strands of talk that wove their way through the progress of the each series of workshops. These strands (comprised of different types of sequences) witnessed the progression of learning through and with talk in the workshops as shown in figure 7.

The themes that these strands addressed and the contradictions which gave rise to their emergence were analyzed in activity theoretic terms. At the end of the project participants were interviewed about what they gained from the experience and subsequent analysis revealed the traces of each sites strands in the interviews at each site. In this way we developed an approach to the analysis of communicative action in the workshops themselves along with a rudimentary approach to validation. The next move was to consider the relation between the communicative action that took place and the historically given structures which shaped the practices of participants.

Over the period of interventions in the workshops many structural transformations were witnessed and by the end of the intervention it was the weaker regulative practice of Liberton which was the object of intervention from an external agent. The historical legacy of the strongly

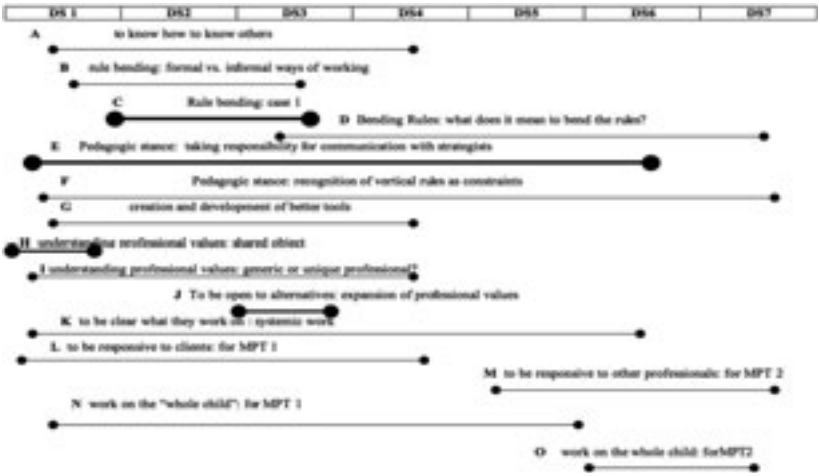


FIGURE 7

Seaside concept formation time lines

boundaried extended school site within which professional practices were highly controlled and which remained distinct from each other provided a setting in which a move to multiagency working and thus weakening of boundaries was most likely to be achieved through external influence on the values and beliefs within the DWR group (the regulative practice). This was confirmed through the analysis of communicative action within the workshops. An educational psychologist acted in this way.

In Seaside the focus of communicative action was on the rules and practices of communication within the instructional practice. Participants became frustrated by the contradiction between legacy rules (maintained by the local authority) and the new emergent objects of multiagency work. They had already established a strong regulative practice before the DWR intervention was initiated. On the basis of this legacy they sought to examine the contradictions in the instrumental aspects of their practice and began to bend (or even break) the legacy rules. The strong boundary between the workshop group and the local authority was

maintained through practices of communication in which instructions (rules) were formulated and tranmitted by local authority strategists bu who were unresponsive to replies or ideas formulated by operational professionals within the workshop group. The d-analysis confirmed that the boundary between the workshop group and the local authority was the focus of the communicative action in the workshops.

In Wildside the relation with clients became the predominant concern. There were no strong barriers between the group and the authority and although the categories of professional agencies within the authority remained strong the learning focussed on ways in which multiagency work could be coordinated through strategic tools. These tools were the focus of much of the communicative action in the Wildside workshops.

Hybridity

In order to refine an understanding of organisational, discursive and transmission practices in such situations new theories of concept formation which emphasise the complex nature of concepts will need to be deployed. An important part of the challenge is to show how written and spoken hybrid discourse arises and to investigate the consequences of its deployment. This feature has been noted by Engeström et al (1995).

> In their work, experts operate in and move between multiple parallel activity contexts. These multiple contexts demand and afford different, complementary but also conflicting cognitive tools, rules, and patterns of social interaction. Criteria of expert knowledge and skill are different in the various contexts. Experts face the challenge of negotiating and combining ingredients from different contexts to achieve hybrid solutions. (Engeström, Engeström, & Kärkkäinen, 1995, p. 320)

In response to the challenge of studying new and emergent expert

practices an understanding of discursive hybridity (Sarangi & Roberts, 1999) may provide an important opening for the development of an understanding of changes in discursive practice as different activity systems are brought into different forms of relation with each other. Research in this field requires a unified theory that can give rise to a coherent and internally consistent methodology rather than a collection of compartmentalised accounts of activity, discourse and social positioning which have disparate and often contradictory assumptions.

	Weak control over professional behaviour (F --)	Strong control over professional behaviour (F++)
Strong categories of professional (C++)	Switching between specialisms	Collection of distinct specialists
Weak categories of professional (C--)	Generalists 'melting pot' Which may be given coherence through a strong regulative practice	Succession of generalists (people)

FIGURE 8

entative typology of hybridities

The strong boundaries around the professional categories and the strong control over professional behaviour in Liberton maintained the practices of individual specialists. Whereas at Wildside there were weak boundaries around the professional categories in which professionals were situated in the workshop and they were more in control than there peers in Liberton but in which operational professional practice witnessed strong boundaries between services and their professional values coordinated by strategy resulted in a coordinated collection of specialists in the field. In Seaside the weakened professional boundaries and relations of control which had been weakened through rule breaking and bending gave rise to a collection of workers who drew on the primary strengths of their colleagues when they recognised the need for their expertise. The early days of this development are witnessed in the following statement albeit with a cautionary note that whilst operational practices were giving rise to new forms of identity there was something of a dissonance with strategic structures.

> But the key difference, which we have tried to broadcast is that basically everyone is a Children's Service worker. People are responsible for the whole child, you're not responsible for this bit of a problem that is presented in relation to this child or this family. And so there is an overarching responsibility. That's taken a while for people to really get to internalise, and I'm not sure we've completely achieved that yet. But within the leadership team it has taken time for people to stop thinking of themselves as Education or Social Care people. […] So, sort of completely integrated philosophy is tempered by that I think.

This move was not that of the dissolution of professional expertise. The following statement attests to the recognition of the need to retain in depth skills, knowledge and understanding.

> We might not see our colleagues from one month to the next, so we don't have their support but we have the support of the multi-professional team. So I to be honest since I've been part of the multi-professional team I haven't really taken too much notice of the other educational welfare officers because I see myself I suppose more a part of the multi-professional team. And they're all in… I mean my educational welfare officer colleagues are all in their teams as well. I mean we all got together yesterday because we had a training day and that's quite unusual. You know it's nice to catch up because obviously we can talk about our particular discipline which we can't do so much in the team.

This recognition of the need to retain professional strengths is set alongside the emergent attributes of relational agency.

> I mean I've found it's a learning curve because I've found out more about other members of the team and what they do, which has actually helped me as a professional. […] So that has actually

> helped me in my professional development and it's helped me to feel more confidence as well because I can say to a family, well I think perhaps, you know, you need support from such and such and, you know, I can follow that through and get that support for you. And then when that all works I think, yes!

The development of this way of working also helps organizations need to destabilize their categorical knowledge. This is knowledge that constrains action to possibilities afforded in gaze of the single professional acting alone. We saw many examples where new ways of working gave rise to shifts from what Engeström (2007) has called stabilization knowledge to possibility knowledge.

> Stabilization knowledge is constructed to freeze and simplify a constantly shifting or otherwise bewildering reality. It is used to turn the problematic into a closed phenomenon that can be registered and pushed around rather than transformed. It commonly takes the shape of fixed and bounded categories, but also narratives may be used to stabilize. Stabilizing categories often become stigmatic stamps on objects, both human beings and things. ... Possibility knowledge, on the other hand, emerges when objects are represented in fields with the help of which one can depict meanings in movement and transformation. One traces transitions of positions in a field, which destabilizes knowledge, puts it in movement and opens up possiblities. In this sense, possibility knowledge is agentive knowledge, the instrumentality of agency at work. (Engeström, 2007, p. 271)

The emergence of this agentic collaboration between actors is a form of what Engeström (2004) has called collaborative intentionality which he argues constitutes a new form of capital and is a central feature of organisations which are successful in developing multi-agency working. The agentic collaboration between the practitioners involved in the sites

we studied provided valuable assets for the organizations involved.

> They perform a dual job in that they solve very complex problems and also contribute to the reshaping of the entire way of working in their given fields. They are very cost-efficient in that they do not require the establishment of new positions or new organizational centers. Indeed, these formations tend to reject such attempts. Rejection and deviation from standard procedures and scripted norms are foundational to the success of such amoeba-like formations. Their efficacy and value lie in their distributed agency, their collective intentionality. In this sense, suggest the notion of collaborative intentionality capital as an emerging form of organizational assets. (Engestrom, 2004, p. 28)

CONCLUSION

This approach gives some insight into the shaping effect of institutions as well the ways in which they are transformed through the agency of participants. We modeled the structural relations of power and control in institutional settings, theorised as cultural historical artifacts, which invisibly or implicitly mediate the relations of participants in practices in which communicative action takes place. This communicative action was then analysed in terms of the strands of evidence of learning in and for new ways of working. This provided empirical evidence of the mutual shaping of communicative action by organizational structures and relations and the formation of hybrid professional identities.

This approach extends the application of Bernstein's work to the study of the transformation of institutional modalities over time. The analysis of communicative action provides an approach to the consideration of the sequential and contingent development of concepts over time in specific institutional settings.

This approach to modelling the structural relations of power and

control in institutional settings theorised as cultural historical artefacts which invisibly or implicitly mediate the relations of participants in practices. Their communicative action may be analysed in terms of the strands of evidence of learning in and for new ways of working gives some insight into the shaping effect of institutions as well the ways in which they are transformed through the agency of participants. It opens up the possibly of developing increasingly delicate descriptions of the rules and division of labour that obtain within and between settings. At the same time it carries with it the possibility of rethinking notions of agency and reconceptualising subject position in terms of the relations between possibilities afforded within the division of labour and the rules which constrain possibility and direct and deflect the attention of participants.

REFERENCES

Abreu, G., & Elbers, E. (2005). The social mediation of learning in multiethnic schools: Introduction. *European Journal of Psychology of Education*, *20*(1), 3-11.

Bernstein, B. (2000). *Pedagogy, symbolic control and identity: Theory, research, critique (revised edition)*. Lanham, Maryland: Rowman & Littlefield Publishers Inc.

Bernstein, B. (1996). *Pedagogy, symbolic control and identity: Theory, research and critique*. London: Taylor and Francis.

Bernstein, B. (1993). Foreword. In H. Daniels (Ed.), *Charting the agenda*: *Educational activity after Vygotsky*. London: Routledge.

Engeström, Y. (2007). Putting Vygotsky to work. The change laboratory as an application of double stimulation. In H. Daniels, M. Cole, & J. V. Wertsch (Eds.), *The Cambridge companion to Vygotsky*. Cambridge: Cambridge University Press.

Engeström, Y. (2004). New forms of learning in co-configuration work. *Journal of Workplace Learning*, *16*(1/2), 11-21.

Engeström, Y. (1987). Learning by expanding: An activity-theoretical approach to developmental research. Helsinki: Orienta-Konsultit. (available at: http://lchc.ucsd.edu/MCA/Paper/Engestrom/expanding/toc.htm)

Engeström, Y. (1992). Interactive expertise: Studies in distributed working intelligence. University of Helsinki, Department of Education. Research

Bulletin 83.
Engeström, Y., Engeström, R., & Kerosuo, H. (2003). The discursive construction of collaborative care. *Applied Linguistics*, *24*, 286-315.
Engeström, Y., Engeström, R., & Kärkkäinen, M. (1995). Polycontextuality and boundary crossing in expert cognition: Learning and problem solving in complex work activities. *Learning and Instruction*, *5*, 319-336.
Hasan, R. (2002). Semiotic mediation and mental development in pluralistic societies: Some implications for tomorrow's schooling. In G. Wells, & G. Claxton (Eds.), *Learning for life in the 21st century: Socio-cultural perspectives on the future of education*. Oxford: Blackwell.
Hjörne, E., & Säljö R. (2004). "There is something about Julia" Symptoms, categories, and the process of invoking ADHD in the Swedish school: A case study. *Journal of Language, Identity and Education*, *3*(1), 1-24.
Ivic, I. (1989). Profiles of educators: Lev S Vygotsky (1896-1934). *Prospects*, *XIX, 3*, 427-436.
Mäkitalo, Å., & Säljö, R. (2002). Talk in institutional context and institutional context in talk: Categories as situated practices. *Text*, 22(1), 57-82.
Middleton, D., Brown, S., Daniels, H., Edwards, A., Leadbetter, J., & Warmington, P. (2008). Making the difference in interagency working: Analytic challenges in studying professional learning in communicating what matters. In C. Candlin, & S. Sarangi (Eds.), *Handbook of applied linguistics communication in professions and organisations*. Berlin: Mouton de Gruyter.
Minick, N. (1987). The development of Vygotsky's thought: An introduction. In R. W. Rieber, & A. S. Carton (Eds.), *The collected works of L. S. Vygotsky. Volume 1. The problems of general psychology, including the volume thinking and speech*, New York: Plenum Press.
Ratner, C. (1998). Prologue. In R. W. Rieber, (Ed), *The collected works of L. S. Vygotsky. Volume 5, Child Psychology*, New York: Plenum Press.
Ratner, C. (1997*). Cultural psychology and qualitative methodology: Theoretical and empirical considerations*. London: Plenum Press.
Sarangi, S., & Roberts, C. (1999). Introduction: Discursive hybridity in medical work. In S. Sarangi, & C. Roberts (Eds.), *Talk, work and institutional order: Discourse in medical, mediation and management settings*. Berlin: Mouton de Gruyter.
Vygotsky, L. S. (1987). *The collected works of L.S. Vygotsky. Volume 1. Problems of general psychology, including the volume thinking and speech*. R. W. Rieber, & A. S. Carton (Eds.), N. Minick (Trans.), New York: Plenum Press.
Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. M. Cole, V. John-Steiner, S. Scribner, & E. Souberman (Eds. & Trans.), Cambridge, MA: Harvard University Press.

Wertsch, J. V. (2007). Mediation. In H. Daniels, M. Cole, & J. V. Wertsch (Eds), *The Cambridge companion to Vygotsky*. New York: Cambridge University Press.

Wertsch, J. V. (1998). *Mind as Action*. New York: Oxford University Press.

Wertsch, J. V. (1991). *Voices of the mind: A sociocultural approach to mediated action.* Cambridge, MA: Harvard University Press.

Wertsch, J. V., & Rupert, L. J. (1993). The authority of cultural tools in a sociocultural approach to mediated agency. *Cognition and Instruction*, *11*(3-4), 227–239.

3

The Predictable Failure of Sustainable Innovations in School: From Warrants to Actions and Back to the Future

Annalisa Sannino

INTRODUCTION

Major attempts to introduce new ways of teaching and learning in schools have very often been rejected by school personnel, become isolated, and died. Eminent examples are found both in alternative schools and in activities aimed at changing schools from within. Mutual connections and interactions between the innovative practices and the well entrenched teaching tradition in school can take the shape of benign neglect, failure to engage, reluctance, withdrawal, criticism, or open conflicts. Even innovations that at first are embraced often wither from the lack of sustained cultivation. By innovations here I refer to desirable and doable changes in school teaching and learning that mediate individual, collective and organizational development, whether triggered by new pedagogical ideas, new technologies, or new collaborative relations between the school and the world outside.

While innovations are usually in principle welcomed in schools, concrete attempts to introduce and sustain innovations often involve resistance and confrontations among participants. A number of studies have focused specifically on the factors that may interfere with teachers' agency with regard to their engagement in innovating teaching and learning practices. Paris' (1993) early study argues for an understanding of teacher's relation to innovation based on the evidence that teachers

conduct their work in multiple and often conflicting historical and ideological contexts, facing critical organizational obstacles. The author also refers to "the ideological walls … that define curriculum knowledge as a rationally created and sanctioned commodity, controlled and enforced by experts who deliver it to masses of teachers who are assumed to be incapable or unwilling to engage in such work" (p. 149).

Individual teachers and teacher collectives can become dysfunctionally protective of their current practices to the point of constraining or preventing innovation efforts. These individuals and collectives are often considered closed to innovative practices. This closure to innovations is often discussed in educational studies in terms of resistance or unwillingness to change. With regard to accountability-related curriculum policies, Sloan (2006) points out that an "understanding of teacher agency ... as merely a capacity to resist and 'act otherwise' … obfuscates important issues of teacher quality and equitability" (p. 123). Also, Lasky (2005) underlines the extent to which the implementation of school reforms can threaten teachers and lead to teacher's "unwillingness to change" (p. 913). Resistance or unwillingness to change is mainly seen in negative terms in these studies, as the opposite of true agency or as a very restricted form of agency - an unfortunate consequence of the introduction of new policies, or as a deviating type of initiative.

Studies which specifically focus on teacher resistance often see resistance as an obstacle to change (Corbett, Firestone, & Rossman, 1987) which should be eliminated (George, & Camarata, 1996). In a recent analysis (Sannino, in press) I examine in particular the case of a teacher in the process of a formative intervention (Engeström, 2007) which was commissioned in order to deal with problems that teachers were having in the evaluation of students' learning and in managing the students' conduct in the classroom during the evaluation. During this intervention process the teacher's discourse shifted from critical and disruptive to constructive and innovative. The analysis explains this transition from opposition to self-initiative as a constructive process through which this

teacher faced and worked out critical conflicts related to her teaching.

The case of this teacher sheds new light on 'resistance' as a manifestation of conflicts experienced by teachers in their practice. Behind resistance there are conflicts. Engaging in resistance is to engage in a field of struggles. It is a field of conflicts in which people dwell every day in their practice. An understanding of these conflicts can therefore be instrumental for supporting educational innovations. This is relevant for reflecting on ways to support agentive resistance, not only to conceive it positively, but to nurture it practically. If we start conceiving resistance in these terms, how can we identify these conflicts? From a methodological point of view, specific analytical tools are needed to identify these conflicts. In this chapter I address this methodological issue.

THE PREDICTABLE FAILURE OF SUSTAINABLE INNOVATIONS IN SCHOOL

By echoing Seymour B. Sarason's (1990) insight in *The Predictable Failure of Educational Reform*, this chapter explores the reasons why an initially successful innovative practice was not sustained. Sarason's book states that the predictability of the failure of educational reform efforts lays in the lack of initiatives among the community of educators. A very well known statement in this book is that "the biggest risk in education is not taking one" (p. 176). An important action, according to Sarason, consists in addressing undesirable features of the school system as a whole, by involving all the parties in the change process. The common top-down way to handle changes commonly leads to resentment and failure. Changing the power hierarchy involved in making school reforms must be pursued, according to Sarason, by promoting shared decision making which would involve all the parties concerned with the change process. While Sarason calls educators to action, one might question what prevents this action from taking place to begin with. In this chapter I argue that one way to support the appropriation and sustainability of innovations among teachers is acknowledging the

barriers that they face, beyond the simply perceived resistance.

Educational change can happen in different ways through reforms and innovations. Educational reforms are typically top-down changes initiated by authorities either at the local municipal scale or at the regional or national scale. They usually focus on overall change of the school system and do not address specific and/or localized practices. Educational innovations in contrast are typically small-scale changes initiated by groups of practitioners and/or researchers who want to experiment with novel ideas. Often they take the form of partnerships between researchers and practitioners. In this chapter I refer to these small-scale attempts to educational innovations by using the term "intervention". Educational innovations usually focus on specific and localized practices or sets of practices that do not cover the entire school system, but only particular aspects of it. They are bottom-up changes that strongly depend on the commitment or involvement of local teachers and may be initiated and constructed by these practitioners themselves.

