A hybrid activity system as educational innovation

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Abstract   This article analyzes a hybrid after-school learning activity for children called "New School" (NS). NS is an inter-institutional, collaborative project based on a partnership between a university and local elementary schools that also involves other social actors and institutions. Using a framework of third generation activity theory, the article illuminates emerging forms of learning in this hybrid activity that attempt to transform traditional school learning. NS seeks to create innovative networks of learning that will expand schooling activity by creating hybrid forms in collaboration with outside communities and organizations. The analysis of the NS intervention explores to what extent the different partners cross boundaries between their activity systems and their willingness to make school changes together as collaborative change agents. Preliminary findings indicate intense contradictions between the involved activity systems. Nevertheless, contradictions also energized collaborative efforts to transform traditional pedagogical practices.

Keywords   Expansive learning · Hybrid activity system · Networks of learning · School innovation · Third generation activity theory

"New School" (NS) is a children's after-school learning activity in which the following partners cooperate to create advanced networks of learning: a university, local elementary schools, families, experts, and community organizations outside the school. The collaborative efforts are supported by the Center for Human Activity Theory at Kansai University in Osaka (Yamazumi 2007, in press). In the NS project, these parties are involved in designing mixed grade, group, and project-based learning units. Elementary school children are engaged in fun, creative, and collaborative learning processes. NS activities include (Fig. 1): (a) project-based learning at the center; (b) rice planting; (c) cooking local vegetables in the school's home economics room; (d) digital-storytelling at the center, all with support of university students. NS units develop agentive, critical, and creative

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Fig. 1 NS activities

learning abilities in the children involved. In this article, I illustrate and analyze the implementation process of the NS activity.

NS units are carried out at the center every Wednesday after school (see Fig. 1a and d), and on a farm and in the school's home economics room on holidays (see Fig. 1b and c). By exposing children to community activities and productive practices of farmers, agricultural experts, senior nutritionists, food-related producers, and social organizations, NS units develop learning opportunities for children in which real life practices are synergistically networked together through productive collaboration among multiple parties. A key NS goal is bridging the gap between the activity of elementary schooling and the productive practice of everyday life outside the school.

This article illustrates the dynamics through which the multiple parties involved in the NS engage in the process of inter-institutional, collaborative learning to implement a new hybrid activity. NS represents intervention research in participant learning and development of the hybrid activity for school innovation. Learning processes can be analyzed and conceptualized using Engeström's (1987) notion of expansive learning: "The object of expansive learning activity is the entire activity system in which the learners are engaged. Expansive learning activity produces culturally new patterns of activity" (Engeström 2001, p. 139).

Engeström's (1991) model implies a qualitative transformation in the entire activity system of school learning. Traditional school learning takes place within the confines of textbooks and 45 minute single lessons in classrooms. Such isolation from real life can be characterized as the "encapsulation of school learning" (Engeström 1991). In contrast, the expansive learning model advocates "networks of learning":

> The expansive learning approach would break the encapsulation of school learning by a stepwise widening of the object and context of learning. …This kind of expansive transition is itself a process of learning through self-organization from below. The self-organization manifests itself in the creation of networks of learning that transcend the institutional boundaries of the school and turn the school into a collective instrument. (Engeström 1991, p. 257).

As Young (1998, p. 155) points out, this expansive learning approach to school change is not another top–down strategy for benevolent reform because it starts with existing conflict and dissatisfaction among participants. It is built on bottom–up, reflective communication among teachers, students, parents, and others involved in schooling. The approach invites those involved to join in a "concrete transformation of the current practice" (Engeström 1991, pp. 256–257), drawing strength from their joint analysis, and thus evoking and generating critical design agency for their own futures. People in the school community are seen as a collective of expansive learners willing to create school innovations together as collaborative change agents who turn their school into their own collective instrument.

The NS project uses the expansive learning approach as an interventionist methodology for school change. It focuses on the formation of learning networks derived from NS as a hybrid activity, gradually transcending the institutional boundaries of the school. The working hypothesis of the intervention is that expansive school activity is carried out not from the inside alone but by creating various networks of learning and hybrid forms of activity in the real world. In these symbiotic forms of activity, various providers of learning outside schools (e.g., universities, experts, workplaces, community organizations) offer different learning trajectories to teachers and children, and the rules and patterns of instruction/learning are different from those in classroom-based teaching.

The idea of expanding school activities by creating networks of learning in hybrid activities originates in the framework of "third generation activity theory" (Engeström 1996, pp. 132–133). Emerging new forms of expansive learning must be sought in the transformations between various activity systems and actors.

