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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

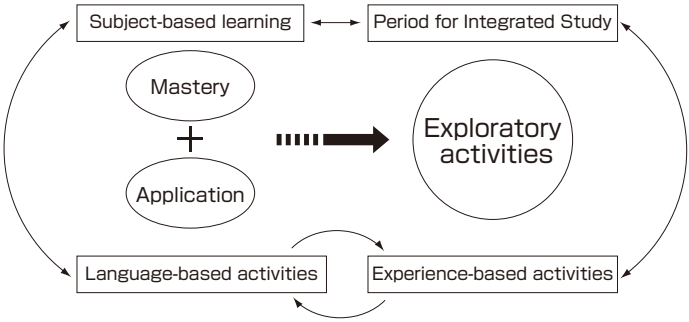

FIGURE 1

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.

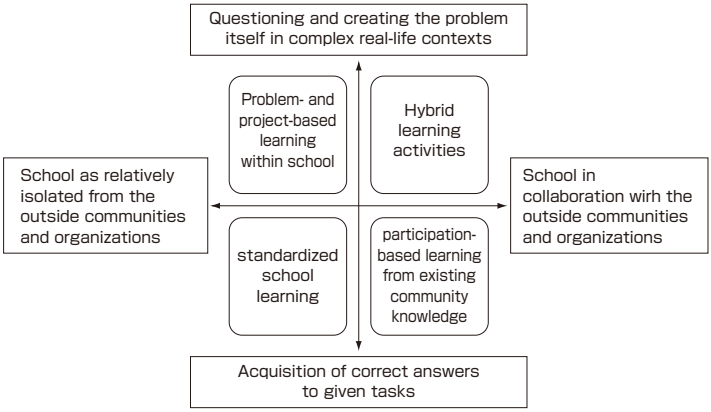

FIGURE 2
Four forms of expansive development in schools

- **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

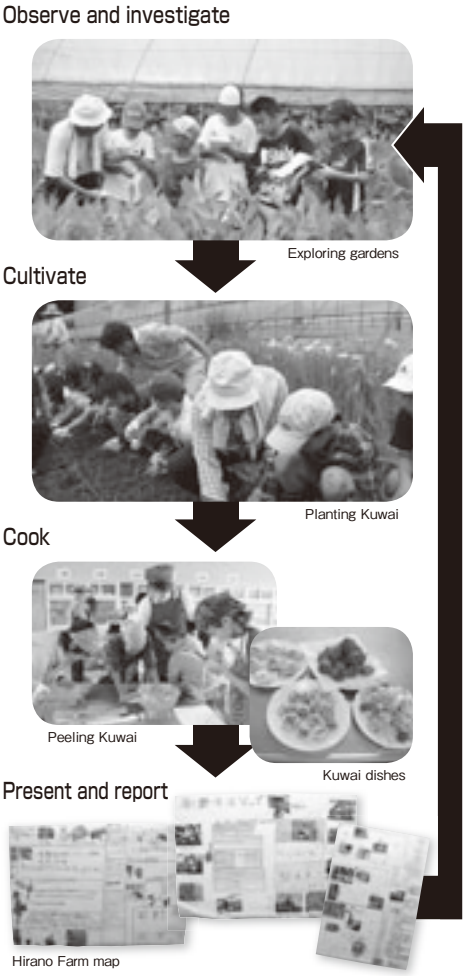

FIGURE 6

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

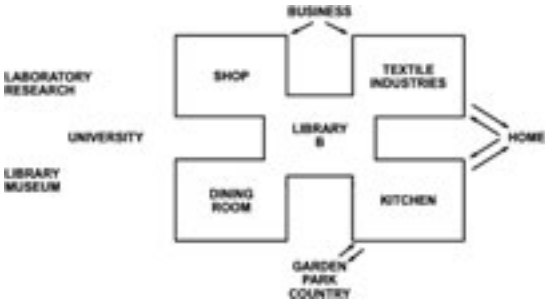

FIGURE 7

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

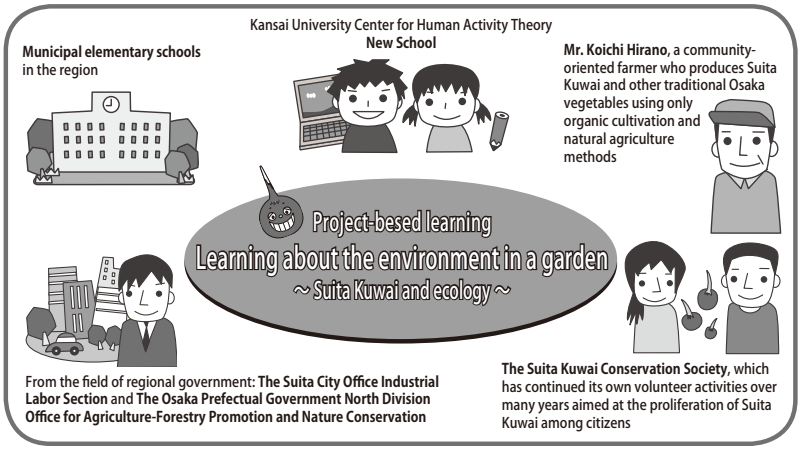

FIGURE 8

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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