Educational reforms and innovations are different yet related. The evaluation of educational reforms is most often based on specific student outcomes, e.g., increases in attendance rates, graduation rates, or average test scores. The evaluation of educational innovations generally focuses on detailed descriptions and analyses of learning processes rather than primarily on statistically significant outcomes. While it is often necessary to consider outcomes such as student achievement and test scores, generally these are of secondary importance from the perspective of educational innovations. Since educational innovations are local and specific, they tend to spread differently from educational reforms. Rather then being adopted at once by a whole educational system, they spread and diffuse through interpersonal interactions. People hear and read about them, visit the site where an innovation has been initiated and perhaps try to implement it in their own local settings. Finally, educational innovations rarely become system-wide reforms, although it is possible. On the other hand, system-wide reforms may trigger local

innovations. In the case that I am presenting in this article, a system-wide reform in Italy to teach informatics in schools beginning in the first grade facilitated the introduction of the Fifth Dimension (5D) innovation in the school.

The 5D is a computer-mediated activity system internationally known as the 'Fifth Dimension' or 5D (Nilsson, & Nocon, 2005). The 5D was promoted as a research intervention within a project of collaboration between a South Italian university and the local elementary school for developing the work of teachers. The project was designed to be a response to two pressing demands coming from Italian authorities and the local university. First the Italian Ministry of Education wanted to introduce informatics instruction starting from the first grade. Secondly, future elementary schools teachers who study at the university went regularly to the school for internships; they preferred to spend their time during internship more actively than sitting in the classrooms mostly observing what the teacher did and interacting only occasionally with the children. As in many other countries, also in Italy teacher training education involves practice periods in schools. However, in Italy elementary school teacher education was only recently brought into the university with a Master's degree requirement. Within the practice periods a particular tension arises between internship students who study at the university and the school teachers who supervise them but often do not have a university degree. This tension often translates into keeping internship students mainly in the position of passive observers and giving them minimal access to real teaching.

After an eight-month period of conception of the artifacts together with teachers and university students, the 5D operated as an in-school site from March 2005 until May 2005 in the multimedia laboratory of the school. In spite of the enthusiasm and participation generated by the project in the university and in the school among the teachers, the students, the researchers and the pupils, the 5D was not continued the following year in the school. All the 5D artifacts left in the school for teachers and internship students remain unused behind the locked door

of the multimedia laboratory of the school. The internship students returned to the school for their last year internship and spent their time again passively as before the 5D experience, sitting in classrooms mostly observing what teachers did and interacting only occasionally with the pupils.

Even if local innovation attempts as this one ostensibly die, they can still spread because others may adopt and continue them. In other words, the sustainability of innovations does not refer only to local continuity, but also to diffusion and adaptations in other settings. Such adaptations do not necessarily mean that an innovation is scaled up and becomes a system-wide reform. Local innovations are seldom adopted by authorities. In the case of the 5D there have been adaptations in different parts of the world indicating a type of scaling up that adapts core concepts and elements of the 5D (i.e., the innovation) to local contexts and concerns and produces localized versions of the innovation as complementary forms of education for children with diverse strengths and needs (Cole, & the Distributed Literacy Consortium, 2006).

The perspective I suggest in this chapter questions the notion of sustainability defined as the systematic continuation of local innovative practices. This perspective is supported by findings recently presented in a special issue (Sannino, & Nocon, 2008), using a cross-case study approach based on international adaptations of the 5D and a playworld that shares some 5D characteristics. Even in cases where the 5D was not continued, some of the practices that it generated were continued in modified forms by local practitioners. In particular two analyses (Sannino, 2008; Nocon, 2008) in the special issue suggest that sustainability should not be taken only as complete appropriation of the initial innovation. Sustainability also takes the form of transformation of local practices as aspects of an innovation contribute to potential enrichment and development of those practices even though the overall innovation itself is visibly discontinued.

New forms of teaching can typically be carried out as long as there is external support and funding. The Italian 5D project, instead, relied

mostly on underutilized resources which already existed in the school. No funding was involved and university researchers and Master's students worked on a voluntary basis. After the experimental period, all materials were left in the school's possession and researchers repeatedly expressed their availability to assist the teachers, the internship supervisor and the internship students if they would take the initiative to continue the 5D. While their inaction could be conceived as a failure, the following interesting facts occurred afterward:

1) Two Master's degree students involved in the project as research assistants who graduated in the meantime made unsuccessful attempts to create 5D sites in educational institutions with which they now interact as professionals.

2) Teachers involved in the 5D integrated aspects of the 5D in their regular teaching.

3) Internship students involved in the 5D used knowledge acquired during the 5D experience in the internship practice and in their studies afterward.

Researchers' expectations of straightforward continuation of what they initiate in a school is fallacious. Individuals take sideways actions which cross the boundaries of researchers' expectations. The impact of researchers' interventionist work is not reducible to just acceptance or rejection, success or failure. Utopian interventionist research discloses obstacles and raises conflicts. Some of those conflicts lead to new hybrids. For these reasons during interventions obstacles, conflicts and sideways actions should be recorded and reflected upon within a specially organized second layer of the intervention. Teachers' in-service training, for instance, could be used for this purpose. This training could be organized in combination with a 5D-type of intervention to reflect on emerging obstacles, conflicts and potential hybrids. If not recognized,

these conflicts and sideways actions might be interpreted as evidence of failure. This chapter aims at providing a methodological tool for detecting such potential obstacles for the school to appropriate and sustain innovations.

METHODOLOGY AND RESEARCH DESIGN: FROM WARRANTS TO ACTIONS AND BACK TO THE FUTURE

Back to the Future is a science fiction adventure film directed by Robert Zemeckis and produced by Steven Spielberg in 1985. Michael J. Fox is one of the stars in the film. The film tells the story of Marty, a teenager who is sent back in time from 1985 to 1955. He meets his parents in high school and accidentally prevents his parents to fall in love. In order to be able to return to 1985, Marty must repair the damage to history. Metaphorically, the methodology I present in this chapter aims at accomplishing something similar, by digging up and dwelling in conflicting issues of the past in order to move on toward the future. An intervention is a future-oriented effort which, however, requires backward analytical movements in order to progress forward.

This chapter uses analyses from recent case studies (Sannino, 2008; Sannino, 2010) based on the 5D interventionist research design to outline a method for analyzing data collected within an interventionist project such as the 5D. The data consist of ethnographic fieldnotes produced by the internship students, transcripts of video- and audio-recorded meetings with the internship students, and transcribed interviews of the internship students, internship supervisor and the teachers. The interviews were conducted in three phases: before the beginning of the 5D, during the period when the 5D was running, and one year after the intervention ended.

The analysis focuses on four key groups of participants as partners in the project: the teachers, the internship students, the internship supervisor, and the researchers. The analysis proceeds in three steps. The first step consists in identifying the justifications that participants

give for not continuing the 5D. The second step of the analysis consists in reconstructing sequences of actions (Leont'ev, 1978) initiated by the participants during the intervention. The third step in the analysis consists in revealing conflicts and dilemmatic representations behind these sequences of actions. The sequences of actions are constructed starting from the statements of the participants in interviews conducted one year after the intervention ended. The statements are conceptualized as warrants (Toulmin, 1958), i.e., justifications that the participants give for not continuing the 5D. The action sequences are then built tracing backward actions thematically connected to these warrants.

FIRST STEP: IDENTIFICATION OF THE JUSTIFICATIONS FOR NOT CONTINUING THE 5D

The justifications for not continuing the 5D are identified by tracing the participants' statements backward, starting from interviews conducted one year after the intervention ended. The justifications are conceptualized as warrants following Toulmin's (1958) method for the analysis of argumentation. What Toulmin calls warrants are statements which legitimize an argument. Toulmin (1958) suggests the following as the basic "skeleton of a pattern for analysing arguments" (p. 99).

D in the diagram stands for "data", that is the foundation or set of

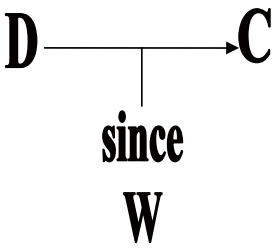


FIGURE 1

Pattern for the analysis of argumentations
(Toulmin, 1958, p. 99)

evidence on which an argumentation is based. C stands for "conclusion", that is the argued claim that one is trying to convincingly establish. "Unless the assertion was made quite wildly and irresponsibly, we shall normally have some facts to which we can point in its support: if the claim is challenged, it is up to us to appeal to these facts, and present them as the foundation upon which our claim is based. … We have, therefore, one distinction to start with: between the *claim* or conclusion whose merits we are seeking to establish (C) and the facts we appeal to as a foundation for the claim – what I shall refer to as our *data* (D)" (Toulmin, 1958, p. 97).

The arrow in the diagram indicates the argumentative movement from the data to the conclusion. In Toulmin's own words: "We may symbolise the relation between the data and the claim in support of which they are produced by an arrow, and indicate the authority for taking the step from one to the other by writing the warrant immediately below the arrow. … As this pattern makes clear, the explicit appeal in this argument goes directly back from the claim to the data relied on as foundation" (p. 99).

W in the diagram stands for "warrants": "The warrant is, in a sense, incidental and explanatory, its task being simply to register explicitly the legitimacy of the step involved and to refer it back to the larger class of steps whose legitimacy is being presupposed" (p. 100), "To present a particular set of data as the basis for some specified conclusion commits us to a certain *step*; and the question is now one about the nature and justification of this step. Supposing we encounter this fresh challenge, we must bring forward … propositions of a rather different kind: rules, principles, inference-licences or what you will, instead of additional items of information. … Propositions of this kind I shall call *warrants* (W), to distinguish them from both conclusions and data" (Toulmin, 1958, p. 98).

The definition of warrant becomes clear by distinguishing it from the data: "Data are appealed to explicitly, warrants implicitly. In addition, one may remark that warrants are general, certifying the soundness of

all arguments of the appropriate type, and have accordingly to be established in quite a different way from the facts we produce as data" (p. 100).

The first step of the analysis allowed me to identify two basic categories of argumentation in the data: (1) individualized and group teaching, and (2) curriculum. The following two examples from the interviews conducted one year after the end of the intervention illustrate which kind of warrants were identified in the 5D data. The excerpts reported in this chapter are translated from Italian.

Example 1: Participants' Statements on Individualized and Group Teaching

Internship Student 3: The 5D has clearly more impact on our training as future teachers because it gives you the opportunity to concentrate on one or two children. This is, however, also utopian because you cannot concentrate only on one or two children. We will be teachers in front of a class of 20 children.

The argumentative structure behind this quote can be represented as in Figure 2.

The utopian character of the 5D is explicitly taken up (in italics in the diagram) by the internship student, by referring to the focus on one or two children at the time in the 5D. This is the concrete evidence on which the argument for not continuing the 5D is based. The implicit warrant legitimizing the argument concerns the principle of multiple children per one teacher in school. The argument of the internship student could be fully expressed in the following way: "Given the utopian character of the 5D, in which you concentrate only on one or

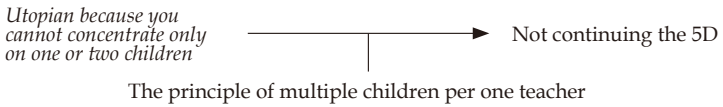


FIGURE 2

The argumentative structure of Internship Student 3's statement in example 1

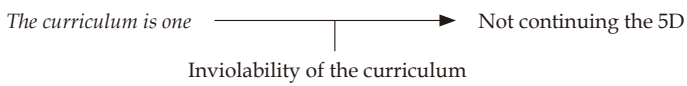


FIGURE 3

The argumentative structure of Teacher 1's statement in example 2

two children (D), we could not continue the 5D (C) since we have to prepare ourselves for becoming teachers in schools which function on the principle of multiple children per one teacher (W)".

Example 2: Participants' Statements on the Curriculum

Teacher 1: The curriculum is this one and you have to do it. You have your own program to fulfill ... Although this [the 5D] is wonderful work, you have to deal with so many things.

The argumentative structure behind the quote of Teacher 1 can be represented with the help of Toulmin's pattern for analyzing argumentations as in Figure 3.

The uniqueness of the standard curriculum is explicitly taken up (in italics in the diagram) by the teacher in the quote, by providing a concrete fact as a foundation of the argumentation for not continuing the 5D. The implicit warrant legitimizing the argument concerns the inviolability of the curriculum. The argument of the teacher could be fully expressed in the following way: "Given the evidence that the curriculum is this one (D), we could not continue the 5D (C) since we would have this way neglected the inviolable curriculum (W).

These warrants are very important because they reveal the basic assumptions of the logic of schooling. They appear unquestionable, they are taken from granted, and they are aggressively defended.

SECOND STEP: RECONSTRUCTION OF SEQUENCES OF ACTIONS

The second step in the analysis consists in reconstructing the sequences of actions by the participants in the course of the intervention. By using the expression "sequences of actions" I refer to Leont'ev's (1978) notion of "a series of concrete purposes … interconnected by a strict sequence… a certain complex of actions subordinated to particular goals" (p. 64). The sequences of actions are reconstructed by tracing backward actions thematically connected to the warrants identified in the first step of the analysis. As the main data on which this chapter is based are fieldnotes and transcripts of interviews, I focus specifically on verbal actions, that is statements of the participants in which they spelled out their concrete purposes with regard to the 5D and their other activities in the school.

Preceding actions thematically connected to the warrant of the group teaching principle

Some of the conflicts that the participants were facing in the 5D concerned the tension between individualized and group teaching. While the participants recognized the 5D individualized pedagogy as more effective, they pointed out the necessity to engage in work which is doable in normal school.

Teacher 1: 5D is better than ordinary internship to train future teachers. ... In a relation of one to one the result is always different and better. ... Instead, when you work with the group it is very different because everybody understands in a different way.

Teacher 2: Individual teaching is necessary, I agree, but we can't forget that the child in life will never be alone with an adult. The child will live in a group ... There can't always be an adult by his side. Individual teaching is important,

but group teaching cannot be put aside.

Frontal group teaching was considered inevitable. Teleology in this sense seems to be embedded in the mentality of teachers to the point that Teacher 2 referred to school group teaching as a reflection of the real life of the child.

Preceding actions thematically connected to the warrant of the curriculum's inviolability

While experimenting with teaching in the 5D the internship students began to describe teaching experiences with pupils which were in contrast with the idea of age-appropriate tasks. When the internship students started coming across with characteristics of the pupil which were unknown to them and discovered individual potentials of each pupil, they started also strongly emphasizing that children can do things on their own, as in the following excerpt, also related to the photo in Figure 4.

Internship student 4: Giulia had never worked with a computer before. I had my hand on her hand on the mouse and half way through I realized that my hand was not guiding her anymore. She was moving autonomously on the desktop.

These contrasting conceptions often materialized also in clashes between the teachers and the internship students as illustrated in the photos in Figure 5.

In their fieldnotes the internship students often reported contents of these tense exchanges as in the following excerpt from the fieldnotes of the Internship Student 8.

Internship Student 8: We were working on a task on the food chain. Lorenzo and I established a relationship of collaboration. He asked for help when he

FIGURE 4
Photo of Giulia autonomously using the mouse

◄a b►

FIGURE 5
Photos from tense interactions between the teachers and the internship students concerning 5D tasks which were not in line with age-appropriate curriculum units

needed help, otherwise he continued on his own. The teacher came to point out that the task we were working on was based on the program of the third grade and that there were therefore notions involved that the pupils did not have yet. Lorenzo, however, understood immediately these notions. After the first reading he summarized: "Sheep eat grass and the wolf eats the sheep. The grass is a producer, the sheep a primary consumer, and the wolf a secondary consumer."

Tensions emerged in the course of the 5D activities among the participants with regard to their perceptions of the tasks on which the pupils were working on. In a recent analysis (Sannino, 2010) I point out

that innovation attempts such as the 5D are fed by tensions both within the individuals who carry with them previously acquired knowledge and in the interaction with authorities who represent and reproduce standard practices.

The internship students, while encountering problematic situations in the 5D sessions with the pupils, were puzzled about the mismatch between the innovative conceptions of the pupils they learned at the university and more traditional conceptions of the pupils transpiring from the teachers' discourse. The analysis demonstrated that the puzzlement of the internship students was an indication of the conflicts that they were facing between radically different conceptions of the pupils. Teaching in this school and the trainees' teacher education program were primarily based on a conception that requires going through age-appropriate curriculum units according to the teacher's plan. This conception was captive of a tradition which does not allow the pupils to act independently, and restricts manifestations of their individual potential. The 5D intervention, on the other hand, was based on a conception which assigns a more active role to the pupils in the school.

In the 5D the internship students were brought to discover pupils' peculiarities and potentials which soon appeared to be in conflict with the dominant conception of age-appropriate curriculum units.

Some of the conflicts that the participants were facing in the 5D concerned more directly the curriculum. The possibility for the participants to continue the 5D was in conflict with the necessity to fulfill the demands of their curriculum, as in the following excerpt by Internship Student 3 who felt that ordinary internship allows students to learn what is required by regular teaching.

Internship Student 3: Although fourth-year internship is normally referred to as active internship, it is much more passive than [5D] internship last year. However, it [ordinary internship] gave us a chance to see how [fourth-year] internship is normally conducted. Because anyhow in schools if we don't know how to create a curriculum unit we could find difficulties.

Also the internship supervisor pointed out that the continuation of the 5D would have required her to modify her own program.

Internship Student Supervisor: We already have a project. For what I am concerned, for the fourth-year [internship] I had this year I already had a program to carry on, therefore I could not modify it.

The actions reported in the examples of this section concern conflicts between well-established and new conceptions of the pupils. These actions opened up a zone of uncertainty but also a zone of possibilities. This zone can, however, be very threatening. The warrants were a way to suppress these threats.

These excerpts reflect a general assumption among the participants that their respective activities in the school were unchangeable and incompatible with the 5D. The 5D was referred to as in contrast with features, obligations and constraints of the current activities of teaching and internship in the school.

Conflicts with previously acquired conceptions are likely to emerge when one starts experimenting with innovative ideas, as the internship students did in the 5D. An individual who is facing such conflicts can fully embrace and pursue an innovation if he or she breaks out of the previously acquired conceptions in conflict with new emerging ones. The participants in the 5D project in Italy did not have a chance to work out these conflicts.

THIRD STEP: DILEMMATIC NATURE OF THE SEQUENCES OF ACTIONS

Although the reported conflicts clearly played a role in the decision of the participants not to continue the 5D, the 5D led them to engage also in a variety of actions which deviated from the basic assumptions transpiring from the warrants. One example of such deviating actions is reported by Teacher 1 in the following excerpt.

Teacher 1: At the beginning [the pupils] would have liked to continue [5D]. Also because I am not competent with the computer, I had to ask a parent of one pupil to come and help.

Here the conflict between continuing the 5D and avoiding to engage in a new activity which would be beyond the teacher's competency led to the action of asking a parent to help the teacher with the use of a computer. This action was not a straightforward step to continue the 5D, but it was also not simply a return to the normal teaching — it was something in between.

The interview data do not allow me to trace systematically such connections between the conflicts and such actions. I could not systematically trace when these deviating actions occurred and the forms that they took. Interviews conducted one year after the end of the 5D allow only to gather *ex-post-facto* indications of their occurrence. Inevitably many deviating actions remained undocumented. In the following I present some of such deviating actions identified in the data, distributed in two categories: (1) documentation and dissemination; (2) application and experimentation.

1. Documentation and Dissemination

This category includes teachers' actions of documentation of the 5D and dissemination of knowledge acquired in the 5D. In the following excerpt, Teacher 3 tells about his effort to collect computer programs which he then used in his teaching and to gather further information about the 5D. He also mentions having acted as a mediator for his colleagues to use software brought to the school with the 5D.

Teacher 3: It [5D] has opened a perspective for focused research of software in Internet. In the summer, I spent my time downloading all I could. Also I have understood what are the sources of this methodology [5D] ... Then I proposed them [the software] to the children. Also, I tried to bring other colleagues to

know that software [used within the 5D] which remained in the computers.

Also internship students told about having engaged in disseminating knowledge about the 5D.