In the sections below, I will describe NS and analyze the process of implementing the NS hybrid activity. The analysis leads to the preliminary finding that the collaborative change effort was characterized by intense contradictions between the logics of the different activity systems involved. Therefore, designing and implementing such a hybrid activity system entails vulnerability and requires efforts and learning to cross boundaries between actors and activities to build a shared object for school innovation.

Developing a hybrid activity system

Cultural–historical activity theory (Engeström 1987, 2005; Leont'ev 1978) offers a conceptual framework that views a collective activity system as the unit of analysis of human practice and development and as one rich source of ideas and tools for modeling future innovative practices. Engeström (1996, pp. 132–133) discusses the historical development of activity theory based on the idea of three generations.

The first generation is represented by Vygotsky (1978), who regarded human behavior as actions oriented at objects. He showed that the development of behavior is above all mediated by the use and creation of cultural artifacts such as tools, signs, symbols, ideas, and technology. The second generation started with Leont'ev (1978). The novelty of his
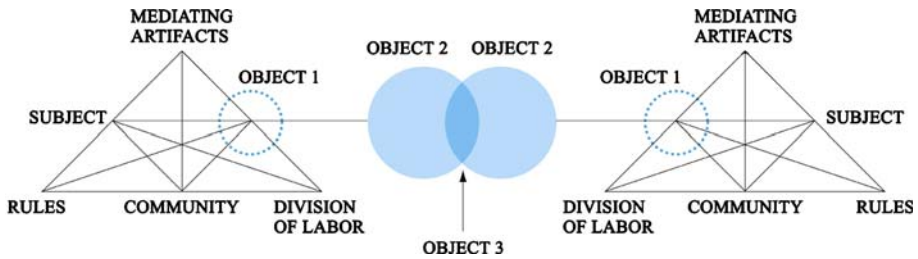
Fig. 2 Two interacting activity systems as minimal model for the third generation of activity theory (Engeström 2001, p. 136)

conceptualization associated activity with the new elements of the division of labor and cooperation and showed that activities motivated by objects are formed in a collective, rather than individual, dimension. Engeström (1987) then developed a systemic model of the human activity based on these two earlier generations. This collective activity system model includes as the socio-institutional infrastructure of activity the elements of community, rules, and division of labor.

The third generation of activity theory exceeds the limits of a single activity system and adopts as its unit of analysis multiple activity systems that mutually interact, promoting empirical intervention research to design and implement networks, dialogues, and collaboration between these systems. Engeström models this new third generation perspective as two or more interacting activity systems with a partially shared object, as shown in Fig. 2.

Challenged by diversity and dialogue between different traditions or perspectives, the third generation of activity theory has developed conceptual tools to understand dialogues, multiple perspectives, and networks of interacting activity systems. As human activity rapidly changes to partnering and networking among diverse cultural organizations, expansive learning must also be studied and facilitated as movement and collaboration across the dividing, traditional boundaries and gaps between various activity systems.

In NS, multiple and different activity systems interact and engage together, expanding their own objects and partially sharing a new object. NS creates a hybrid and expansive activity system based on partnership among diverse activity systems. As Gutiérrez and colleagues (1999) argue, hybridity and diversity must be understood to include not only racial, ethnic, socioeconomic, and linguistic hybridity and diversity, but also hybridity and diversity in the mediating artifacts (tools and signs), roles, and activity systems themselves. "Hybridity and diversity, then, are not problematic but rather are viewed as important cultural resources …" (Gutiérrez et al. 1999, p. 287).

With its development, NS increasingly mediates in the emergence of networked hybridity. Such hybridity is clearly an important resource for developing new activities because it can produce invention and innovation through the processes of emergence by "putting disparate ideas together or by connecting different and diverse minds, or both" (Hargreaves and Fink 2006, p. 163). On the other hand, hybrid forms of activity are also riddled with tensions and contradictions, since they take shape without standardized procedures and scripted norms. Boundary crossing and sideways movement and learning between partners and practitioners in the networked activities are required as the innovative hybrid activity expands. Below, I analyze boundary crossing from the NS implementation process.

Contradictions between the logics of different activity systems

From July to December 2006, the NS project conducted seven reflection sessions to facilitate, support, and follow participant expansive learning in the process of implementing mixed grade, group, and project-based learning units. The participants were Kansai University students who served as tutors for the children, the research coordinator of the Center for Human Activity Theory at Kansai University who served as the principle NS practitioner, and the center's researchers who served as interventionists.

In the sessions, after watching video of the children's group work, the participants offered personal assessments of mixed grade and group-based learning as an alternative to traditional school learning. The participants' expansive learning illustrates the act of learning for collaborative contributions to solving actual problems and forming new perspectives to reshape learning in NS. This expansive learning process involved, first, analysis of the contradictions and collaborative discussions around concrete cases that were carefully selected from all videotaped units and field notes.

