

Space for teacher learning: a case study on developing teacher curriculum leadership in Hong Kong

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Abstract

This article aims to report the experiences in using activity theory approaches to understand a curriculum development project conducted in a primary school in 2005 in Hong Kong, as well as part of its data and findings. It shows that the theoretical orientation of the activity theory can assist researchers in unveiling the deeper meanings of parts of the data, which have been previously reported in a couple of articles by the same author. While the other articles adopted grounded approaches in their analyses of the interview data and the foci were on teacher learning, the current article takes a drastic turn and uses “lenses” from the socio-cultural perspectives in understanding the videotaped data available to researchers, showing that distributed approaches to leadership development in the curriculum can be understood through different perspectives.

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 and 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 and 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 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 Engestrom and Miettinen (1999: 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 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: 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 (Engestrom, 2001). The following figure 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.

Insert figure 1 here

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 (Engestrom, 2001: 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
(Engestrom, 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 and 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, 2001:39).

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.

Insert figure 2 here

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 and 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 and 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 and Kemmis, 1986; Elliott, 1991; Day, 1993; Fullan, 1993; Henderson and Hawthorn, 1995; Darling-Hammond and McLaughlin, 1995; Harris, 2003: 75; MacBeath and 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 and 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, 2001:142). 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 and 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 and Brooker, 1999:1)

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 and 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 and 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, 1999:57; Brabeck, Walsh and 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 and 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 and 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-orientes 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. This observation may explain why the interviews of the participating teachers 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, and 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, and 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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Figure 1: Third Generation of Activity System

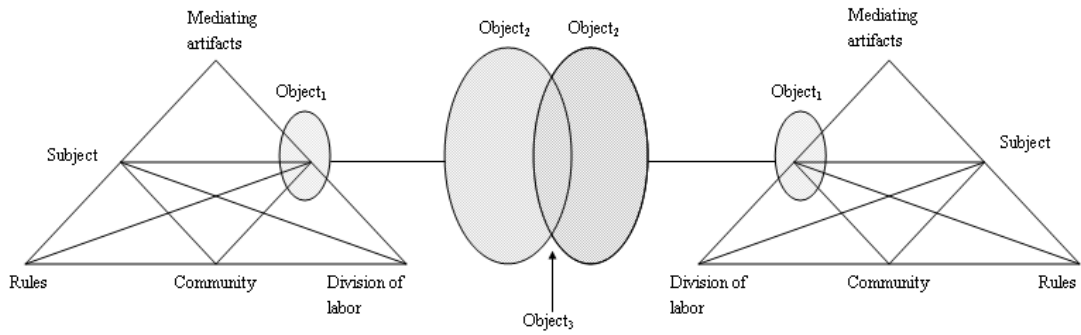


Figure 2: Activity System in the Curriculum Development Teams in Schools at the Macro and Micro Levels

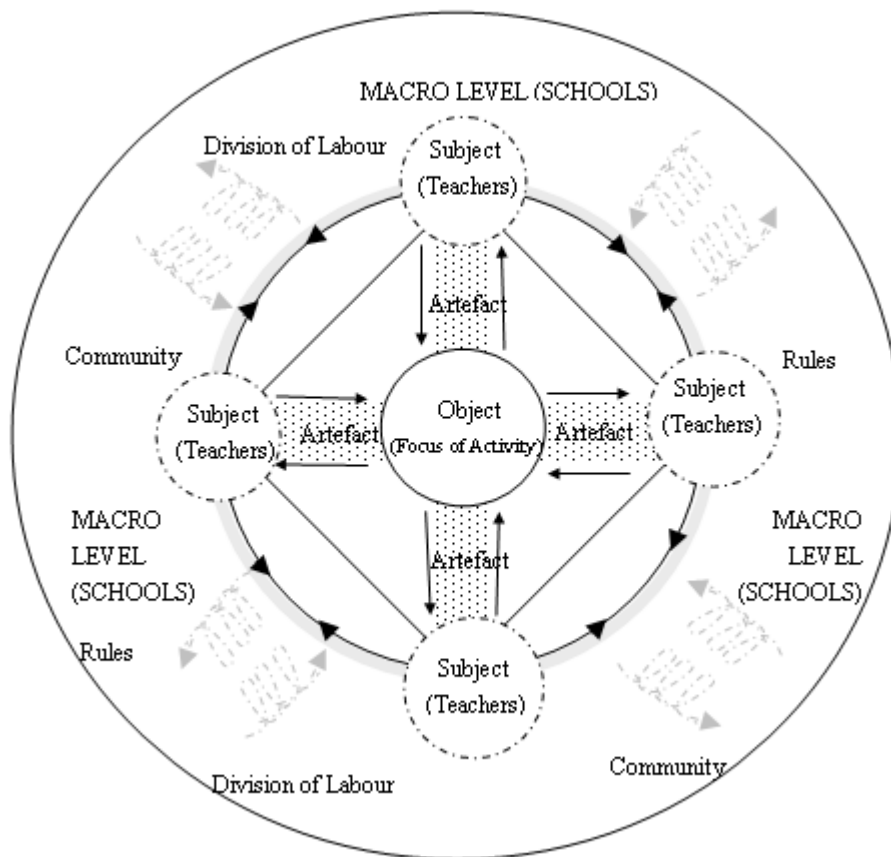


Table 1: Mediation Effects of the Two Modes of Communications

	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