Internship Student 11: This year for an exam I want to propose this kind of activity [5D]. I am preparing an exam of didactics of Italian language and the professor gives us freedom to present a didactic unit for learning the language... I hope I will impress him.

2. Application and Experimentation

This category includes actions of applying knowledge acquired in the 5D and experimentation with computers in school teaching. In the following excerpts, teachers report on their occasional use of computers in teaching when traditional book-based methods do not work, and when children are bored with a particular subject.

Teacher 1: When I do not manage to do some work in a traditional way, with the common method, I do it with the machine [the computer] ... . In this sense, this [5D] perhaps had an impact.

Teacher 2: I have transferred things [from the 5D] the other way around. ... Mathematical tables are boring for children. Then in this situation we play with the computer.

Also internship students engaged in actions of application and experimentation based on their experience in the 5D. The 5D required a theory-based reflective approach to teaching and learning which several students transferred into their subsequent ordinary internship activity. They reported writing more detailed fieldnotes than before (Internship Student 1) and preparing support materials for their lectures in the school which they now called mediating artifacts as in the 5D (Internship

Student 2). Also they reported to use computers in the curriculum units they created within the internship (Internship Student 3), and talk to children consciously using a simpler vocabulary (Internship Student 9).

Internship Student 1: My way to write fieldnotes is now different. ... Before you were more superficial, more generic. ... Now I reflect, I go through things carefully afterwards.

Internship Student 2: We have prepared materials on PowerPoint and charts, and we have used them as mediating artifacts.

Internship Student 3: We focused on [preparing a curriculum unit which would require the use of] computers, because children are much more active [with computers] than with classic didactics. ... If we had not done 5D, I believe we would have not focused on computers.

Internship Student 9: Now I talk to children in a simple way, because of the many things that you learn here at the university one does not manage anymore to have a simple language.

These actions of documentation, dissemination, application and experimentation are far from complete attempts to continue the 5D. They were, however, triggered by the participants' experiences in the 5D and became integrated as small innovations in their current leading activities. In this sense, the 5D had an impact on the standard teaching and internship activities of the participants, and some aspects of the 5D, albeit perhaps minimal, were indeed sustained.

This finding provides also a basis to examine the dilemmatic nature of the sequences of actions.

Dilemmas have been traditionally studied in social psychology as means for understanding the processes of decision making, moral reasoning, social representations or ideologies. According to Billig (1988) dilemmas characterize our everyday thinking and conduct: "Dilemmas…

do not refer to the agonized mental states of the decision-maker, who is faced with a difficult choice… but to… aspects of socially shared beliefs which give rise to the dilemmatic thinking of individuals … Ordinary life… is shaped by dilemmatic qualities" (pp. 8-9)

In social-psychological literature conflicts and dilemmas are often discussed jointly. Billig (1988), for instance, points out that in dilemmas "socially shared representations and values can be seen to conflict. It is this conflict which produces the difficulty of the dilemma. In fact without *the conflict of values* the dilemma could not occur in social life" (Billig, 1988, p. 14; italics added by AS).

A dilemma expresses incompatible evaluations in the discourse of one or more individuals. Dilemmas stem from the ideology and history of a community. The advantage of exploring the dilemmatic nature of argumentation by digging up warrants is that it allows shifting from the analytical level of individual action to the level of collective activity and opens up the possibility of tackling the contradictory features of the activity under scrutiny (Engeström, & Sannino, forthcoming).

In the following excerpts, the use of linguistic cues such as "however" or "although" indicated the inherently dilemmatic nature of the participants' perspectives on the 5D, in connection with their common practices in the school.

Example 1: Individualized and Group Teaching

Internship Student 3: The 5D has clearly more impact on our training as future teachers because it gives you the opportunity to concentrate on one or two children. This is <u>however</u> also utopian because you cannot concentrate only on one or two children. We will be teachers in front of a class of 20 children.

The dilemmatic nature of this statement lies in the fact that the principle of multiple children for one teacher is endorsed as an inevitable feature in the work of future teachers, while at the same time the principle of individualized teaching is strongly defended as fruitful for

training future teachers.

Example 2: The Curriculum

Teacher 1: The curriculum is this one and you have to do it. You have your own program to fulfill ... Although this [the 5D] is wonderful work, you have to deal with so many things.

The dilemmatic nature of this statement lies in the fact that the principle of the curriculum's inviolability is referred to as imposed to the teachers, while at the same time the positive value of the 5D is strongly recognized.

Linguistic cues such as "however" and "although" do not correspond mechanically to specific manifestations of dilemmas. Clearly they can express many other things besides a dilemma. One can expect that a corpus of discourse data contains many more rudimentary linguistic cues than actual discursive manifestations of contradictions. Still the relative ease of detecting rudimentary linguistic cues makes their analysis a useful preliminary step.

CONCLUSION

The participants' actions through the different phases of the project often appear as missing continuity. For instance, teachers who were very collaborative and positive during the phases of conception and implementation of the 5D expressed harsh critiques on the same practice afterwards. The internship supervisor who was very reluctant and even disruptive at the beginning and during the project appears at the end to be very enthusiastic of the 5D. Also the internship students consider the traditional internship useless but comfortable, and on the other hand they find the innovative form of internship meaningful but too demanding.

While warrants might look monolithic, closed, almost dogmatically

single-minded statements, behind them there are conflictual and dilemmatic fields of tensions. Warrants may therefore be seen as moves to conceal uncertainty when facing the possibility and threat of change. This is in line with Vasilyuk's (1988) idea that critical conflicts paralyze people and reinforce the status quo. Without supportive measures to work out these conflicts and dilemmas, the non-continuation of the 5D became one more predictable failure of school innovation.

If recognized during the intervention, the conflictual and dilemmatic sequences of actions could be highlighted as obstacles to appropriating and sustaining innovation in the school. Supportive measures can be designed for working out these obstacles. One type of supportive measure could consist in recruiting allies; in the Italian 5D case for instance regional authorities which support computerization of the primary school or parents who want the pupils to learn using the computer. These allies would support the alternative logic of innovation.

In this chapter I suggest a three-step analysis for detecting potential obstacles to innovations. The first step consists in the identification of the reasons why those involved did not pursue the innovation, as reported by these participants themselves. The second step consists in the reconstruction of these sequences of actions initiated by the participants during the intervention. In this step the analyst proceeds backward starting from justifications or warrants provided by the participants after the conclusion of the intervention. Actions from the participants, which occurred in the course of the intervention, are then connected to the warrants on the basis of a common theme and for composing the sequences of actions.

For reformers and analysts of educational practices this chapter opens up the challenge that conflicts and dilemmatic sequences of actions might be monitored through a meta-reflective layer of negotiations and redefinitions during the actual innovation effort rather than *ex post facto.*

REFERENCES

Billig, M., & al. (1988). *Ideological dilemmas: A social psychology of everyday thinking*. London: Sage.

Cole, M., & The Distributed Literacy Consortium (2006). *The Fifth Dimension: An after-school program built on diversity.* New York: Russell Sage.

Corbett, H., Firestone, W., & Rossman, G. (1987). Resistance to planned change and the sacred in school cultures. *Educational Administration Quarterly, 23*(4), 36e59.

Engeström, Y. (1996). Development as breaking away and opening up: A challenge to Vygotsky and Piaget. *Swiss Journal of Psychology, 55*, 126-132.

Engeström, Y. (2007). Putting Vygotsky to work: the change laboratory as an application of double stimulation. In H. Daniels, M. Cole, & J. V. Wertsch (Eds.), *Cambridge companion to Vygotsky*. Cambridge: Cambridge University Press.

Engeström, Y., & Sannino, A. (forthcoming). Discursive manifestations of contradictions in organizational change efforts: A methodological framework. *Journal of Organizational Change Management.*

George, G., & Camarata, M. R. (1996).Managing instructor cyberanxiety: The role of selfefficacy in decreasing resistance to change. *Educational Technology, 36*(4), 49e54.

Lasky, S. (2005). A sociocultural approach to understanding teacher identity, agency and professional vulnerability in a context of secondary school reform. *Teaching and Teacher Education, 21*, 899-916.

Leont´ev, A.N. 1978. *Activity, consciousness, and personality*. Hillsdale: Prentice-Hall.

Nilsson, M., & Nocon,H. (2005). *School of tomorrow: Teaching and technology in local and global communities*. Oxford: Peter Lang.

Nocon, H. (2008). Contradictions of time in collaborative school research. *Journal of Educational Change, 9*(4), 339–347.

Paris, C. L. (1993). *Teacher agency and curriculum making in classrooms.* New York: Teachers College Press.

Sannino, A. (2008). Sustaining a non-dominant activity in school: Only a utopia? *Journal of Educational Change, 9*(4), 329-338.

Sannino, A. (2010). Breaking out of a professional abstraction: The pupil as materialized object for teacher trainees. In V. Ellis, A. Edwards, & P. Smagorinsky (Eds.), *Cultural-historical perspectives on teacher education and development: Learning teaching*. London: Routlege.

Sannino, A. (in press). Teachers' talk of experiencing: Conflict, resistance and agency. *Teaching and Teacher Education*.

Sannino, A., & Nocon H. D. (Eds.) (2008). Activity theory and school innovation. Special issue of *Journal of Educational Change, 9* (4).

Sarason, S. B. (1990). *The predictable failure of educational reform. Can we change course before it's too late?* San Francisco: Jossey-Bass.

Sloan, K. (2006). Teacher identity and agency in school worlds: Beyond the all-good/all-bad discourse on accountability-explicit curriculum policies. *Curriculum Inquiry, 36*(2), 119-152.

Toulmin, S. (1958). *The uses of argument.* Cambridge: Cambridge University Press.

Vasilyuk, F. (1988). *The psychology of experiencing*. Moscow: Progress.

4

Space for Teacher Learning: A Case Study on Developing Teacher Curriculum Leadership in Hong Kong

Edmond H. F. Law

CONTEXT OF EDUCATIONAL INNOVATION

Decentralization of educational decision making, particularly in the domain of the school curriculum, has been perceived as one of the core strategies in enhancing school improvement, teacher development, and pupil learning for the past several decades in many developed countries (Skilbeck, 1984; Fullan, 2008; Hopkins, 2001; Gamage, & Zajda, 2005). In general terms, decentralization means transferring the power of making pedagogical and curriculum decisions from the central agencies to the schools. It implies that school teachers take up new curriculum responsibilities. Often their role changes from curriculum users to curriculum developers, and their assigned tasks can be understood as a form of curriculum leadership (Stenhouse, 1975; Marsh, 1997; Ovens, 1999; Law, 2003; Harris, 2003, 2004). In Hong Kong, the decentralization movement took its embryonic form in the Llewellyn report in 1982, which suggested that school teachers should be involved in curriculum decision-making processes to enhance teacher professionalism and pupil learning (Llewellyn, 1982; Law, & Galton, 2004). Until 2002, teacher participation in curriculum decision making took an institutional approach. Recently, leadership in organizing school curriculum has been assigned to a senior teacher appointed as curriculum coordinator in each primary school in Hong Kong (Education Department, 2002). A few

empirical studies have examined what teacher participation in school-based curriculum-decision making means for teacher development or how teacher participation is being mediated by various contextual factors within the socio-cultural milieu of schools (Harris, 2005).

This article reports the findings on using the analytical framework of activity theory and its key concepts to interpret videotaped data from the meetings of two curriculum development teams in the second action cycle of a teacher leadership development project in a case school in April 2005. The need for such research was echoed by Engeström and Miettinen (1999, p. 27) who noted that the following:

> There has been very little concrete research on creation of artifacts, production of novel social patterns, and expansive transformations of activity contexts.

The various meetings among the members of the two curriculum development teams provide "activity contexts" in which "novel social patterns" are realized in the interactions among their members. These interactions in turn provide evidence for investigating how power relationship is realized in the discourse and how the discourse patterns reflect the power structures among members. It is the power structure realized in discourse that gives investigators opportunities to understand how the "initiation" of new ideas may be responded to differently. Differences in responses may open more opportunities for learning or, conversely, may limit the scope of learning. This is the key question that this article attempts to answer.

The key principles and theoretical assumptions of activity theory are outlined below.

ACTIVITY THEORY: ITS PRINCIPLES AND ANALYTICAL FRAMEWORK

The activity theory originated from the social learning theory of

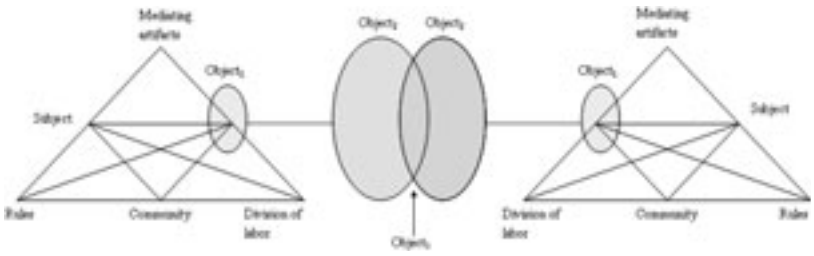


FIGURE 1

Third generation of activity system

Vygotsky, who advanced our understanding of learning in social action, which is mediated by various materials and psychological forms of cultural and social artifacts (Daniels, 2001). Artifacts refer to tools, signs, language, beliefs, traditions, schema, and discourse that shape the object of learning and are created and shaped in the interactions between different parties in the activity system - a primary unit of analysis in activity theory. Activity theory is a developmental theory that seeks to explain and influence qualitative changes in human practices over time (Daniels, 2001, p. 91). The first generation of the activity system includes only the subject, the object of the activity, and the mediation artifacts. The second generation develops into an interaction model, which depicts the emergence of the new artifacts due to the interactions between two activity systems. In the third generation, the rules, division of labour, and the community are included (Engeström, 2001). Figure 1, shows the key elements in an activity system and how the interaction of the two activity systems creates "Object 3" for the new activity system.

In the activity theory, the motivation to learn and develop is embedded in the social contexts and interactions among participants. Its driving force to change or innovate emerges when contradictions that lead to tensions and dynamics arise. These contradictions can be considered as a form of instability arising from the institutional contexts causing disequilibrium among the members in the activity system. However, these contradictions trigger actions for change on the part of

the participants in culturally valuable collaborative practices wherein something useful is produced (Engeström, 2001, p. 140) to settle the contradictions.

Expansive learning in the model of Developmental Work Research (DWR) by Engestrom encompasses a series of cycles of learning actions in response to a series of contradictions that the members encounter. It includes the following stages:

- Drawing on ethnographic evidence to question existing practices (such as learning in and for interagency working)
- Analysing the historical origins of existing practices and bringing in these analyses to support the analysis of current dynamics within and across services
- Modelling an alternative way of working (i.e., a new model of learning)
- Examining the model to understand its dynamics, strengths, and pitfalls
- Implementing the model and monitoring the processes and impact of the implementation in the dispositions and actions of the professionals
- Drawing on these data to reflect the processes and outcomes

(Engeström, 2001)

Learning in activity theory differs from the Piagetian model of learning, which highlights the vertical progression towards a higher level of cognition and competence in a course of study. On the contrary, activity theory advocates a complementary model of situated learning (Lave, & Wenger, 1991), which focuses on expanding learning experiences horizontally. Therefore, transformative learning emerges when participation and involvement are expanded, and when participation assumes rotations and changes in responsibility and role in the community of practice (Daniels, 2001, p. 39).

The change in responsibilities and roles of each member in an object-

oriented unit of activity (e.g., team work or leadership activities) assumes changes in power structure and division of labour in the team. Therefore, the change in power and division of labour (i.e., the mode of control) entails changes in the discourse features of the interactions within the team (Bernstein, 1995; Daniels, 1995). These features will shed light on the mechanisms or strategies used by members of the team to restrict the scope of the dialogue or to release the constraints to engage in genuine and authentic negotiation processes. In addition, the interaction features (i.e., discourse shifts) also indicate the processes in which the division of labour, the power and control, and the social relations are to be negotiated or mediated (Daniels, 2004). In other words, the study of the interaction processes in the activity system will disclose the social processes mediated in discourses by the hierarchical structure of the social relations among the members of the activity system. It will therefore show how a piece of innovative initiation by a member in the activity system is resisted and/or developed into a form of acceptable primary, secondary, or tertiary artifact, and how a piece of experience or belief is reproduced or transformed. This model appears deterministic and does not allow individual autonomy, but our concern here is the extent to which the power, as a psychological artifact, leads to changes in communicative patterns as well as the extent to which the changed patterns facilitate or constrain (mediation functions) negotiation of meanings among members of the team. We assume that greater negotiation space indicates greater potential for individual transformation and, therefore, teacher learning.

Application of Activity Theory

Figure 2 shows the three generations of activity theory, and how an activity system is related to the communal traditions and expectations at large. The mutual interactional relationships within and outside the activity system is depicted through the different types of arrows in the diagram.

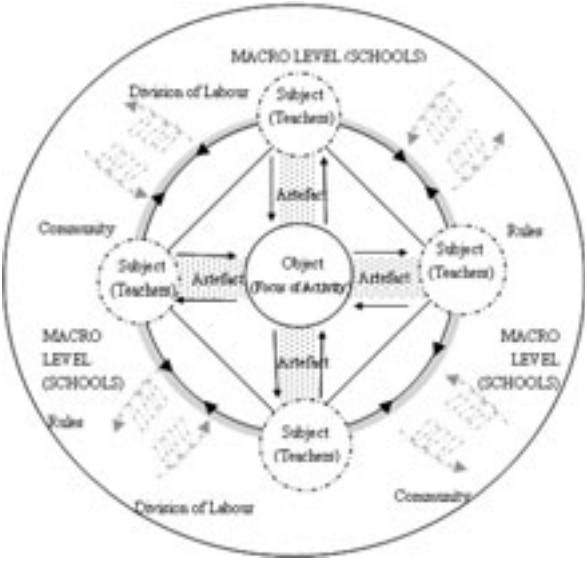


FIGURE 2

Activity system in the curriculum development teams in schools at the macro and micro levels

Instead of using triangles to indicate the inter-relationship among subjects, objects, artifacts and outcomes, I prefer using a circle in the centre of the diagram to represent the activity system and the relationship among its members in each Curriculum Development Team in the research project, showing the potential multi-directional interactions among the members in each team. The position of the object or focus of the activity remains central, and the artifacts are placed in the middle of the interaction paths among members of the team, symbolically and practically showing their mediation role(s) and function(s) in the production of the artifacts. The circle of the activity system is covered by another circle, indicating the interrelationship between micro activity systems, where each curriculum development team is located, and the macro societal systems, which represent the rules, division of labour,

and community of a school. The relationship between the micro activity systems (inner circle) and the macro sociological and cultural-historical systems in the school (outer circle) is indicated by the shaded spiral lines, illustrating the hidden and implicit mutual influences among individuals or groups of people as activity systems and the socio-cultural contexts of the community where individuals or groups operate.

At the micro level of analysis, an activity system is composed of the following key components:

Subjects – teachers
Object of the activity – focus of the innovation (outcome)
Artifacts – discourse, lesson plans, languages, values, and roles
Process of interaction – mediation (rejection, resistance, acceptance, revision, and transformation)

At the macro level of analysis, an activity system is composed of the socio-cultural contexts of the school community, including the following key components:

Rules - regulations

Community – social ethos, beliefs, values, traditions, and so on.
Division of labour – organizational structure
Process of interaction – socialization (rejection, acceptance, resistance, revision, and transformation)

DESIGN AND ORGANIZATION OF THE LEADERSHIP PROJECT

The School Curriculum Leadership Development Project

The school in this study was established in 1975 with a religious foundation. It is located in a district in Hong Kong and serves 700 pupils. The school, like many other primary schools, has been under tremendous

pressure because of a steady decrease in the enrollment rate for some time now. Many schools fear closure. Under the circumstance of change and challenge, the school leadership initiated a number of development projects in recent years such as participation in partnership schemes with the Education and Manpower Bureau, peer observation of teaching, teacher appraisal schemes, and collaborative lesson preparation to gain parents' confidence and to improve performance in school evaluation exercises. The development project reported here was undertaken for two years to develop teachers' leadership skills and capacities in reviewing, planning, designing, implementing, and evaluating school curriculum.