The third case studied was held on September 12, 2006. The Principal of the local elementary school, a farmer, a nutrition professor, and a senior nutritionist were invited. In the session, one university student, who was charged with being the tutor of a children's mixed-grade group, confessed the following hesitation concerning his own relation to the children in their project work:

> *Excerpt 1*
> *University Student 1:* There are things we have to do here, aren't there? I may be wrong in saying "have to," but aren't there often times when something is finished, and the children ask, "It's finished. What's next?" If a child is playing while saying this, I just can't get angry with him. Because he's enjoying himself, and we're outside of school, and children naturally play. So I can't get angry with them. If this were a school, the teachers would say, "Hey!" and become strict.

University Student 1 as well as the other university students involved in NS encountered a problem in which their actions involved an under-explored emotional dilemma, resistance, and insecurity about which is better: controlling the children or allowing them to play freely. University Student 1 commented that because NS is different from school, he experienced difficulty guiding the children's individual behavior. Such conflict could be derived from the contradictions between the different logics of traditional school learning and alternative forms in the NS project.

From the conceptual framework of activity theory (Engeström 1987), the contradiction faced by humans in their activities is viewed as a driving force for development. These contradictions are faced and identified between "multiple motives embedded in and engendered by their historically evolving communities and objects" (Engeström 2006, p. 3). They obstruct, but also energize collaborative change efforts.

In the reflection session, the Principal of the local elementary school offered the following response to University Student 1's comments in Excerpt 1:

> *Excerpt 2*
> *Principal:* Certainly, *even in schools* during group work, some children finish earlier than others. Some children just want to get things out of the way when you say, "You should do this." As the researcher told us, conscientiously planning how to get the children interested in the next topic depends on our *abilities as teachers*. To avoid

that situation, teachers should prepare *plans B and C* so that when a child finishes early, the teachers can provide him or her with other things to do.

Note that the Principal acknowledged that the university student's problem was also faced by school teachers, "even in schools," and proposed a solution that depended on the "abilities as teachers" to assign a series of such disconnected though repeated learning tasks (plans B and C) to secure the children's interest. This proposal reflects a dominant idea about pre-service teacher competencies to manage classroom lessons in schools. The exchange characterizes the second type of contradiction: contradictions between the activities of in-service teachers, pre-service teachers enrolled as students at the university, and the children. Such contradictions are closely connected with the contradictions between the institutional logics of school activities and the NS activities mentioned above.

In search of a shared object for school innovation

The NS project is now building partnerships with local elementary schools to create various networks of learning and hybrid forms of activity through discussions with teachers concerning how NS units can be engaged in schools. The potential partnerships will provide NS with new forms of learning opportunities for children that bridge the gap between elementary school practice and productive practices of everyday life.

On June 28, 2007, the NS research coordinator and a researcher met with four local elementary school teachers who are in charge of the third to sixth grades and are also members of the school curriculum committee. The teachers noted three problems affecting the design and implementation of project-based learning in the school:

1. Students' lack of basic skills in school subjects;
2. Motivational problems among students in long-term in-depth investigation-like learning;
3. Teachers' difficulty realizing new patterns of learning about relatively unfamiliar cross-curricular themes because they cross the boundaries of currently separate school subjects.

The first type of problem was articulated by Teacher 1 (fifth grade) and Teacher 2 (fourth grade):

> *Excerpt 3*
> *Teacher 1:* If the children are going to read the materials, they have to be able to read Kanji. If they are going to understand the discussions, they have to have the basics for such understanding; for example, the ability to listen, to comprehend what they are hearing, and to ask questions about anything they don't understand.
> *Teacher 2:* We teach about the environment in the fourth grade. As part of those activities, the children create a newspaper at the end of the unit to summarize what they have learned … to create a newspaper, you have to be able to put sentences together, and not every child is able to do this. …Personally, I feel that one of the major issues here is that there's not enough time for lessons that provide children with these basic academic abilities.

These teachers shared a national concern with perceived decline in basic skills and a local (and global) concern about lack of time to teach and learn (see Nocon 2008).

Another type of problem, mentioned by Teacher 3 (third grade), concerned motivational issues:

Excerpt 4

Teacher 3: But, you know, when it comes to elementary school children, many do really well with the work handed to them, as a percentage of the whole class. On the other hand, the things you were just talking about, like learning things for themselves and the desire to improve—these still seem kind of weak. In that sense, children are a little withdrawn. At least, that's the impression I have. If you ask, "What are you interested in?" They say, "I don't know"… Even if it's just a suggestion, like "Why don't you try it like this?" They say, "I don't want to do it anymore." They think it's too much trouble, or that you're getting in the way … so I try to speak to them positively and encourage them to do better.