This project aimed at the creation of innovation opportunities for the professional development of teachers in a primary school in Hong Kong, China, within a reform context of change and innovation initiated by the government in 2000 (Education Commission, 2000; Design-Based Research Collective, 2003). Professional development activities in this school included workshops, seminars, reports, presentations, and the formation of three curriculum development teams to review, plan, design, implement, and evaluate pedagogical aspects of the school subject-based curriculum (Hiebert, Gallimore, & Stigler, 2003). All activities were organized into a cycle of action. Each semester had one cycle, the purpose of which was to sustain innovation among participating teachers and to manipulate core variables for observations, such as the rotation of leadership in the project (Law, & Wan, 2006).

The conceptualization of the team approach and its organization originated from the major principles and research practices of the activity theory outlined above. The core elements in effective professional development programmes, however, were derived from the principles of teacher development (Schon, 1983; Carr, & Kemmis, 1986; Elliott, 1991; Day, 1993; Fullan, 1993; Henderson, & Hawthorn, 1995; Darling-Hammond, & McLaughlin, 1995; Harris, 2003; MacBeath, & Moos, 2004; Cheng, 2009). These principles note that the development activities should be as follows:

1. School-based and problem-solving in nature, with a pedagogical focus
2. Collaboratively designed and implemented by teachers involved who have a sense of ownership in the innovations amid a flattened leadership context
3. Reflective and action oriented
4. Organized in a series of cycles of action and activities to sustain change and innovation

Tensions and Conflicts in Curriculum Development Teams

Three curriculum development teams based on the major school subjects were organized as a form of intervention to alter the socio-cultural contexts of schooling through the development of a culture of collaborative peer problem solving (Norwich & Daniels, 1997; Karkkainen, 2000; Daniels, 2004). This time, the agent of change is not located in the leadership of head teachers or experienced teachers but in the recreation of the socio-cultural situations in which regulative discourse as a form of artifact becomes problematic, and therefore members (actors) of the team might encounter internal tensions, dilemmas, conflicts, and contradictions. These should stimulate the emergence of critical moments for solutions, which will then be taken as the new object of the new activity system (Engestrom, 2001, p. 142). This new object will become the driving force in the new activity system.

Membership and the roles members play in object-oriented team meetings were critical focal points to the focus of the research; therefore, these were arranged to create contrasts among experience, seniority, and occupational hierarchy in the teams. For example, the Chinese and mathematics subject-based curriculum development teams were composed of department heads and other participating teachers who had less practical experience but were recommended because of their commitment and enthusiasm. As the rotation of leadership was also a focus of the research, subject heads led the team in the first cycle, and

another team member took the "leadership" role in the second cycle. This arrangement was intended to create a flattened leadership context (Harris, & Lambert, 2003), which is also a focus of our interest. For instance, observations focused on whether and how the change in power structure stimulated a change in discourse among members. We observed the negotiation processes among team members. For this project, we reconceptualized leadership as

> …a shared phenomenon at a teaching/learning site, and acknowledges the teacher as a curriculum maker, located within a context charged with possibilities for engagement. (Macpherson, & Brooker, 1999, p. 1)

This understanding is shared by many other scholars who advocate distributive leadership in schools (Spillane et al., 2004; Timperley, 2005).

Each curriculum development team was to follow a simplified model of action research similar to the theory of expansive learning cycles explained above. In this way, the object of the professional activities for all members in each team became focused and oriented towards pedagogical innovations, which are output or product driven. All members were expected to work in teams and collaborate (Law, Galton, & Wan, 2007).

METHOD AND DATA COLLECTION

A mixed approach was adopted to ensure that a wide range of direct experiences with the innovation was collected, and the effects of the innovation could be understood from various perspectives of the participants in the project (Teddle, & Tashakkori, 2003). We interviewed key participating teachers and videotaped the planning and reflection meetings as well as the practice lessons. All videotaped meetings were transcribed verbatim. This article reports the findings from the interpretation of the videotaped interactions among the members in the

mathematics and Chinese curriculum teams. We focus here on the mediation effects of two of the artifacts: the roles of the consultants and their leadership styles.

FINDINGS AND ANALYSES

However, the major purpose of this article, in general, is to use the empirical data relevant to our discussion on the fundamental theoretical premises of activity theory as a framework for analysis of situated learning in the context of school-based curriculum development, and, specifically, the development of teacher curriculum leadership. Attempts will be made to illustrate the extent to which some of the artifacts, such as power, role, and leadership style, serve as psychological and communication instruments in the mediation of the interaction pattern or discourse among the members of the two curriculum development teams. The effects on the interaction patterns gave us some evidence about the space of learning among the members of the two curriculum development teams in contrast with the results of previous studies based on interview data.

Mediation Effects of the Communication Styles of the Consultants

Partnership with university faculties in education is considered a key factor in the successful implementation of educational reform (Sherrill, 1999, p. 57; Brabeck, Walsh, & Latta, 2003). This is true especially when the style of collaboration fits well with the professional needs of the school-based innovation, rather than being done in an ad hoc manner. The current project emphasized the need for collaboration with university faculties. Each subject team was then assigned someone in the field to provide professional support and advice on pedagogical innovation. The appointed consultant worked with the curriculum development teams, joined the collaborative lesson preparation meetings, observed practice lessons, attended the reflection meetings,

and provided advice and feedback on the focus of the pedagogical innovations. The functions and practice of having a consultant from outside the school environment working with the school-based curriculum development team or projects have not been well documented in many school improvement or curriculum development project reports. The consultants appointed for the two curriculum development teams worked with each of the teams in the first action cycle and developed some form of mutual understanding with the participating teachers. The members of both teams found them useful, appreciated their professional input, and enjoyed the opportunities they presented, particularly on the issues they confront and on the exploration of possible alternatives (Law, Galton, & Wan, 2007).

However, the impact of the mediation roles of the two consultants during the curriculum deliberation of the two teams seems to differ in quite a number of dimensions. I now separately present the observations on each case using several themes, such as the emerging collaboration models and models of personality or professional style.

A Restricted Code in the Chinese Curriculum Development Team

The instructional leadership played by the Chinese curriculum team has been discussed and documented in another article by the same author (Law, & Wan, 2006). Here, our focus is on the effects of the professional style of the consultant on the communication patterns of the meetings in such a way that the potential exploratory function of the role of the external consultant is suppressed, thus restricting the space for negotiation among members of the team. The style of the consultant's professional input and his relationship with the team were salient and explicit in the videotaped planning and reflection meetings. Analyses of the videotaped planning meeting corroborated teacher perspectives on the relationship between the consultant and the curriculum development team. The consultant gave significant professional input on pedagogical principles and practices in relation to the Chinese curriculum during the

planning meeting as well as during the reflection meetings after the practice lessons. He tended to dominate and direct the discourse, which was closed to more alternatives and prevented the elicitation of possibilities from the participating teachers.

The consultant was recorded as saying the following:

> ...problems with speaking…speaking ability, attitude and habit are important, indeed the curriculum guide is very clear about this, listening, speaking, reading and writing … if you want them to master these skills, you need to train them on character and word construction, sentence patterns, etc., …speaking ability starts with early age, …in a lesson, four pupils in one group, they have to speak, they have to find a topic themselves, like school issues, news, let them speak free, can speak for two minutes,… other groups follow… (Consultant, literal transcription, videotaped consultation meeting on 22 April 2005)

In response to a teacher's pedagogical questions, the consultant here elaborated on the issue, gave general advice on alternatives, compared the experiences of other schools, and proposed strategies. This communicative pattern was consistently observed throughout the three meetings he had with the team. His discourse style matched the features of the didactic leadership, while the other members in the meetings were given limited space for meaning negotiation (Bernstein, 1995). The communicative pattern here is a convergent one.

The observations given by the teachers were also congruent with the discussion content in the planning meeting. For instance, the teachers thought that the focus of the meeting was no longer on the innovative aspect of the practice lessons but rather on general issues on curriculum and teaching in primary schools in Hong Kong. The lack of clarity with regard to the focus seems to be a consequence of the consultant's professional style and perception of his own role in the team.

Ironically, very few reflections on the practice lessons by the teachers

were recorded in the reflection meeting, while the comments were mainly from the observations of the consultant. The reflection meeting failed to create opportunities for the teachers to share experiences and seek improvement on their practical experiences by trying out innovation. In other words, the space for participatory or expansive learning was limited or, in extreme cases, suppressed by the dominating role of the consultant. Evidence from the videotaped meetings showed that when a teacher initiated three discourse shifts to essential pedagogical issues, such as how to integrate learning with the life experiences of the pupils and the sources for support learning materials for pupils, responses from the consultant were didactic and closed. The teacher initiations were not exploited, preventing further reflection among the members of the team. The consultant did almost all the talking in the meetings and simply gave his answers. An example is shown below.

> Teacher S: 'We had talked about different abilities, actually should we train all skills, or concentrate on one first?'
>
> Consultant: 'First, we better do one first, because we do not have a clue how to move, now we work on one, and when mature, we can extend, from festivals to food culture, religion, music, etc.'
>
> (Literal transcription, videotaped reflection meeting on 17 June 2005)

Here we see a distorted or twisted activity system that can be called a uni-structural activity system in the case of the Chinese curriculum development team. The mediated interaction pattern becomes largely uni-structural and closed, and the object of the activity system is blurred (Biggs, 1993). This interaction pattern seems similar to "coordination" (Edwards, 2005), in that each member individually contributes without strong evidence that the object of learning is mutually negotiated. Participation by team members seems superficial. One may expect the

consultant to expand the horizon of the team members. However, his responses are largely restricted and uni-structural with no evidence that the pedagogical issues are being extended, challenged, or explored and that the solutions are being proposed or sought from teachers. The discussion above does not imply that the teacher participants did not learn from the consultant but that what was expected to be learned was relayed in the form of direct transfer from the consultant rather than in a transformative form of knowledge creation among members in the team (Paavola, & Hakkarainen, 2005). Therefore, the nature and the degree of teacher learning remain at the informative level rather than at a higher intellectual level with evidence of both parties being engaged in meta-cognitive interactions. The impact and the scope of the function of the consultant were restricted.

An Elaborated Code in the Mathematics Curriculum Development Team

The effects of the professional and leadership style of the consultant in the mathematics team were different. The consultant facilitated the discussion and invited members to participate in the exploration of the fundamental issues in teaching the topic, identifying the focus of the lesson or the object of the activity system. His discourse feature was open, stimulating, and inviting. The following are some of the questions he posed with my analyses in italics.

> 'What about other teachers?'
> *(This invites the others to participate in the team meeting, exemplifying the function of a flattened leadership teamwork.)*
>
> 'This means it is not the problem with methods.'
> *(This re-orients the focus of the discussion and reflection. The tone is exploratory, and the statement is tentative.)*
>
> 'Fractions big or small is not the first lesson on fraction, before,

> must teach about fractions. Why did we choose to teach to compare fraction big and small?'
> *(This invites reflective thinking on a specific object of learning in the team meeting.)*
>
> 'According to your method, do we have problems in the process?'
> *(This engages the participants in deep and critical thinking. Probing invites alternative interpretations and understanding.)*
> (Literal translation, consultation meeting, 12 April 2005. My comments are in italics.)

The open and exploratory questions and statements posed by this consultant are also illustrated below, with a functional analysis of the exchanges among the members in the consultation meeting. This is important because the strategies employed by this consultant and their effects on the communication patterns among the members in the team significantly contrasted with the professional style of the consultant in the Chinese team.

> Consultant: "…we now sit down and discuss…what is important is about the method? …or the content of learning? …normally people respond and say…we study the content first…wait until later for the methods…what is important is to investigate what is the most difficult for students in terms of contents…"
>
> Teacher 1: "…she talked about the aims of this collaboration… look at one topic and see whether we can use different methods to teacher…"
> Consultant: "…or it is not the problem with method…"
>
> Teacher 1: "…possibly the problem with learning effectiveness…"
> Consultant: "…if in the past we have good methods we can use… or we think about what is the problem…or whether we have

problems in understanding the learning content…"

(Literal translation, consultation meeting, 12 April 2005.)

It is important to note the effects of the consultant's style of leadership on the communicative patterns of the members. He explained issues, challenged traditional views, explored possibilities, analyzed situational issues, and presented alternatives. When he responded to the members' statements and views, he "continued" the content of the discussion in an exploratory and tentative manner. He posed questions and refocused the orientation of the discussion and the embedded issues. His discourse style was distributive and exploratory in nature. The effects of this distributed approach on leadership are shown in the following matrix:

Discourse Strategies	Effects on Communicative Patterns
Challenging traditions	More liberal in expressing views
Presenting alternatives	Stretching for possibilities
Adopting tentative mood	Being exploratory
Posing questions	Engaging in thinking
Distributing questions	Distributive participation

These series of exchanges illustrate the multi-structural nature of the communication. Nearly all members participate. Sources of information do not come largely from the consultant but from various members of the team. The focus of discussion concentrates on the object of the activity system, the identification of the pedagogical problems, and the exploration of their solutions. This pattern of communication among the members of the team was consistently observed in the co-planning and reflection meetings on 25 April and 19 May 2005, respectively. We can label this as a multi-structural activity system in consideration of the nature and characteristics of the mediated interaction pattern. This interaction pattern is similar to "cooperation" in that each member contributes to the communal discourse with strong evidence of the

object of learning being mutually negotiated (Edwards, 2005).

It is also important to note that various members of the meeting responded to the other teachers' initiation. This contrasts with the way in which the consultant in the Chinese team assumed professional superiority with a restricted type code.

Each turn initiated by the mathematics consultant in the interaction has the potential of leading towards a space for negotiation among the members in an inviting manner. The space is open, and there can be many alternatives. The end product of the negotiation processes in the meetings is the shared product of the members of the team. In other words, all shared the outcomes of the meeting and the "ownership" of the emerging product from the collective efforts and labour of the curriculum development team. This "product" becomes the object in the next activity system when such a "product" of the discussion is implemented in the practice lesson. The creation of the new "object" for another new activity system is another driving force in transformative action in both parties in the activity system.

In summary, we observed two contrasting modes of professional leadership exemplified by two external consultants in the curriculum development teams. The effects of their leadership style on their communications patterns in the meetings were described, recorded, and analysed. The application of the activity theory and its key concepts of "mediation" and "artifacts" enable the researchers here to understand the effects of the leadership artifact in the two cases of teacher participation and learning. While the consultant in the Chinese team carries the communication features of a restricted and convergent kind, the consultant in the mathematics team remains open to the participation of all members in a flattened hierarchy. While the former is focused on "transfer of knowledge" from the consultant to the teacher members in a more hierarchical manner, the latter's method can be understood as a form of "knowledge creation" with greater potential for human and knowledge transformation (Paavola, & Hakkarainen, 2005). This observation may explain why the interviews of the participating teachers

TABLE 1

Mediation effects of the two modes of communications

	Modes of Communications	
Domains of activity system	Restricted	Elaborated
Leadership contexts	Distributed leadership	Distributed leadership
Input	Personal instructional experience	Generic instructional alternatives
Role	Informative	Exploratory
Discourse style	Closed; convergent	Open; divergent
Collaboration	Didactic	Professional
Social cohesion	Hierarchical	Flattened
Leadership	Ascribed; power-coercive	Re-educative; social interactive
Interaction pattern	Uni-structural	Multi-structural
Nature of learning	Knowledge transfer	Knowledge creation
Negotiation space	Limited	Extensive

in the two teams indicate positive attitudes towards the functions of teacher participation in curriculum decision-making processes in schools.

DISCUSSIONS AND CONCLUSIONS

Teacher participation in curriculum decision making seems to have received universal consensus as one of the strategies to enhance professionalism among teachers (Craig, 2008). The teacher curriculum leadership project outlined above has attempted to base its design and analysis on the premises of activity theory, which emphasizes the socio-cultural contexts of learning and the mediation roles of artifacts in the production of outcomes in the activity systems. The innovation project has redesigned the formation of the curriculum development teams and organized the rotation of leadership to create potential tensions and contradictions among members in a flattened hierarchical power context (Gronn, 2000). Our intention is to enable observation of the mediation functions of the two essential artifacts, namely, the roles of the consultants and their leadership styles on the interaction patterns or

forms of teacher participation in the two teams. We found that the mediation functions of the two artifacts were explicit and had impacts on the interaction patterns or forms of teacher participation. Restricted professionalism exemplified by the consultant of the Chinese team allowed less negotiation space for team members, thus creating a uni-structural pattern of communication. Its mediation function constrained the exchanges of alternatives and possibilities. On the contrary, extended professionalism identified in the mathematics team invited participation and created a multi-structural pattern of communication. These features became the conditions for deep learning among the members of the team.

It could be argued that distributed leadership in a flattened manner in the two teams was mediated by the leadership artifact though its effects on the interaction patterns; thus, teacher participation seemed different (Spillane, Haverson, & Diamond, 2004). The Chinese consultant tended to assert his hierarchical and professional power, thus restricting the possibilities for an open and dialogical interaction pattern and participation of the team members. The mathematics consultant, on the other hand, seemed to be participatory and her discourse shifts in the discussion seemed to be picked up by her members. The discussions moved to the core issues on pedagogical difficulties. The object of the activity system was clearly focused, with solutions emerging towards the end of the meetings. The object of the activity system was owned by the team, and the space for teacher participation led to the proposed solutions -- creations that resulted from the authentic distributed leadership of the consultant in the mathematics curriculum development team.

The application of activity theory and its analytical framework provides a different lens, allowing researchers to look into the videotaped data microscopically. The key concepts of activity theory particularly allowed the researchers to study the very unit of analysis of the direct interactions among members of the two curriculum development teams (Russell, 2004). Interactions among the members of the teams are

realizations of the power structures and the perceived roles among them in the activity system, and they provide valuable data for understanding how the claimed effectiveness of teacher participation in decision-making processes in schools can be positively and negatively mediated by the same power artifact (Wallace, Nesbit, & Miller, 1999). This finding points to the need for the enhancement of the skills and leadership of school heads and school middle managers such as panel heads, particularly in the conduct of programs for education change and the organization of reform activities in schools.

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REFERENCES

Bernstein, B. (1995). Code theory and its positioning: A case study in misrecognition. *British Journal of Sociology of Education*, *16*(1), 3-19.

Biggs, J. B., & Moore, P. J. (1993). *Process of learning*. Singapore: Prentice Hall.

Brabeck, M. M., Walsh, M. E., & Latta, R. (2003). *Meeting at the hyphen: Schools-universities-communities-professions in collaboration for student achievement and well being*. Chicago: National Society for the Study of Education.

Carr, W., & Kemmis, S. (1986). *Becoming critical: Education, knowledge and action research*. London: Falmer.

Cheng, Y. C. (2009). Teacher management and education reforms: Paradigm shifts. *Prospects*, *39*, 69-89.

Craig, C. J., & Ross, V. (2008). Cultivating the image of teachers as curriculum makers. In F. M. Connelly, M. F. He, & J. Phillion (Eds.), *The Sage handbook of curriculum and instruction*. London: SAGE Publications.

Daniels, H. (1995). Pedagogic practices, tacit knowledge and discursive discrimination: Bernstein and post-Vygotskian research. *British Journal of Sociology of Education, 16*(4), 517-533.

Daniels, H. (2001). *Vygotsky and pedagogy*. London: RoutledgeFalmer.

Daniels, H. (2004). Activity theory, discourse and Bernstein. *Educational Review*, *56*(2), 121-132.

Darling-Hammond, L., & McLaughlin, M. W. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappa*, *76*(8), 597-604.

Day, C. (1993). Reflection: A necessary but not sufficient condition for professional development. *British Educational Research Journal*, *19*(1), 83-93.

Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher*, *31*(1), 5-8.

Education Commission. (2000). *Learning for life, learning through life: Reform proposals for the education system in Hong Kong.* Hong Kong Government: The Printing Department.

Education Department. (2002). *Provision of an additional teacher post for leading curriculum development in primary schools for five years,* Administration Circular No. 13/2002. Hong Kong: Education Department.

Edwards, A. (2005). Let's get beyond community and practice: The many meanings of learning by participating. *The Curriculum Journal*, *16*(1), 49-65.

Elliott, J. (1991). *Action research for educational change.* Buckingham: Open University Press.

Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, *14* (1), 133-156.

Engeström, Y., & Miettinen, R. (1999). Introduction. In Y. Engeström, R. Miettien, & R. L. Punamaki (Eds.), *Perspectives on activity theory*. Cambridge: Cambridge University Press.

Fullan, M. (1993). *Change forces: Probing the depths of educational reform.* London: Falmer Press.

Fullan, M. (2008). Curriculum implementation and sustainability. In F. M. Connelly, M. F. He, & J. Phillion (Eds.), *The SAGE handbook of curriculum and instruction.* London: SAGE Publications.

Gamage, D. T., & Zajda, J. (2005). Decentralisation and school-based management: A comparative study of SGS models. *International Journal of Educational Practice and Theory, 27*(2), 35-58.

Gronn, P. (2000). Distributed properties: A new architecture for leadership. *Educational Management and Administration*, *28*(3), 371-338.

Harris, A. (2003). Teacher leadership and school improvement. In A. Harris, C. Day, D. Hopkins, M. Hadfield, M, A. Hargreaves, & C. Chapman (Eds.), *Effective leadership for school improvement.* London: Routledge Falmer.

Harris, A., & Lambert, L. (2003). *Building leadership capacity for school improvement.* Milton Keynes: Open University Press.

Harris, A. (2004). Distributed leadership and school improvement: Leading or

misleading? *Educational Management Administration & Leadership*, *32(4),* 11-24.

Harris, A. (2005). Leading or misleading? Distributed leadership and school improvement. *Journal of Curriculum Studies*, *37* (3), 255-265.

Henderson, J. G., & Hawthorne, R. D. (1995). *Transformative curriculum leadership.* New York: Teachers College Press.

Hiebert, J., Gallimore, R., & Stigler, J. W. (2003). The new heroes of teaching. *Education Week, 23*(10), 56.

Hopkins, D. (2001). *School improvement for real.* London: Falmer.

Karkkainen, M. (2000). Teams as network builders: Analyzing network contacts in Finish elementary school teacher teams. *Scandinavian Journal of Educational Research*, *44* (4), 371-391.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* New York: Cambridge University Press.

Law, E. H. F. (2003). In search of a quality curriculum in Hong Kong. In W. F. Pinar (Ed.), *International handbook of curriculum research.* New Jersey: Lawrence Erlbaum Associates, Inc.

Law, E. H. F., & Galton, M. (2004). Impact of a school-based curriculum project on teachers and students: A Hong Kong case study. *Curriculum Perspectives*, *24* (3), 43-58.

Law, E. H. F., Galton, M., & Wan, S. W. Y. (2007). Developing curriculum leadership in schools: Hong Kong perspectives. *Asia Pacific Journal of Teacher Education*, *35*(2), 143-159.

Law, E. H. F., & Wan, S. W. Y. (2006). Developing curriculum leadership in a primary school: A Hong Kong case study. *Curriculum and Teaching*, *21*(2), 61-90.

Leadbetter, J. (2004). The role of mediating artefacts in the work of educational psychologists during consultative conversations in schools. *Educational Review*, *56*(2), 133-145.

Llewellyn, J. (1982). *A perspective on education in Hong Kong: Report by a visiting panel.* Hong Kong: Government Printer.

MacBeath, J., & Moos, L. (2004). *Democratic learning: The challenge to school effectiveness.* London/New York: Routledge/Falmer.

Macpherson, I., & Brooker, R. (1999). Introducing places and spaces for teachers in curriculum leadership. In I. Macpherson, T. Aspland, R. Brooker, & B. Elliott (Eds.), *Places and spaces for teachers in curriculum leadership.* Deakin West, ACT: Australian Curriculum Studies Association.

Marsh, C. (1997). *Key concepts for understanding curriculum.* London: The Falmer Press.

Norwich, B., & Daniels, H. (1997). Teacher support teams for special educational needs in primary schools: Evaluating a teacher-focused support scheme.

Educational Studies, *23* (1), 5-24.
Ovens, P. (1999). Can teachers be developed? *Journal of In-service Education*, *25*(2), 275-305.
Paavola, S., & Hakkarainen, K. (2005). The knowledge creation metaphor–An emergent epistemological approach to learning. *Science & Education, 14*(6), 535-557.
Russell, D. R. (2004). Looking beyond the interface: Activity theory and distributed learning. In H. Daniels, & A. Edwards (Eds.), *The RoutledgeFalmer reader in psychology of education*. London: RoutledgeFalmer.
Schon, D. A. (1983). *The reflective practitioner.* London: Temple Smith.
Sherrill, J. A. (1999). Preparing teachers for leadership roles in the 21st century. *Theory into Practice*, *38(1),* 56-61.
Skilbeck, M. (1984). *School based curriculum development.* London: Harper & Row.
Spillane, J. P., Diamond, J. B., & Jita, L. (2003). Leading instruction: The distribution of leadership for instruction. *Journal of Curriculum Studies*, *35*(5), 533-543.
Spillane, J. P., Haverson, R., & Diamond, J. B. (2004). Towards a theory of leadership practice: A distributed perspective. *Journal of Curriculum Studies*, *36*(1), 3-34.
Stenhouse, L. (1975). *An introduction to curriculum research and development.* London: Heinemann.
Teddle, C., & Tashakkori, A. (2003). Major issues and controversies in the use of mixed methods in the social and behavioral sciences. In A. Tashakkori, & C. Teddle (Eds.), *Handbook of mixed methods in social & behavioral research.* Thousand Oaks, CA : Sage.
Timperley, H. S. (2005). Distributed leadership: developing theory from practice. *Journal of Curriculum Studies*, *37*(4), 395-420.
Wallace, J. D., Nesbit, C. R., & Miller, A. C. S. (1999). Six leadership models for professional development in science and mathematics. *Journal of Science Teacher Education*, *10*(4), 247-268.

5

Engineering the Educated Person: An Ongoing Problematic in Singapore

Yew-Jin Lee

RECEIVING A WORLD-CLASS EDUCATION

To many observers, the K-12 educational system in Singapore is not a failing nor a low-performing one. On the contrary, many would point to the constellation of accolades that this tiny island-state of nearly five million inhabitants has garnered in the areas of school infrastructures that are of enviable standards, generous educational provisioning including teacher remuneration packages extending far beyond basic levels, inexpensive access to schooling guaranteed by law up to the ages of twelve, and a highly-qualified and committed cadre of educators among other taken-for-granted matters. Whereas many other educational systems in Asia are ready only to provide computers to selected or privileged schools, policymakers in Singapore have already asked that all 30,000 teachers here weave the latest technologies (e.g., Web 2.0, social networking, Wikis, games) into their daily lessons as a matter of routine to take advantage of living in one of the most wired nations in the world. In terms of educational outcomes—perhaps that single yardstick by which all systems are adjudged in the final analysis—the score card is not unlike these success stories just described: Local students have consistently proven that they are highly capable in terms of mathematics and science mastery in Grades 4 and 8. Attributed to students' educational aspirations/attitudes towards the subject together

with good school-home resources (Ministry of Education [MOE], 2004), tertiary-level students here too have won over the years a number of prestigious international prizes in law, debating, and literature besides being represented in goodly numbers at Oxbridge and Ivy League universities. As if these indicators of receiving a world-class education were not enough, President Barack Obama has recently paid tribute to the quality and coherence of the local mathematics curriculum in the highest possible way by asking his fellow countrymen to take a leaf from mathematics educators in Singapore, and if possible, to adopt textbooks written in the Lion City for use in American classrooms.

For a former British colony that at one point even doubted its ability to prosper beyond a few years as an independent state when Westminster withdrew its protection in the 1960s, Singapore has certainly come a long way. As part of the first-wave "Asian Tigers" miracle, which we have yet to fully explicate from political and economic standpoints, Singaporeans have nonetheless enjoyed a minority world standard of living. From a sleepy Malay fishing village that greeted representatives from the British East India Company looking for trade in 1819, the nation is now considered as one of the most globalised states on the planet as well as being one of the easiest places to conduct business, a continuing legacy of this initial raison d'être (Global Cities Index, 2008). It does not take long for any visitor to realize that concerns with efficiency and self-preservation are always circulating in the common psyche and that these have been conflated with talk about national survival. This is because without any physical hinterland and lacking any deep sense of historical rootedness in a society comprising mainly of first and second generation immigrants from East and South Asia seeking a better quality of life, the angst of survival at the collective and individual levels have been pervasive in everyday discourses. Questions (and warnings) about whether the state would continue into the next century given that she has hardly any natural resources other than human capital has engendered a slew of governmental policies that both attempt to exploit Singapore's lead in certain niche areas (e.g., high-end

technologies such as water treatment, biomedical pharmaceuticals, digital media) and to safeguard whatever capital that she has so painstakingly accumulated. To be a Singaporean is thus to be associated with meticulous and long-term planning, a sort of perpetual Boy Scout mentality that is always on the alert for new opportunities so that one's material way of life can be preserved, if not bettered, in the midst of global uncertainties and threats.

Yet, this concern with all things economic has been in part also an albatross for youth in Singapore: Anxieties about the future and thriving in the so-called Knowledge Economy have translated into a paradoxical situation in Singapore. On the one hand, few would disagree that present achievements in K-12 education and raising the standards of living here have been nothing short of impressive. On the other hand, the ongoing pursuit of consumption for societal survival has presumably come with an existential price for young people that has diminished the value of human autonomy, mastery of one's life conditions, and what we value as being educated in the broadest sense of the word. The pressures of studying and teaching in such a highly competitive East Asian environment are tangible for there are limited rewards at hand despite assurances by the authorities that every Singaporean counts regardless of one's abilities. One is compelled to ask if this quest to engineer an educated Singaporean who can thrive in an increasingly postmodern 21st century is inherently struck with many challenges. Indeed, the term "engineer" chosen for the formation of subjectivities in Singapore is appropriate; these are deliberate processes as well as being externally imposed and justified on the grounds of prosperity, nation-building, and Asian moral sensibilities.

In this critique of K-12 education in Singapore that is influenced by ideas from cultural-historical activity theory (CHAT) and German Critical Psychology, I offer my personal interpretations of how young people and teachers here have to navigate being pulled in many different directions, of often being caught in double-bind situations. These pincer grips that simultaneously emphasize creativity and conformity,

centralization and decentralization, short-term gain versus learning something of intrinsic or greater worth play out to larger and lesser degrees in classrooms all over the country and, of course, elsewhere (Levin, 2001). These to me signify the tensions in obeying top-down reforms and cultivating ground-up initiatives in education, of satisfying a market-driven system infused with strict accountability criteria borrowed almost wholesale from the corporate sphere (Brown, & Lauder, 2001). As such, it is necessary to periodically interrogate the trajectories that education in Singapore are taking and the destinations that will they bring our young people. Although not an educator, no commentator on the sociopolitical agenda in Singapore has put it so bluntly as David Harvey when he declared that

> the neoliberal state needs nationalism of a certain sort to survive. Forced to operate as a competitive agent in the world market and seeking to establish the best possible business climate, it mobilizes nationalism in its effort to succeed….longstanding sense of moral superiority that pervades countries such as Singapore and Japan in relationship to what they see as the 'decadent' individualism and the shapeless multiculturalism of the US. The case of Singapore is particularly instructive. It has combined neoliberalism in the marketplace with draconian coercive and authoritarian state power, while invoking moral solidarities based on the nationalist ideals of a beleaguered island state (after its ejection from the Malaysian federation), Confucian values, and, most recently, a distinctive form of the cosmopolitan ethic suited to its current position in the world of international trade. (Harvey, 2005, pp. 85-86)

A more recent but equally scathing salvo from John Kampfner, an award-winning British journalist, has alleged that Singaporeans are locked into a social contract with the ruling authorities; in return for engaging in unbridled capitalism and the enjoyment of its benefits, they

have been subjected to forms of illiberal democracy with curbed public liberties (Kampfner, 2010). These kinds of trenchant though not original critiques have not gone unheeded and typical counter-arguments have ranged from the indignant (e.g., mere rants from elitist Western intelligentsia) to the pragmatic (e.g., this is *our* way that has worked superbly for us). In this volume that emphasizes the relationships between developmental interventions and learning, I want instead to focus on what kinds of educated persons are therefore being raised in this and subsequent generations through mass schooling in the Lion City (Levinson, & Holland, 1996). Are the seemingly well-intentioned objectives of local reform movements to enhance teaching and learning being met, to what extent and at what cost? What messages in the curriculum, hidden or otherwise, are being transmitted? What kinds of subjects are being (re)produced in schools and society? How does change and resistance occur, if any? In what follows, I describe some of the tensions and inner contradictions that impinge on students and teachers at a collective as well as from an individual's viewpoint, a perspective that the German Critical Psychologist Klaus Holzkamp made thematic in his framework of *Subjektwissenshaftenliche Grundlegung* (a science of the subject or subject science approach). I then conclude with modest proposals of how CHAT can assist in better conducting implementation research, which I deem to overlap greatly with studying developmental interventions and learning and the problems of schooling. With better tools and the knowledge to use them wisely, social critique can then fuse with phronesis, which to me is the ultimate purpose of being educated.

TENSIONS AND CONTRADICTIONS IN SINGAPORE EDUCATION

If the earlier allegations by Harvey and Kampfner are accurate, then Singapore is an unashamedly neoliberal regime whereby education is used to serve the interests of a nation that has embraced market-driven

policies. At other times, Singapore has been likened to an East-Asian developmental state with similar guiding philosophies: Education is the vehicle par excellence to serve the economic needs of the state through its provisions of educated workers carefully slotted into pre-planned labor sectors. So strong has been these tendencies whereby her social institutions tightly resonate with each other and with larger collective goals that the nation has even been referred to as "Singapore, Inc." Regardless which is the better overall theoretical placeholder, it is insightful to examine how education is an apparatus to serve certain socioeconomic purposes and the problems that can arise. Education is, in many senses, a form of social engineering, which Singapore has enacted and perfected to a very high level (Tan, & Ng, 2005).

I concede that it is foolhardy to make direct causal links between society/schooling and subject formations although this has not deterred researchers who have devoted a lifetime explicating the relations between culture and agency. Thus, in making the claims in this chapter I stand on the shoulders of giants such as Anthony Giddens, William Sewell, Paul Willis, Jean Lave, Dorothy Holland, Fred Erickson, Jay MacLeod, and others who seek to understand how people and their social circumstances are necessarily intertwined. We must also understand that the notion of what constitutes an educated person is ultimately a certain kind of person with desirable traits peculiar to that cultural-historical period and society. Granted these kinds of imaginings are by no means unusual, what is interesting is that in Singapore these *and* the means to achieve that vision through the process of schooling have been announced by the Ministry of Education (MOE) in Singapore.

For example, during the major *Thinking Schools, Learning Nation* (TSLN) reforms that began in 1997 (MOE, 2009). What was now wanted according to TSLN was to break away from traditional ways of teaching and learning by rote or the chalk-and-talk methods so favored in East Asia. Instead, student-centered pedagogies (e.g., collaborative work, small-group discussions) and concomitant changes in assessment practices (having more project work and open-book tests) were

encouraged. This radical change in educational philosophy (and being) was followed by similar reforms elaborating and expanding what TSLN had basically set out including the so-called 21st century skill sets such as critical and creative thinking, entrepreneurship, and so on. Above all, the change required a refocusing on quality rather than quantity, a valuing of passion for learning over merely studying for good grades as critical competencies similarly valued by many European countries (OECD, 2001). For local educators who had experienced success in proven but didactic teaching in the past, these new reforms and innovations to the curriculum threatened nearly complete reversals to established practices. To effectively implement these innovations, school leaders were thus given free-hand, and even encouraged to depart from standard scripts and seek niches for their schools to excel. After carving out these areas of excellence, students' decisions to choose schools could then be made, a perfect example of market-thinking and rationality. Taken together, these changes do not just contribute towards new ways of doing things in schools, I claim that they are attempting to forge new subjectivities although this has been an uneven and tension-filled process (Lannegrand-Willems, & Bosma, 2006). To provide evidence for the latter, I draw upon three studies conducted in local schools, specifically from science classrooms. Without asserting complete generalizability, what happened in these situations are arguably not much different from the everyday struggles that other teachers and students encounter in Singapore.

a) Helen the Unlikely Guerrilla Teacher

What these educational reforms have meant for innovative teachers such as Helen willing to try new teaching techniques was that they had to navigate the multiple conflicting demands of school marketization, decentralization, raising academic standards, league tables, managerialism, and surveillance (see Lee, 2008). Although normative in a landscape undergoing rapid transition, these pressures were

heightened because Singapore rigorously espouses the doctrine of meritocracy too. Otherwise known as the ideology of talent (*Begabungsideologie*) (Holzkamp, 1993), the sorting and normalizing distribution of scores (and rewards) from schooling as fair utterly depends upon these principles, which of course begs the question whether all learners were beginning at the same starting line (e.g., resource-wise) in the first instance. Success in school thus equals IQ plus effort and conversely, failure is largely traced back to learners' lack of abilities and/or effort, which is a latent albeit strong assumption among many Singaporeans. For teachers, this often translates into pushing students to the limits of their academic potential lest one was accused of denying any child the opportunity to learn—a tantalizing and difficult concept to put into operation. In Helen's case, what irritated her as a teacher working in whatever curricula spaces she could find was having to mechanically complete worksheets that meant very little in terms of students' meaningful learning and personal interests or what Holzkamp called *Lebensinteresse*. Nonetheless, worksheet completion is a universal means of ensuring accountability for teachers and students apart from potentially generating some learning outcomes.

> What does bother me is when the school prints a whole stack of worksheets and practice papers for the kids to complete when they don't even have the capacity to understand what the questions are talking about in the first place! Some of the other teachers have given up on them and made the kids copy the model answers from the board. So, some lessons have become a handwriting exercise now since my class has no basic literacy skills.

And because teachers now had a reward structure at the end of the year that depended upon their performance, it created additional anxieties for those who were eager to be seen as meeting or exceeding job expectations. However, Helen did not concern herself too much with these rankings. She reasoned that

> if nobody is going to set me up I'm not too bothered by what grading I get at the end of the year. There is simply no way I can teach the way I do and complete all that is laid out in the syllabus. However, I can't say the same for some of my other colleagues who care a great deal about their performance grades. Some of them don't like how I'm teaching, "You're too rebellious, a non-conformist!" they say. It's really no fun being an outlier.

Rather than adopting new pedagogies demanded by TLLM such as inquiry-based learning, which Helen used very extensively, some colleagues resisted by using more traditional and familiar pedagogies. The latter is reportedly more efficient in terms of time and delivery of concepts in a crowded curriculum—this is a leitmotif one hears amongst local teachers. Again, the notion of defensive learning (*defensives Lernen*) from Holzkamp (1993) is salient here for there was a overall reluctance to expand one's action potence (i.e., agency). During periods of defensive learning, one narrowly seeks to do just what is minimally sufficient (exam scores, teacher evaluations), to avoid disadvantage and punishment, to only get by. This contrasts with expansive learning (*expansives Lernen*) whereby mastering specific actions, increasing control over one's experiences and thus motivation in learning are normative. As Helen continued,

> with the ranking system of teachers and schools firmly in place, nobody is going to stick her neck out and do what I'm doing. When I tell the other teachers that MOE has officially loosened up and encouraged new teaching strategies, they reply, "It's too risky, I don't want to slip up on the work review. And it's worse when the kids are behaved so it is really not worth the effort. Now, it's not that I don't want to give the kids a good education mind you, it's just these other things."