Acknowledging the teachers' problems, the NS intervention in schools leads to the third type of contradiction: contradictions between the activities of the elementary school and the productive practices of everyday life outside the school. NS units develop project-based learning for children in which real life activities are synergistically networked with school learning. Multiple partners and parties must be involved in exploring patterns of new hybrid learning activity and engaged in efforts and learning to cross the boundaries and bridge the gap between elementary school activities and the productive practices of everyday life.

After listening to Teacher 1 about fifth graders' learning about Japanese agriculture in a social studies class, the researcher asked how the unit is expanded:

Excerpt 5

Researcher: That's very interesting. What about raising local vegetables and preparing them? The category of 'food education'—this theme, is it being developed as a single unit within social studies? Or is it being merged with another …?

Teacher 1: That sounds like home economics more than social studies.

Teacher 3: Right, home economics.

Teacher 1: Yes.

Researcher: Oh, home economics. I see.

In the meeting between the teachers, the NS research coordinator, and the researcher, one promising idea emerged about the expansive development of multiple project-based learning units:

Excerpt 6

Researcher: From today's discussion, it seems that a common issue for all four teachers here is having the children undertake learning that involves investigations, finding out what they want to know. Here, I think the research center can work with the teachers and create new forms of learning …

Teacher 1: Collaboration and cooperation? Let's start with the third graders!

Everyone: (Laughter).

This joint engagement between the school and the NS was designed to implement the third graders' and their teachers' project-based learning unit titled "A Kansai University Exploration: What place?" in the 2007 fall semester. In this unit, NS invited the third graders to the university and facilitated their group- and project-based learning to investigate such themes as the facilities, equipment, and people's roles at the university that might interest the children.

Since NS units focused on creating a network of learning on the theme of food after school, instead of changing the school as an activity system, the network itself could not be directly integrated into school activities, a formal curriculum, and lessons. First, as indicated above (see Excerpt 5), teachers may have difficulty realizing new patterns of learning about relatively unfamiliar cross-curricular themes. Second, integrating activities is ordinarily difficult because it requires longitudinal design solutions that gradually generate common objects.

Sannino's article (2008) on "dominant" and "non-dominant" activities is useful to explain why the ideas about networks of learning and hybrid forms of activity were not integrated into the school. She proposes the "notion of *transitional actions* which typically move sideways, across boundaries between dominant and non-dominant activities, and have potentially long-term sustaining significance." In Japanese schools, although progressive pedagogical approaches such as problem- and project-based learning have a long history, their application is often defined by schooling—tasks in textbooks and classroom-based teaching. Schools are still relatively isolated from outside communities and organizations. Creating networks of learning is a non-dominant activity that challenges the encapsulation of learning and moves beyond the institutional boundaries of schools.

However, the NS project and the school have engaged each other, collaboratively expanding the learning of third graders. This effort is transforming the existing curriculum unit in the school by stepwise widening of the object and the learning context, based on partnerships between the university and the school as well another social actors and institutions.

Perhaps, hybrid and networked forms for school innovation will emerge from a combination of two-dimensional development of school activity—vertical and horizontal development. Forward-aiming innovative movement within the school combines a single activity system with a sideways innovative movement between the school, outside communities, and organizations and involves multiple activity systems and various actors, including the university.

Conclusion

The NS project leads to the preliminary finding that a collaborative change effort is characterized by sets of intensive contradictions between the involved activity systems: the children, their families, and their teachers from local elementary schools, university students and staff, researchers, and experts and community organizations outside the school. These contradictions might be a resource for designing and implementing new learning activity by networking to provide mixed grade, group, and project-based learning activities that transcend the institutional boundaries of traditional school learning.

The otherwise loosely connected NS and the traditional school can cross boundaries between the involved activity systems by expanding and sharing a common object. This intervention is based on changing the school, not from the inside alone but by creating hybrid forms of activity. As a hybrid activity system, NS intervenes in schools as a member of a network of learning that is trying something new with children as learners.

A framework of third generation activity theory is useful for focusing research efforts on the challenges and possibilities of emerging new forms of expansive learning and boundary crossing in hybrid and networked activity systems. Identifying crucial contradictions, which obstruct the implementation of new forms of learning in hybrid forms of activity, can also such energize collaborative efforts to transform traditional pedagogical

practices into new practices of collaboration between schools and outside society. New forms of expansive learning among the involved participants are genuinely needed along the horizontal dimension to change the school. Such an effort could evoke and generate agency to transform the school with a connected, reciprocated object. This emergent agency would potentially have longitudinal significance for sustainable school innovation.

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