To be sure, one reason why Helen could teach the way that she did

was because her science class was considered somewhat of a "lost cause," which meant that it escaped the radar of accountability from management. There was therefore nothing to lose by allowing Helen to teach science mainly by inquiry as opposed to standard drill-and-practice techniques widely believed to deliver good results. Due to the lack of support from colleagues for her progressive thinking, Helen the guerilla science teacher eventually left this school for another where she restarted doing what she thought was best for meaningful science instruction.

b) Miss Chen the Inadvertent Subverter of Inquiry

In this section from Yeo, Tan, and Lee (2006), it shows a teacher (Miss Chen) attempting Problem-based Learning (PBL) in a high-school biology class. The transcribed exchange revolves around her and two students, Sandra (S) and Eric.

S:	Basically, protein has four structures
Miss Chen:	Okay
S:	That means different protein has different structures
MC:	At different levels
S:	Okay
MC:	Mmm?
S:	At different levels. And basically, the first one is the primary structure, the second one secondary structure, the third one tertiary structure, the fourth one quaternary structure
MC:	Okay. Tell me about the primary structure
S:	The primary structure
MC:	(interrupts) *This one ah, time out. This one must know ah*
Eric	Okay
S:	This is a picture of the protein structure
MC:	Okay

S: And it is made up of amino acids

MC: Okay amino acids.

S: And is made of a chain of peptide bonds. So if I'm not wrong, these are the peptide bonds, is it? (pointing to the picture on the tablet screen)

MC: Ya. They just show bonds by lines lah. Essentially, your amino acids like that right? Primary structure focuses on the fact that there are amino acids connected to each other by peptide bonds. Do you know the structure of amino acids? (pause) *Okay, you need to know*

On the face of it, there seems little that is troubling here; the teacher is attentive and allows students to explain with minimal interruption. Yet, not only have we found this kind of Socratic dialogue ubiquitous, this teacher also highlighted what knowledge was necessary for the coming school examinations. That Miss Chen frequently marked out whatever subject matter was important (in italics) is jarring in the context of doing PBL for it is a student-centered pedagogy that places learner agency (and ownership of problems) uppermost. Skills of collaboration are necessary together with experiencing increased learner motivation in discovering answers for themselves. During one of the PBL discussions, this teacher was further heard to say, "Don't worry, I'll do troubleshooting later." The underlying meaning of this utterance was not lost on the students; they understood that they had license to discuss freely or even superficially although at the end of the lesson, Miss Chen would summarize the salient learning objectives for them. In effect, the students were going through the motions of doing PBL just as this teacher new to this pedagogy was performing what she felt was in their best interests although she was subverting their learning of biology in the long-term. Deeper and older cultural norms of teaching, personal life experiences, and knowledge of what constituted the educated person in Singapore had probably influenced Miss Chen to teach in the way that she did during this initial period of trying out PBL. This was a clear

example of the teaching-learning short-circuit from Holzkamp, which is the popular but mistaken assumption that if something is taught, it would be learnt (c.f., good versus successful teaching from Fenstermacher and Richardson (2005)). Readers would be pleased to know that Miss Chen better understood the pedagogical rationales behind PBL the following year and her lessons became less fixated on getting "right" solutions quickly. Students could now explore alternatives and develop their own ideas even if they departed from canonical scientific knowledge.

As Lave and Wenger (1991) explain, the primary conflict was the tension between the exchange value and use value of the object of school as an activity system in Singapore––exam grades. Miss Chen's PBL classroom activities were embedded within a larger system that valued good grades in examinations. Exemplary school performance, as one often hears from interviews with youth, educators, and parents, are a pragmatic means of getting a well-paying job rather than anything intrinsically satisfying in itself. Because of the tight coupling between high-stakes assessment and classroom instruction in Singapore, educators are caught in a double-bind when "the legitimacy, and hence the survival, of the school depends on its conformity to broad institutional rules as defined by the state, the professions, or more amorphously, public opinion" (Hogan, Towndrow, & Koh, 2009, pp. 220-221). For teachers such as Miss Chen, teaching how to learn meaningfully was definitely not automatic and required repeated practice and institutional support. Likewise, for students, it required being personally comfortable with new sites of epistemic authority (i.e., other than the teacher or textbook), experiencing uncertainty and chaos during inquiry, and unlearning previous habits that had previously served them well. These kinds of re-learning and attitudinal changes are not always successful as we read in the following story concerning Alice.

c) Alice the Strategic Student of Science

That people weigh and act upon the reasonableness of their reasons whether to extend control over one's life situations is demonstrated when I describe how a grade four student named Alice played a strategic "game" over the course of our ethnographic research. By game I mean to say that she consistently tried to further her personal advantage in learning science at the same time as she minimized her sharing of knowledge with fellow classmates, of helping others academically. Telling this story through Alice as protagonist was simply because she initially seemed a bright and effervescent child who took every opportunity to answer her science teacher's (Kelvin) questions. Whether she was a typical child in Singapore is hard to confirm or disconfirm but every time I relate stories about her behavior to local educators there are no expressions of surprise; are not considered out of the ordinary. The context of the transcribed classroom excerpt below was when Kelvin was asking if anyone wanted a study partner since Sam and James (two other students) had already experienced some benefits from this arrangement.

Kelvin: Anybody thinks they need a buddy like Sam and James?
(Many raise their hands including Alice)
Kelvin: A buddy means ah your buddy do what you do what. When your buddywork hard you work hard your buddy slack ah…like Sam and James. Sam work(s) hard, James you work hard also right? But you learn from (?) better don't. So who needs buddy?
(Alice hands still raised, turns her head to look around)
Kelvin: Let me decide. Eh, how come the guys (very few boys have their hands raised) Ok, who wants to be buddy?
(Alice's hand drops down and she looks around. Mohammed's hands are still up very high)
Kelvin: Ok so buddy lemme see ah ok who wants buddy go that side

(pointing to front corner of room)
(Alice and Mohammed begin rushing to the corner)

Kelvin: That means you are the helpers
(Alice exclaims "aiyerr," spins around on her feet and returns back to her seat while Mohammad continues to the corner)

Kelvin: You don't have to have to be very good marks like Sam, kay, as long as I think you are okay standard you can be buddy already

Kelvin: Who needs buddy (Alice's hands are immediately raised) stand up! Let me decide
(Alice stands while Kelvin thinks out loud who needs a buddy)

Kelvin: Alice sit down you're doing too well

Alice (softly): Awww…every time no

Ever wanting help to get ahead of the pack, Alice was motivated to have somebody assist her in her studies but not to be on the giving/sharing end. This claim was borne out when she lowered her hand after Kelvin rephrased the question about getting a buddy to being a buddy. Mohammed was a very bright boy who sat near Alice and he persisted in offering help for someone who might need it. Unable to decide, Kelvin then decided to ask those who needed buddies to move to the corner of the classroom, which Alice and Mohammed understood and immediately moved. However, Kelvin contradicted himself and announced that "that means you are the helpers," which was heard and understood by Alice for she then gave a cry of disgust and whirled around to return to her seat while Mohammed continued running. And when Kelvin asked once again if anybody who wanted a buddy to stand up, Alice complied. At this point, Kelvin finally reached a decision and told Alice that her grades were sufficiently good and thus he was going to deny her request. With a soft cry of rejection, she finally gave up and sat down. This was not an isolated incident; throughout the year Alice

was reluctant to share her learning with others, in fact, this behavior ironically increased the more Kelvin adopted Knowledge Building (a type of collaborative, student-centered inquiry)!

Because examinations and assessment are such important events—an offshoot of human capital development policies in Singapore—students normally have opportunities to review their marked scripts for any grading errors. Here we observe the stranglehold that the ideology of achievement and defensive learning feature in the lives of youth in Singapore. Scoring well in tests and assuming the identity of a model student seemed to be an all-consuming (and appropriate) object of Alice's schooling even though the former is truly a poor judge of meaningful learning (Engeström, 1991). In the excerpt below, we see an exchange with Kelvin and a few students including Alice showing how scoring well in examinations was paramount, a joint project for parent and child. This kind of one-upmanship behavior was certainly not confined to Alice nor was it limited to postmortem periods of exam results. (N.B., "Band 2" grade ranges between 75 to 84 percent and "Band 1" from 85 percent onwards.)

Kelvin: I'm looking at your marks this is what I feel…not too bad. How did you all feel after your exam?
(Students say "relaxed, relaxed")

Kelvin: Are you all happy with your marks?
(Students loudly chorus "no" and other responses, Alice shakes her head)

Kelvin: Ok enough I talk one voice. Who, who is not happy with their science marks?
(Alice raises hand quickly along with some others)

Kelvin: Those not happy stand up
(Alice stands up quickly and many others too such as Mohammad)

Kelvin: Wait ah let me check. Alice Lim you improved by almost twenty marks why you not happy?

Alice: My mother say not enough marks that's why I get Band 2
Kelvin: Your mother say not enough sit down! Mohammad! Of course you are not happy your marks dropped but not bad still not bad ah Band 2 sit down
Alice (to Mohammad): High Band 2 leh
Jonathan: Yah lor
Alice: But almost the whole class dropped
[some time later]
Kelvin: Jonathan, your marks went up, why you not happy?
Jonathan: Actually I was aiming for ninety plus
Kelvin: Wah! Not bad
Alice (softly): I also aiming for ninety plus but (now) my mother said my dream cannot come true
[some time later]
Jonathan: Alice, how many marks are you aiming for?
Alice: Ninety five
Jonathan: I'm aiming for eighty plus

Readers might raise objections; "How do these mundane events index deeper contradictions in schooling in Singapore? Do they really tell us anything about the formation of people in culture and history?" My answer is in the affirmative because events that occur at the micro-, meso-, and macro-levels are mutually influencing (Lefstein, 2008). The unfolding of educational/policy change such as what we observe in the lives of Helen, Miss Chen, and Alice definitely do matter at the level of the micro-interactional in the classroom as I have shown in the excerpts. These forms of interaction are durable and persistent because they are embedded (accountable and consequential) in relevant contexts of life, that is, they are cultural-historical in nature.

> To the human subject the world presents not determinants but possibilities. The subject is free to relate to the world…. The choice of action from among possible actions is guided

> by what Holzkamp regarded as the sole material *a priori* and fundamental axiom of human intersubjectivity, namely, that no one acts contrary to his or her own interests as he or she understands them. We are always guided by what we imagine will contribute most to the subjective quality of our lives (Tolman, 2009, p. 155).

IMPLEMENTATION RESEARCH AND CHAT

In the previous section, I focused on the tensions and contradictions in schooling that has come with recent educational reforms in Singapore. These reforms were themselves dependent upon decisions by policymakers to nurture a citizenry at ease with living and working in the Knowledge Economy though maintaining national economic competitiveness was paramount. For researchers who adopt newer interpretations of CHAT as their analytic lenses (see Sannino, & Nocon, 2008), they are advantaged because activity theory is strong in those areas whereby the processes of educational change writ large is undertheorized or weak (Hargreaves, 2005; McLaughlin, 2008). These areas of research include but are not confined to a) truncated analyses of the contexts of change, b) favoring reductionistic rather than complex and nuanced explanations, c) insensitivity to power and politics, d) lack of concern with emotions and identity, and e) insensitivity to rapid educational change processes. For instance, in the case of Helen, CHAT supplies us with a means of understanding her progressive inquiry-based teaching as a tertiary contradiction, an anomaly in the activity system of her school even though it was pedagogically sound. Identity issues as well as emotions associated with being an excellent teacher who produced good examination results were relevant too in Miss Chen's example. In both of these cases, CHAT also allows us to understand that the objects of activity that these teachers pursued were problematic; Helen's object differed from her colleagues in her workplace while Miss Chen's was aligned with societal goals of what was an

educated person. Although both were undeniably committed teachers who sought out the best for their students, the means of instruction in their classrooms chosen were vastly different. Activity theory also enables us to better understand Alice's actions through the wider cultural-historical context of being a student in Singapore. One cannot simply ascribe psychological deficits to Alice for she was acting in conformity to what was considered by many of her age as appropriate to survive in that kind of environment.

Notwithstanding some criticisms of CHAT surrounding its overly flexible theoretical concepts and fuzzy notion of the unit of analysis (see Martin, & Peim, 2009), CHAT is well-suited for researching problems related to developmental interventions and learning. In particular, it seems almost custom-built to understand the issues surrounding implementation, which is a three- to four-decade old problematic in education. What is implementation and why is it so consequential for understanding learning? One definition takes implementation to be the "process of putting a defined practice or program into practical effect; to pursue to a conclusion" (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005, p. 82). Often a black box, it is the significant difference between "effective practices (i.e., theory and science) and what is actually done (i.e., policy and practice)" (Fixsen et al., 2005, p. 2). Research on implementation is thus a common denominator among several important domains in education such as shown below in Figure 1 although each subfield modulates the concept according to its own needs and disciplinary histories. For example, in the field of program evaluation, implementation is the stage of process evaluation—the assessment of delivery and conformity to services as intended by developers. Within curriculum research such as during the introduction of a new textbook, one often speaks about the enacted curriculum and the contingent dialectic between people, policies, and place (Honig, 2006). Workers in educational change and policy analysis appear to share greater similarities in viewing implementation research (Datnow, & Park, 2009) although it is highly likely for each to travel along separate

research trajectories without meeting. While there is great diversity in the theorizing the components of implementation (e.g., Fixsen et al., 2005; Fullan, & Pomfret, 1977), what happens during implementation is most amenable to analysis and redesign by CHAT practitioners. Not only does CHAT have a wide range of (evolving) concepts to understand learning at the individual and collective levels during implementation, it is above all a theory for praxis (Roth, & Lee, 2007). Work that is informed by CHAT enables researchers and participants to collectively identify and solve problems together rather than one party taking dominance over the other. Moreover, it diverts blame from individuals; contradictions are correctly inner contradictions that originate at the societal level rather than arising from the individual such as what we read in the case studies of teaching and learning in Singapore. This kind of educational

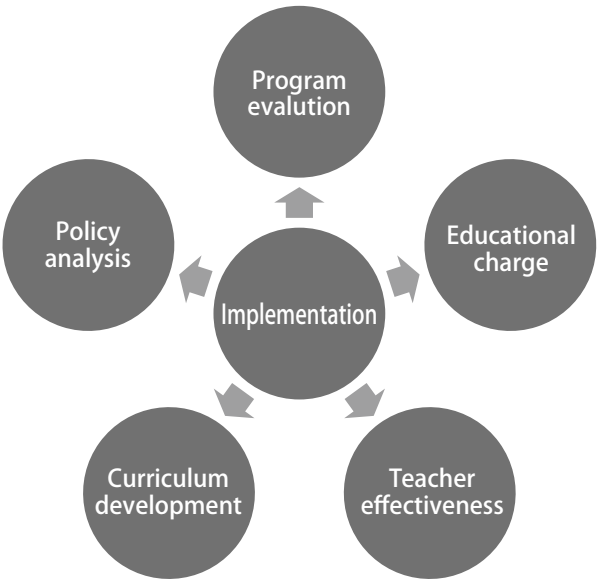

FIGURE 1

Diagram showing how implementation research is a common denominator across some educational fields.

research is emancipatory as well as phronetic and should be the gold standard that all of us should aspire towards.

REFERENCES

Brown, P., & Lauder, H. (2001). The future of skill formation in Singapore. *Asia Pacific Business Review, 7*, 113-138.

Datnow, A., & Park, V. (2009). Conceptualizing policy implementation: Large-scale reform in an era of complexity. In G. Sykes, B. Schneider, & D. L. Plank (Eds.), *Handbook of education policy research*. New York: Routledge.

Engeström, Y. (1991). Non scolae sed vitae discimus: Toward overcoming the encapsulation of school learning. *Learning and Instruction: An International Journal*, *1*, 243-259.

Fenstermacher, G. D., & Richardson, V. (2005). On making determinations of quality in teaching. *Teachers College Record, 107*, 186-213.

Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature*. Tampa, FL: University of South Florida.

Fullan, M., & Pomfret, A. (1977). Research on curriculum and instruction implementation. *Review of Educational Research*, *47*, 335-397.

Global Cities Index, The (2008). Retrieved December 12, 2009, from http://www.foreignpolicy.com/ story/cms.php?story_id=4509&page=0

Hargreaves, A. (2005). Pushing the boundaries of educational change. In A. Hargreaves (Ed.), *Extending educational change: International handbook of educational change*. Dordrecht: Springer.

Harvey, D. (2005). *A brief history of neoliberalism*. Oxford: Oxford University Press.

Hogan, D., Towndrow, P. A., & Koh, K. (2009). The logic of confidence and the social economy of assessment reform in Singapore: A new institutionist perspective. In E. L. Grigorenko (Ed.), *Multicultural psychoeducational assessment*. New York: Springer Publishing Company.

Holzkamp, K. (1993). *Lernen: Subjektwissenschaftliche Grundlegung*. Frankfurt/ M.: Campus.

Honig, M. I. (2006). *New directions in education policy implementation: Confronting complexity*. New York: SUNY press.

Kampfner, J. (2010). *Freedom for sale: Why the world is trading democracy for security.* New York: Basic Books.

Lannegrand-Willems, L., & Bosma, H. A. (2006). Identity development-in-context: The school as an important context for identity development. *Identity: An International Journal of Theory and Research, 6,* 85-113.

Lee, Y.-J. (2008). Thriving in-between the cracks: Deleuze and guerrilla science teaching in Singapore. *Cultural Studies of Science Education, 3,* 917-935.

Lefstein, A. (2008). Changing classroom practice through the English National Literacy strategy: A micro-interactional perspective. *American Educational Research Journal, 45,* 701-737.

Levin, B. (2001). *Reforming education: From origins to outcomes*. London: Routledge.

Levinson, B. A., & Holland, D. (1996). The cultural production of the educated person: An introduction. In B. A. Levinson, D. E. Foley, & D. Holland (Eds.), *The cultural production of the educated person: Critical ethnographies of schooling and local practice*. Albany, NY: SUNY Press.

Martin, D., & Peim, N. (2009). Critical perspectives on activity theory. *Educational Review*, *61*, 131-138.

McLaughlin, M. (2008). Beyond 'misery research'—New opportunities for implementation research, policy and practice. In C. Sugrue (Ed.), *The future of educational change: International perspectives*. London: Routledge.

Ministry of Education [MOE] (2004). *Singapore tops the Trends in International Mathematics and Science Study (TIMSS) 2003*. Retrieved May 26, 2009, from http://www.moe.gov.sg/media/press/2004/pr20041214.htm

Ministry of Education [MOE] (2009). Desired outcomes of education. Retrieved December 12, 2009, from http://www.moe.gov.sg/education/desired-outcomes/

Organisation for Economic Co-operation and Development [OECD] (2001). *The well-being of nations: The role of human and social capital*. Paris: OECD.

Roth, W.-M., & Lee, Y.-J. (2007). "Vygotsky's neglected legacy": Cultural-historical activity theory. *Review of Educational Research, 77*, 186-232.

Sannino, A., & Nocon, H. (2008). Introduction: Activity theory and school innovation. *Journal of Educational Change, 9*, 325-328.

Tan, J., & Ng, P. T. (2005). *Shaping Singapore's future: Thinking schools, learning nation*. Singapore: Prentice Hall.

Tolman, C. W. (2009). Holzkamp's critical psychology as a science from the standpoint of the human subject. *Theory & Psychology*, *19*, 149-160.

Yeo, J., Tan, S. C., & Lee, Y.-J. (2006). A learning journey in problem-based learning. In S. A. Barab, K. E. Hay, & D. T. Hickey (Eds.), 7th International Conference of the Learning Sciences, 27 June-1 July. Mahwah, NJ: Lawrence Erlbaum Associates.

6

Schools that Contribute to Community Revitalization

Katsuhiro Yamazumi

INTRODUCTION

The introduction of information and communication technologies such as the Internet is resulting in an ever-expanding range of learning experiences for students, teachers, and staff in all kinds of school systems. Learning is no longer something that takes place within the confines of textbooks, and it has come to draw on a wide range of different sources of knowledge. At most schools, current social problems and future possibilities form an essential part of the curriculum. Consequently, it is becoming increasingly important for schools to build partnerships with community organizations, businesses, expert groups, and other relevant actors outside of the school and to invite them to contribute to the curriculum and lessons. In these partnerships, the teachers and students get involved in the issues and problems that interest them by investigating and intervening in them outside of the school grounds. Conversely, the outside partners might come to the school and engage in discussions with the students and teachers. In this way, the partnerships between the school and the outside community build reciprocal relationships where knowledge and practices that are learned together are created and shared.

Certainly, learning is not restricted to textbooks and classrooms. To transform traditional pedagogical practices in schools, this chapter

proposes a concept of *hybrid education* for the expansive development of curriculum, lessons, and learning in schools. Hybrid education is based on collaborations among a variety of participants (providers of learning) both inside and outside the school. It is achieved when a wide variety of people work together to transcend their formal boundaries in order to expand learning within this matrix of diverse relationships.

These hybrid-learning activities can be conceptualized with the help of the framework of cultural-historical activity theory (Engeström, 1987, 2005a, 2008; Leont'ev, 1978; Sannino, Daniels, & Gutiérrez, 2009). Activity theory offers a conceptual framework that views a collective activity system as a unit of analysis of human practices and development and as a rich source of ideas and tools for modeling future innovative activities. Using the framework of activity theory, especially "third-generation activity theory" (Engeström, 1996, pp. 132-133), this chapter illuminates and analyzes the emerging hybrid and symbiotic forms of learning activity in which various involved parties and partners inside and outside the school collaborate and reciprocate with one another. Accordingly, participating organizations and actors can gain the ability to share and expand new endeavors in educational work.

Based on the "expansive learning" approach (Engeström, 1991) to school innovation, which proposes "to break the encapsulation of school learning by expanding the object of learning" (p. 256), the creation of these hybrid and symbiotic forms of learning activity in schools should be seen as an extremely promising formative intervention for school reform efforts. By creating "networks of learning," this kind of intervention can "transcend the institutional boundaries of the school and turn the school into a collective instrument" (p. 257) for transformation surrounding activities and the real-life world. In such expanding school activity, innovative schools can act as active agents of societal change by undertaking collaborative efforts such as community revitalization, cultural production, economic innovation, and citizenship activation, which involve hybridizing with other actors (producers, experts, communities, various workplaces and organizations outside

schools) through networking, interaction, dialogue, and boundary crossing (Yamazumi, 2005, 2006, 2007, 2009). This new type of school could be called *school as societal change agent*.

In the following sections, I start by discussing the concept of hybrid education from the perspective of a theoretical working hypothesis on school innovation. Second, to make concrete this concept of hybrid education, I describe and analyze an experimental hybrid educational project called "New School" (NS) as intervention research in Osaka. This intervention research aims to develop a hybrid activity system in schools that can transform the pedagogical activity of the traditional school, based on a partnership between a university and local elementary schools but also involving other social actors and institutions. Finally, the significance of hybrid educational innovation and its potential to turn schools into active societal change agents are discussed based on a concrete case study on the NS project as an example of what this approach intends.

THIRD-GENERATION ACTIVITY THEORY AND AN APPLICATION OF HYBRID EDUCATION

In March 2008, Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) revised the Courses of Study as the national standard for educational courses in the nation's elementary and junior high schools. This resulted in a reduction in the number of classroom hours allocated to "Period for Integrated Study." (Elementary schools previously allocated 105 hours to Period for Integrated Study in the third and fourth years, and 110 hours in the fifth and sixth years. The revised Courses of Study brought the classroom hours for this to a total of 70 hours annually for all grades.)

A basic policy for curriculum formulation under the new Courses of Study is that emphasis be placed on the balance between "consistent mastery of basic/fundamental knowledge and skills" and "the application of these to develop the creative thinking, judgment, power of

expression and other applied abilities required for problem solving." As such, there is a genuine need for Period for Integrated Study to strive for qualitative improvements as an "exploratory activity" while giving due consideration to the enhancement of learning activities that target the acquisition and application of knowledge and skills in all subjects. MEXT's *Interpreting General Rules for the Courses of Study for Elementary Schools* contains the following description.

> As consistent mastery of basic/fundamental knowledge and skills and the application of these to develop the creative thinking, judgment, power of expression and other abilities required for problem solving are both important to the cultivation of solid academic capabilities, it is necessary to attain a balance between both learning activities.
> In addition to placing emphasis on the mastering of basic/fundamental knowledge and skills in each subject, efforts are to be made to achieve this balance by enhancing learning activities that target the use of such knowledge and skills as observation/experimentation, report writing and debate. In addition, it is necessary to develop creative thinking, judgment, powers of expression and other abilities through quality improvements in exploratory activities conducted principally during Period for Integrated Study to link up the knowledge and skills learned in school subjects and solve cross-curricular and comprehensive tasks that transcend subject boundaries. Moreover, underpinning these pursuits are language-based skills, and emphasis is being placed on developing these skills not only in the study of Japanese Language, but throughout all subjects. (MEXT, 2008, p. 3)

The relationship between "subject-based learning" activities targeted toward this type of "mastering" and "utilization" of knowledge and skills, and "Period for Integrated Study" defined by cross-curricular and comprehensive "exploratory activities" that cut across multiple school

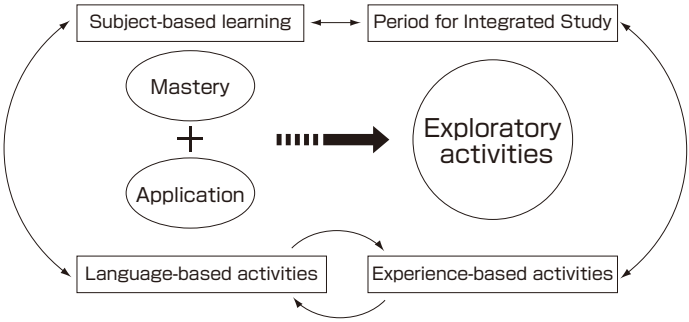

FIGURE 1

Positioning and interrelation of "subject-based Learning," "Period for Integrated Study," "language-based activities," and "experience-based activities" in the new Courses of Study

subjects is based on the integration of "language-based activities" and "experience-based activities." Figure 1 illustrates this relationship.

The research discussed in this chapter proposes a concept of hybrid education for the expansive development of curriculum, lessons, and learning in schools based on a type of Period for Integrated Study that seeks qualitative improvements through "exploratory activities." The overall aim is to develop a concrete curriculum, lessons, and learning practices for hands-on learning within this educational concept.

The theoretical working hypothesis of this research, which endeavors to develop hands-on practices for hybrid education, is that the practical application of hybrid education will expansively innovate curriculum, lessons, and learning in schools (Yamazumi, 2009b).

As shown in Figure 2, we can distinguish four formats of expansive development in schools if we look at the intersection of the vertical *objects* of learning (types of learning task) with the horizontal *organizations* (relationships with the outside community).

The present research looks to model the *hybrid learning activities* marked IV in Figure 2 into an expansive form of learning for schools that is envisaged to expand through the vertical and horizontal dimensions outlined below.

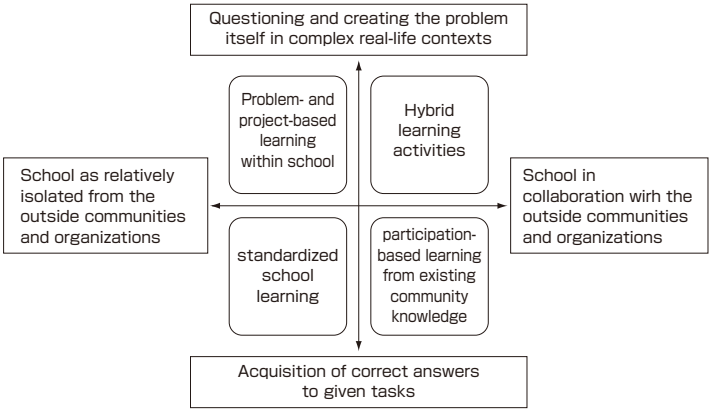

FIGURE 2
Four forms of expansive development in schools

- **Vertical dimension** ⋯ Expand from learning by acquisition of correct answers as responses to given tasks in school texts and the classroom to learning by questioning and creating the problem itself in relation to real life and society.
- **Horizontal dimension** ⋯ Expand from schools that are socially isolated to schools that form networks with outside communities/ organizations and engage in productive practices to achieve hybrid functions.

In this way, hybrid education refers to schools creating a variety of hybrid relationships with outside communities and organizations (mixing of multiple heterogeneous elements). Within these relationships children and teachers can together build a network of learning that seeks out problems and tasks across multiple school subjects and makes use of the knowledge and skills gained to develop collaborative learning. This learning endeavors to investigate and offer solutions to problems and tasks in collaboration with a variety of outside learning providers, namely producers and experts, as well as workplaces and community organizations (Yamazumi, 2008).

The present research aims to develop hybrid education as a new

concept in the area of educational practices. It also looks to promote practical research and development activities that actually generate collaborative learning from hybrid education. Joint research within school sites will further the development of the concrete curriculum and units required for hybrid learning activities within the Period for Integrated Study so that associated lessons and learning practices can be established. Over time, results will be analyzed and verified on the basis of detailed data collected as these practices evolve.

At present, activity theory is moving into a new era. Research is now focusing on networks and collaborations between heterogeneous multiple activity systems in an effort to abolish organizational, institutional, cultural, national and other such boundaries. This is what is known as "third-generation activity theory" (Engeström, 1996, pp. 132-133). Credited for this is the shift of modern human activity toward a new paradigm of "networked organizations," "hybridity," and "horizontal weak ties." Social practices in today's workplaces and organizations are rapidly switching from the paradigm of mass production to a new configuration of network, collaboration, and partnership building among many heterogeneous individuals, organizations, cultures, and professions. This is leading to the emergence of a new and pressing research query in the field of human education, learning, and development: What kind of learning can generate critical and creative agency among individuals and communities in schools and workplaces to help them shape their own lives and future, which are gradually being transformed?

Third-generation activity theory is progressing toward a new framework that analyzes and designs new networks between multiple heterogeneous activity systems (e.g. between schools and outside communities organizations) so as to transcend the limitations associated with stand-alone activity systems (schools for example) and thereby abolish organizational, institutional, cultural, and national boundaries (Engeström, 1996; Yamazumi, 2006, 2009a). This new conceptual framework for activity theory is bringing about an "expansive learning"

approach (Engeström, 1987, 2005a) characterized by the radical transformation of one's own activities through the creation of "networks of learning" (Yamazumi, Engeström, & Daniels, 2005).

In a similar way, this research applies activity theory, and in particular third-generation activity theory, to shed light on reciprocal activities and collaborations among teachers, children, and outside participants and their partners (experts, workplaces, communities, etc.). Such awareness will assist efforts to deploy hybrid education as a new concept for pedagogical practices, and to expansively redefine curriculum, lessons and learning for schools. Practices for curriculum, lessons, and learning within hybrid education will be developed in detail while making full use of concepts and models obtained through theoretical study. By doing this, I hope to demonstrate workable hybrid learning activities suitable for the newly expanded learning framework demanded by current schooling. Developing concrete practices will entail the collection of detailed data related to evolving practices, as well as the analysis and verification of outcomes, with results fed back into the theoretical study to shape a more refined concept and model of hybrid education.

Research on collaboration between schools and outside communities and organizations is presently attracting considerable interest within educational fields. There is, however, insufficient detailed empirical research on the content and forms of this collaboration, not to mention its merits and weaknesses. In terms of academic features, the present study has the potential to clearly define the design of a new type of learning activity for schools based on detailed empirical study. Making use of the conceptual framework of activity theory, it also offers the possibility of developing a clearer conceptualization of the widely used but theoretically ambiguous concepts of "community," "collaboration," and "partnership." This clarification can be achieved through intense evaluation of practical trials in hybrid education.

Creating a new type of learning activity for children based on schools entering into boundary-crossing collaboration with outside organizations is expected to deliver significant outcomes. Giving concrete and practical

form to the concept of hybrid education will offer an extremely promising option for school reform efforts.

SUPPORT FOR INDEPENDENT LEARNING BEYOND THE CLASSROOM

"New School" (NS) refers to project-based learning activities conducted after school every Wednesday and on holidays during the periods from April to July and September to January, for grade 3-6 children at Suita municipal elementary schools in Osaka, adjacent to Kansai University (18 children in 2009). The program also involves university students studying to become elementary school teachers in Kansai University's Department of Elementary School Education (Yamazumi, 2008, 2009a, 2010). The NS activities create advanced networks of learning based on cooperation among the following partners: a university, local elementary schools, families, experts, and community organizations outside the school. Working as an intervention, these NS parties design and implement grade-mixed, group- and project-based learning as well as networks of learning. Their collaborative efforts have been supported by the Center for Human Activity Theory (CHAT)[1] at Kansai University since 2005.

Project-based learning refers to studies in which a group undertakes expansive, in-depth investigation into a specified theme or topic over an extended period of time. This could be considered cross-curricular, integrated learning that is related to real-life and social activities or learning that applies knowledge and skills in real-world problem solving. Through this type of learning approach, the children develop

1 The Center for Human Activity Theory (CHAT) at Kansai University was an international research center established to undertake the joint research project "International Joint Research in Innovative Learning and Education System Development: The Creation of Human Activity Theory," as part of the Ministry of Education, Culture, Sports, Science and Technology (MEXT) "Academic Frontier" Project, from 2005 through 2009. See Center for Human Activity Theory Web site: http://www.chat.kansai-u.ac.jp/english/

the abilities needed for creative expression.

At the New School, elementary school children and university students collaborate in project-based learning centered on the theme of "Food." This theme is not only about "eating" but also includes cooking, cultivation, and the agricultural experience, as well as living well, ideas on the ecology, and a "sustainable future."

In essence, children engage in fun, creative, and collaborative learning processes in NS. The goal of the NS project is to create a model for transforming "schools of memorization" into "schools of activity," in order to cultivate the children's autonomy, creativity, imagination, expressiveness, and social skills. The learning activities are designed to bridge the gap between the children's learning in school and their everyday social lives in their own homes and the community outside of the school, and to organically link these two aspects of their lives.

In 2009, local elementary school children and university students carried out project-based learning for sustainable living "Learning about the environment in a garden: Suita Kuwai and ecology." *Suita Kuwai* (the Japanese arrowhead, an aquatic plant), which was the focus of the investigative and collaborative learning, is a traditional vegetable unique to Suita City in Osaka Prefecture. It originated and evolved in the Suita region, where the children live, and has been well known for generations as a soft, sweet, distinctive tasting vegetable. Being a half-cultivated, half-wild vegetable, however, it quickly disappeared amidst a wave of urbanization, and at one point was even on the verge of extinction. In recent years, however, local farmers, citizens, and government agencies established a network to revive the Suita Kuwai, to promote its protection and proliferation, and to ensure that it is passed onto future generations.

The children investigated this local vegetable and other traditional Osaka vegetables with the support of university students, the CHAT research coordinator, and researchers. Outside experts and producers were involved in discussions with the children. In addition, they worked on a farm over the holidays, created recipes for Suita Kuwai, and cooked in the school's home economics room.

NS has undertaken the following grade-mixed, group- and project-based learning:

- Study traditional vegetables from the Osaka region, particularly Suita Kuwai.
- Interact with agricultural producers and experts.
- Cultivate and harvest Suita Kuwai and other vegetables.
- Records the information studied and discovered, by taking notes and taking photos.
- Create original dishes and menus using Suita Kuwai, and prepare these foods.
- Create a story to introduce the original foods, the group members, and the learning themes at NS, and present this story in the form of a picture book (Figure 3).
- Learn using computers and information technologies (Figure 4).

The children used books, the Internet, and other materials to investigate Suita Kuwai and other traditional Osaka vegetables, and

FIGURE 3
Recipe books created by the children

FIGURE 4

Doing research on the Internet

FIGURE 5

Children hearing about organic cultivation from Mr. Hirano at his farm

they heard directly from people who were involved in protection and proliferation activities. In this way, they also learned about regional geography, history, and culture. Furthermore, by actually planting and cultivating Suita Kuwai and other vegetables in a garden, the children could observe their growth. At the same time, they heard talks by experts, including Mr. Koichi Hirano, a community-oriented local farmer

who uses only organic cultivation and natural agriculture methods. Through such non-traditional teachers, the children learned about the growth of vegetables and the natural environment (Figure 5).

The approach of this learning process is "From Seed to Table," that is, from the experience of agriculture through organic cultivation and learning about ecology to learning about food through original cooking lessons (Figure 6).

For whatever reason, standardized learning at school tends to be from textbooks within the closed walls of classroom environments. The American educational and social critic, John Holt is renowned for his stinging criticism (1964/1982) of this type of standardized school learning. Basically, Holt criticizes classroom learning that values only the act of answering correctly. In his view, it destroys a student's ability to think deeply on problems and form a thinking habit that puts aside fears of failure to keep working on challenging problems. He concluded that learning based on a fear of failure shapes a self-defensive thinking habit that compels children to feign understanding and thus avoid the "insecurity of not having any answer to a problem" (Holt, 1964/1982, p. 90).

At NS, projects are undertaken on the basis of three objectives: (1) to go beyond the conventional "classroom" environment where outcomes are classified as "success" or "failure"; (2) to support children in their efforts to learn independently; and (3) to help children foster the feelings of self-affirmation and self-esteem that are linked to a sense of achievement. In short, the aim is to "go beyond the classroom to help children learn independently." To achieve this, NS has come up with methods to bridge the gap between school-based learning and home/community life outside school to create learning activities that organically link these elements.

As explained before, this type of project-based learning within hybrid education refers to integrated learning that involves investigations of themes crossing the boundaries between different subjects and fields in school education to connect in a meaningful way with the real-life world

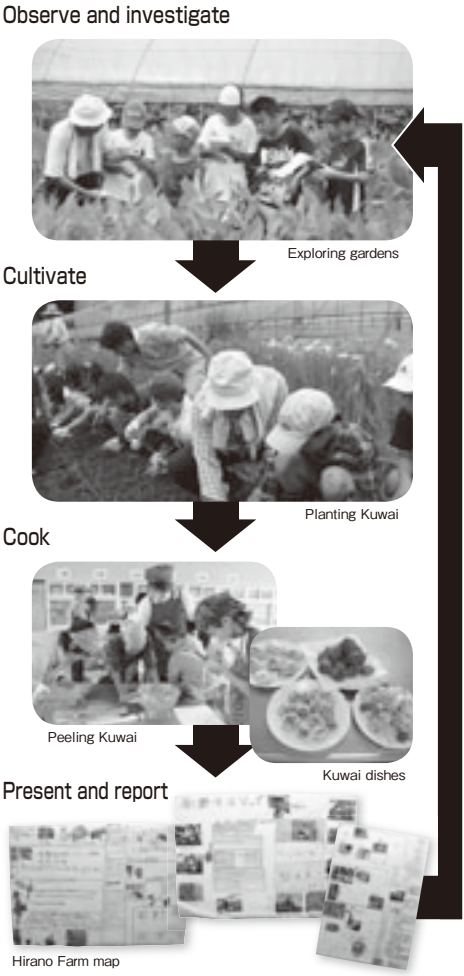

FIGURE 6

Project-based learning: "From Seed to Table"

and social activities. It is problem-based learning that uses knowledge and skills in actual problem situations. For project-based learning characterized in this way, the words of a Russian philosopher, Evald Ilyenkov (1974/2009), carry particular weight. Ilyenkov notes that

problems involving the "practical application of knowledge to life" take troubling and strange forms in the field of educational practices. In reality, there are times when it is difficult to know how to "apply" knowledge to issues that occur outside the school walls, even after we have graduated. This is a question of finding a correlation between "knowledge" and "object," namely what the person is actually oriented for and motivated toward.

Why does Ilyenkov describe this correlation as a troubling and strange problem in school education? This stems from the question of what it means to apply the known facts of an object, that is, "knowledge" about an "object," to the "object" in question. However, if we reconsider this troubling and strange problem in the following way, it might take on more resonance. In the distinctive environment of conventional school education, students don't acquire knowledge about an object but instead acquire knowledge about "statements" and "systems of statements." In other words, students gain the "language" of an object. "Knowledge" here equates to linguistically organized consciousness. Ilyenkov agues as follows:

> So, during class the schoolchild ends up dealing with ready-made images (schemas) or reality and the verbal formulate that express them, but he encounters the object only outside of lessons, outside of school. As a result, he never finds a bridge between these two very dissimilar worlds — these two spheres of his life activity — he is lost when he finally encounters any reality that has not been scientifically prepared for him. He ends up being able to 'apply formulate' successfully only in a situation that is precisely as described in the textbook, i.e. only when life has already been organised 'according to science'. That is, when the object has already systematised by someone else's activity, where it has already been made according to the 'rules', where science has already been applied.
>
> …

> Traditional 'learning' activity …reduces to the process of assimilating ready-made knowledge, ready-made information, and ready-made conceptions, i.e. it is realised as the activity of the embodying of ready-made images in language and — inversely — of the 'visualisation' of verbally formed conceptions. (Ilyenkov, 1974/2009, pp. 222-223)

Ilyenkov advocates that this "traditional learning activity" should give way to "learning as an activity." In this case, "activity" is the particular "object-oriented activity" pursed in activity theory.

Learning as an activity oriented for and motivated toward an "object" attempts to transform the object itself, rather than the object's "ready-made images in language." In this process, it is the image or visual representation of the object that is established first, not a schema derived *a priori* from linguistic rules or instruction. To reiterate, "object" refers to what a person is actually aiming for or motivated toward.

Real-life human activity is located outside the boundaries (limits) of a person's psyche. In short, human activity is an "object-oriented activity" that is outside and independent of consciousness. This, as Ilyenkov says, is conducted by "hand," and it deals not with an "image" but with the actual thing in "its most direct, 'crude' meaning, in a 'crudely material' sense-activity that directly masters the object" (Ilyenkov, 1974/2009, p. 224) Using the metaphor of "work of the hands," Ilyenkov adeptly expresses learning as an activity as follows:

> Real thinking is formed precisely when — and only when — the work of language is indissolubly joined to the work of the hands — the organs of direct-object activity. Not hands drawing letters, words, and 'statements' on paper, but hands making things, i.e. changing obstinate, intractable, and capricious matter. Only thus can we observe its objective nature — independent of words or ready-made 'images' — its objective character or 'stubbornness.' Only thus does the object reveal itself as the thing

> in itself, compelling us to reckon with it more than with words or with 'schemas' that 'visualise' those words. It is clear that this is the only way one can hope to overcome verbalism and avoid the problem of 'the application of knowledge to life' — a problem that school teaching itself has created. (Ilyenkov, 1974/2009, p. 224)

This conceptualization of "real thinking" by Ilyenkov appears very similar to Holt's (1964/1982) notion of "intelligence" as follows:

> When we talk about intelligence, we do not mean the ability to get a good score on a certain kind of test, or even the ability to do well in school; these are at best only indicators of something larger, deeper, and far more important. By intelligence we mean a style of life, a way of behaving in various situations, and particularly in new, strange, and perplexing situations. The true test of intelligence is not how much we know how to do, but how we behave when we don't know what to do. (Holt, 1964/1982, p. 271)

The experience of learning at NS based on the theme of food and agriculture is intended to make such "real thinking" and "intelligence" at the "work of the hands" — learning as an activity — come alive for the children. When the children participate in the world of agriculture, which is the source of food, they come face to face with the far broader "object" of nature that is real, complex, and ever-present in the background. On the organic and natural agriculture farm operated by Mr. Hirano, the children can come into contact not only with vegetables but also with a wide variety of living organisms, including worms in the soil, mole crickets, and numerous other insects as well as swamp eels and other animals. The farm is a kind of microcosm. Of course everyone is different but in many cases, children can be quite comfortable around the creatures that would make most adults cringe; in fact, they observe these creatures with the greatest of interest. Children are not yet shackled by the preconceived notions that burden adults — for example,

"worms are disgusting" — but have a healthy and lively intellectual curiosity.

Fritjof Capra, a physicist and systems theorist, characterizes "ecological thinking" as follows:

> Ecology, from the Greek *oikos* ("household"), is the study of the relationships that interlink all members of the Earth Household. Ecological thinking, therefore, is thinking in terms of relationships, connectedness, and context. In science, this kind of thinking is known as systems thinking. (Capra, 1997, p. 3)

Nature can be a great teacher for children, and the natural world, which carries within it subtle opportunities for change and creation, represents the best possible environment for learning; one that hones the children's senses and promotes active action. The collaborative tasks of cultivating and harvesting Suita Kuwai and other vegetables encourages the children to think in terms of the real and complex contextual background that is nature and to think from the perspective of an ecosystem: the environmental conditions of the farm as a microcosm, including the soil, light, water, and weather conditions, and the interrelationships and interconnections among the various organisms that populate that microcosm. The results of creative learning at NS are clearly visible in this type of "ecological thinking" and "systems thinking."

A PLATFORM OF LEARNING FOR TRANSFORMATION OF REAL-LIFE ACTIVITIES

John Dewey, in his seminal book, *The School and Society* (1900), which proved to be a turning point in the switch to new education, strongly advocated the need for the school to "get out of its isolation and secure the organic connection with social life" (Dewey, 1900/1990, p. 79). In doing so, he presented a conceptual schema for the school building, as

FIGURE 7

Dewey's diagrammatic representation for the school building (Dewey, 1900/1990, p. 79)

shown in Figure 7, and spoke about his idea as follows:

> It is not our architect's plan for the school building that we hope to have; but it is a diagrammatic representation of the idea which we want embodied in the school building. …The center represents the manner in which all come together in the library; that is to say, in a collection of the intellectual resources of all kinds that throw light upon the practical work, that give it meaning and liberal value. If the four corners represent practice, the interior represents the theory of the practical activities. (Dewey, 1990, p. 79)

Based on this conceptual schema, the "library" is placed at the center of the school to link practical, hands-on activities (Dewey's word "occupations" including sewing, spinning, weaving, cooking, and crafting) with intellectual inquiries (scientific and theoretical knowledge). Learning then expands out from this "library" in a radial fashion to the surrounding world, and as a result it is thought that a natural reciprocation is achieved between the school and everyday social life. Dewey's "library" concept has the potential to be re-packaged for the modern era as a platform from which exploratory learning and its many associated possibilities could emanate and return to actively construct

and expand a progressive network.

Operating on the theme of creating a society for a sustainable future, NS is attempting to build a *platform of learning* that will create collaborations between schools (children, teachers, and parents) and a diverse range of outside partners and expand into the regional society as a whole to change surrounding communities and society for the better.

The collaborative learning activities of NS, as I have mentioned, are supported and encouraged by many groups and individuals that transcend the boundaries of school education, including a partnership that has been established between the Kansai University Center for Human Activity Theory (CHAT) and municipal elementary schools in the region; Mr. Hirano, a community-oriented farmer who produces Suita Kuwai and other traditional Osaka vegetables using only organic cultivation and natural agriculture methods; the Suita Kuwai Conservation Society, which has continued its own volunteer activities over many years aimed at the proliferation of Suita Kuwai and its bequeathal to future citizens; and regional government agencies such as the Suita City Office Industrial Labor Section and the Osaka Prefectural

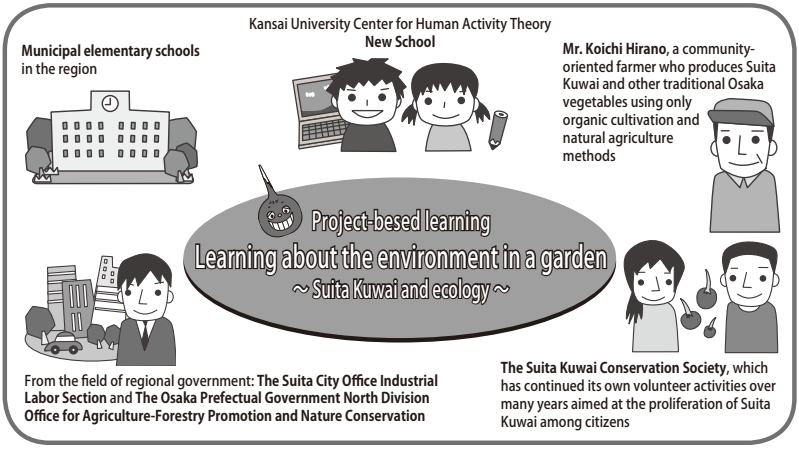

FIGURE 8

The creation of hybrid education in New School

Government North Division Office for Agriculture-Forestry Promotion and Nature Conservation, as illustrated in Figure 8. This has given rise to a network of learning for the children, tied into the real-life world and social activities.

Project-based learning at NS uses as its source of learning a network of volunteer activities by people attempting to bring back Suita Kuwai to modern life. This learning project gives rise to learning activities in which the children discover integrated cross-curricular problems and issues, build networks of learning, and use knowledge and skills while at the same time investigating and resolving problems and issues in cooperation with producers and experts outside of the school. In this way, NS has created a form of hybrid education based on collaborations among a variety of participants, namely providers of learning, both inside and outside schools (Figure 9).

NS does not operate as a closed organization with a fixed framework and membership in the process of creating a form of hybrid education. In other words, CHAT is not always a central function that controls

FIGURE 9

Asking questions to outside experts by phone

learning activities. Learning is provided by a wide range of individuals and organizations including representatives of producers, experts, volunteer organizations, and government agencies. CHAT provides initiative while overseeing periodic changes and rotations in these providers of learning. The notion of "negotiated knotworking" of Yrjö Engeström (Engeström, 2008; Engeström, Engeström, & Vähäaho, 1999) is useful for analyzing the creation of these flexible, fluid, and impromptu collaborations. Knotworking refers to a way of organizing and conducting productive activities in a hybrid and distributed field where different partners operate.

The notion of "knot" refers to partially improvised forms of intense collaboration between otherwise loosely connected actors and activity systems that are engaging in solving problems and rapidly designing hybrid solutions when required by their common object (Engeström, 2005b). Drawing on the notion of knotworking, the goal in building hybrid activity systems is to have "no fixed center of authority or control." By a knotworking-type formation of collaborative practice, the NS research coordinator and researchers avoid being cast as "authorities" in the NS project.

We believe that hybrid education using Suita Kuwai as a regional learning material, similar to that developed for the NS project, can be put to use in establishing new directions for "Period for Integrated Study" at elementary schools. According to the Courses of Study for elementary schools in Japan, the individual elementary school curriculum should include a "Period for Integrated Study" dealing with interdisciplinary and cross-curricular themes for third-graders and older in addition to school subjects. Its content is not prescribed in the national curriculum standards but schools are expected to make efforts to develop and conduct distinctive project-based learning activities for it.

Consequently, efforts have been made to implement activities and units developed by the NS project in schools, especially as curriculum units in "Period for Integrated Study." As part of this expansion, from the 2008-2009 school year, one regional elementary school has conducted

FIGURE 10
Planting Suita Kuwai in the schoolyard

cross-curricular and integrated learning of Suita Kuwai — the Suita Municipal Yamate Elementary School, which is a partner in the NS project. In the 2009-2010 school year, the scale of activities undertaken by the school's fourth graders was impressive: They created an irrigated field for Kuwai on the school grounds. The children planted the seedlings themselves in June (Figure 10) and then cultivated them and observed their growth. In December, the children harvested the vegetables and cooked them for eating. In the final stage of these activities in February, they summarized the things they had investigated and observed in preparation for creating and publishing a Suita Kuwai newspaper as a group.

Integrated learning at Yamate Elementary School based on the theme of Suita Kuwai included a lesson by an agricultural expert from the Osaka Prefectural Government North Division Office for Agriculture-Forestry Promotion and Nature Conservation. As an expert on the subject, he gave an inspired and at the same time easy-to-understand presentation on the growth mechanisms of the Kuwai. He received many challenging questions from the children, such as "Why did Suita Kuwai disappear?" and, conversely, "How did they come back?"

The Suita Kuwai left a very strong impression on these fifth-graders

as a species unique to the Suita region, where the children lived, and as a part of the traditional food in that area of Japan. No doubt, they were surprised to find that such a famous traditional vegetable, representing an important part of the region's culture and history, even existed in the area where they lived, which seemed to be far removed from the world of agriculture. This is why they thought it so strange that this Suita Kuwai was on the brink of extinction. They also expressed a sincere interest in the background to the regeneration of Suita Kuwai: "Who brought these disappearing flowers back to life, and how?" These are the compelling questions on the minds of the children.

The realistic and practical experience of Suita Kuwai and traditional Osaka vegetables in a garden is not one-directional, force-fed teaching from textbooks and other printed materials; it originates with observations of an object's true value and uses that as a starting point for a longer-range curriculum and educational method. It is teaching that encourages a more ecological approach to a variety of things based on the background context, as well as interrelationships and interconnections.

Principal Tatsuo Asano of Yamate Elementary School spoke to me of his belief that the children's encounter with Mr. Hirano could bring about a new change in the way those children live:

> ***Principal***: The reason that I think rice and arrowhead are interesting is related to the background of the present era. At that time, what Mr. Hirano was trying to emphasize to the children was the image that capitalism has already moved into the next era. Also, he wanted to communicate the joy of creating things, and of knowing that their work would come alive in the food that people eat. The dream and the attraction of a primary industry which goes back to people's roots. Children, and adults as well, have been living in an era where all we do is consume things. It's possible that now, the thing that will lead the world is not only consumption but primary industry: that is, creating things. (June

10, 2008)

From consumption, returning once again to production: As demonstrated by Principal Asano's deep insights, integrated learning based on the theme of Suita Kuwai could provide a deeply meaningful opportunity to think together about how we can initiate a new change in the values of how we live in the "next era" — that is, in our future way of sustainable living.

Hybrid and expansive forms of project-based learning will create "knots" between diverse individuals in different organizations and groups when boundaries are transcended by different people sharing a common object. In the case of project-based learning on the theme of Suita Kuwai as well, people with different affiliations transcend boundaries to achieve knotworking, tied together by a common vision of building better living for the sustainable future.

CONCLUSION

As has been noted, the hybrid education and project-based integrated learning activities on the theme of Suita Kuwai in NS and the municipal local elementary school do not stop at the level of individuals. On the Macro level, mutual learning and collaboration at NS and the elementary school are expanding to encompass investigations into the potential for sustainable development in the larger community, society, and the world.

This kind of hybrid education and project-based integrated learning activities creates a local community to share and investigate a theme, which involves collaborations with others in that community. Furthermore, these activities create mutual learning and collaboration that will expand to include the regional society as a whole, with participation by diverse partners from the community outside of the school, based on comprehensive themes that transcend the boundaries of school subjects, like creating a society for a sustainable future. This approach builds

platforms for mutual learning that will change the surrounding community and society for the better. I believe that this platform for mutual learning is the ideal form of new schools, and I refer to this as "schools that contribute to community revitalization." The collaboration and interaction between organizations and practical activities inside and outside of schools give rise to educational practices that enable schools to contribute to the changes in society, in order to help revitalize the community, enliven our culture, innovate the economy, and activate citizenship.

We could therefore say that the hybrid education and project-based integrated learning activities as outlined in this chapter are the challenges undertaken by NS and the elementary school as they become a kind of intermediary entity that turns school education into a new platform of mutual learning. The collaborative relationships and connections, and the networks with a variety of organizations inside and outside of the schools, which are the subjects of the NS mediations, are by no means fixed; they are dynamic, constantly changing and forming in response to diverse needs and various tasks at any given time. CHAT is not a central function that controls learning activities. Rather, it provides initiatives while overseeing periodic changes and rotations among diverse partners. This is evidence of a radical new form of school activities, which encourages hybrid mutual learning and collaborations, and the results never become fixed as in established and closed systems.

"Schools that contribute to community revitalization" is a venue for a variety of people from regional society and organizations outside of schools to interact and connect, and to think together about a better future. The mutual learning and collaboration with children that is being practiced here now holds the potential for a better future. This is also evidence of a radical new form of school activities.

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REFERENCES

Capra, F. (1997). *Creativity and leadership in learning communities*. Berkeley, CA: Center for Ecoliteracy.

Dewey, J. (1900/1990). *The school and society and The child and the curriculum*. Chicago: The University of Chicago Press.

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.

Engeström, Y. (1991). Non scolae sed vitae discimus: Toward overcoming the encapsulation of school learning. *Learning and Instruction: An International Journal*, *1*, 243-259.

Engeström, Y. (1996). Developmental work research as educational research: Looking ten years back and into the zone of proximal development. *Nordisk Pedagogik/Journal of Nordic Educational Research*, *16*, 131-143.

Engeström, Y. (2005a). *Developmental work research: Expanding activity theory in practice*. Berlin: Lehmanns Media.

Engeström, Y. (2005b). Knotworking to create collaborative intentionality capital in fluid organizational fields. In M. M. Beyerlein, S. T. Beyerlein, & F. A. Kennedy (Eds.), *Collaborative capital: Creating intangible value*. Amsterdam: Elsevier.

Engeström, Y. (2008). *From teams to knots: Activity-theoretical studies of collaboration and learning at work*. Cambridge: Cambridge University Press.

Engeström, Y., Engeström, R., & Vähäaho, T. (1999). When the center does not hold: The importance of knotworking. In S. Chaiklin, M. Hedegaard, & U. J. Jensen (Eds.), *Activity theory and social practice: Cultural-historical approaches*. Aarhus: Aarhus University Press.

Holt, J. (1964/1982). How children fail. New York: A Merloyd Lawrence Book.

IIyenkov, E. V. (1974/2009). Activity and knowledge. In E. V. IIyenkov, *The ideal in human activity*. Pacifica, CA: Marxists Internet Archive.

Leont'ev, A. N. (1978). *Activity, consciousness, and personality*. Englewood Cliffs, NJ: Prentice Hall.

MEXT (2008). *Interpreting General Rules for the Courses of Study for Elementary Schools*. Tokyo: Toyokan Publishers (in Japanese).

Sannino, A., Daniels, H., & Gutiérrez, K. D. (Eds.) (2009). *Learning and expanding with activity theory*. Cambridge: Cambridge University Press.

Yamazumi, K. (2005). School as collaborative change agent. In K. Yamazumi, Y. Engeström, & H. Daniels (Eds.), *New learning challenges: Going beyond the industrial age system of school and work*. Osaka: Kansai University Press.

Yamazumi, K. (2006). Activity theory and the transformation of pedagogic practice. *Educational Studies in Japan: International Yearbook of Japanese Educational Research Association*, *1*, 77- 90.

Yamazumi, K. (2008). A hybrid activity system as educational innovation. *Journal of Educational Change*, *9* (4), 365-373.

Yamazumi, K. (2009a). Expansive agency in multi-activity collaboration. In A. Sannino, H. Daniels, & K. D. Gutiérrez (Eds.), *Learning and expanding with activity theory*. Cambridge: Cambridge University Press.

Yamazumi, K. (2009b). Not from the inside alone but by hybrid forms of activity: Toward an expansion of school learning. *Actio: An International Journal of Human Activity Theory*, *2*, 35-55

Yamazumi, K. (2010). Toward an expansion of science education through real-life activities in Japan. In Y.-J. Lee (Ed.), *Science education research in Asia*. Boston, MA: Sense Publishers.

Yamazumi, K., Engeström, Y., & Daniels, H. (Eds.) (2005). *New learning challenges: Going beyond the industrial age system of school and work*. Osaka: Kansai University Press.