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CONSTRUCTING CHILDREN'S BUILDING BEHAVIOR AS PRACTICE OF PARTICIPATION--SUMMER CAMP "NESTING" [1]

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ABSTRACT:

This paper uses the example of summer camp "Nesting" to discuss a participatory approach to children's building education. "Nesting" evolved from the idea of adventure playgrounds and is a 5-day summer camp designed for children, with adult activity staff assistance, to build their "secret places". The process is aimed at scaffolding children's learning in building ability development and through participation: communicating, negotiating and collaborating. The researcher as a consultant, participant observed summer camp members' behavior, and interviewed them as needed. The findings indicate: (1) Children's building behavior followed a continuous design-build-use cycle; (2) Higher affordance caused higher levels of participation; (3) "Nesting" scaffolded not only children's but also adults' building ability development; (4) Children did not

follow "legitimate" architectural methods but rather built intuitively while also displaying a degree of creativity; (5) Individual differences were more notable than age/gender differences.

Keywords: Children's participation; building education; adventure playground

1. A STRUCTURALIZED ADVENTURE PLAYGROUND--SUMMER CAMP "NESTING"

Children not only create their spaces but also turn them into their own places, for example, hiding in cartons/quilts and claiming them as personal spaces, or "discovering" secret places and limiting access to just close friends. If assisted by adults, children will further develop their building competence, resembling the concept of adventure playgrounds. This concept is based on the learning theory of the Zone of Proximal Development (ZPD) in the evolution of children's building ability. This paper shows how a structuralized adventure playground, summer camp "Nesting", encourages participation and scaffolds children's building ability.

The original ideas of "Nesting" were inspired by the "New Schoolground Movement"—the post-earthquake reconstruction of schools. This movement aimed to enhance the quality of school buildings by introducing progressive concepts into the reconstruction process. One of them was participatory design –enhancing the intersubjectivity between the users and the construction teams. In this process, the "professionals" release their hold over the users, letting the users express their visions, and eventually, empower the users to act autonomously within their environment. We, professionals from various backgrounds [2] also believe that this participatory experience can be converted into an educational program for children. Hence the development of "Nesting".

"Nesting" is a five-day summer camp designed for 4th -6th graders to accomplish a hands-on task—constructing their "nests". A group of ten children, with the assistance of two adult activity staff members, collaboratively build a nest—a shelter-like building or complex. There are two main tasks in the nest construction: to become familiar with the context, materials, and tools, as well as the process of constructing a building—from understanding the needs to building in physical space. In order to facilitate children's practice, the activity staff creates a learning scaffold for the participants based on the ZPD. For the first task, the staff conducts events for children to explore the environment, and become proficient with the tools and materials [3]. For the second task, since there is no children's building education nor adventure playground in

Taiwan, and we have therefore no other reference to consider, the staff temporarily refers to an adults' building process—plan, design, and then construct. One difference, however, is that the activity staff provides the children with imagined scenarios — narratives or stories -- to free them from the real-world constraints when developing their ideas. At times the staff uses models or sketches to help team members integrate and concretize their ideas. Ideally, the team members, with their original plans designed after taking into consideration the ideas of usage, the form and the materials will complete the construction phase of the project. This "structuralized adventure playground" thus includes two hidden curricula: children's participation and building education [4].

1. 1. THE PRACTICE OF CHILDREN'S PARTICIPATION

"Nesting" emphasizes both process and result. The camp encourages children to participate in each phase. In fact, most of the children were involved in all the processes, although a few children might have been distracted by other events and skipped some steps. Since the task is to build a "team" nest, communicating and cooperating within the group are highly valued. These two features were the main concerns about the participation.

To communicate: The ability to clearly express one's own ideas, understand other people's concerns and to reach consensus on different perspectives. Sometimes assistance from adults is needed in order to bridge the communications gaps.

To cooperate: The ability and willingness to work with others. Usually the size of the nest is larger than anyone can handle by him/herself; hence the children need to cooperate with each other. This process lets children learn that collective strength is more powerful then individual strength.

1. 2. BUILDING EDUCATION

Through participation in team activities, children work with peers and adults to design and actualize design ideas. Ideally, the staff assists the children, providing a scaffold for the children as they create their own spaces. Team members first decide on the functions of the nest, choose the appropriate site, determine the size and form of the building, tools and materials to be used, plan for the construction, divide up the work, and finally build. This is a complete building education, as they carry the process from start to finish.

2. RELEVANT THEORIES AND LITERATURE

2. 1. THE ZPD IMPLICATIONS OF ADVENTURE PLAYGROUND

The concept of "Nesting" resembles the adventure playground. The adventure playground was developed by Danish landscape architect C. Th. Sorensen in 1943. The main idea of the playground is to let children use construction materials to create their own spaces. While children play the main roles, usually a number of adults act as supervisors to assist them (Frost & Klein, 1979). This learning concept of the adventure playground thus can be explained in terms of Vygotsky's Zone of Proximal Development: The learning (i. e., zone) of an individual depends on assistance from others (experts). Learning is achieved by way of interacting, communicating, and discoursing with others, including giving explanations to them (Wu, 1997).

Children's abilities are analogous to buildings. Usually teachers use scaffolding to reduce the gap between zones of development, while children also actively construct their own learning. The social milieu is the required scaffolding or support system, which facilitates children's progress and imparts new abilities. Through working with adults and more capable peers, children develop new abilities and then internalize them. Efficient scaffolding aims at reaching the following goals: to cooperate with others and actively solve problems; to reach consensus through discussion and compromise; for adults to respond warmly to children's needs; to retain children in the ZPD through appropriate challenges from and involvement with adults, or let children experience cooperation in order to build their self-discipline (Berk & Winsler, 1999). The goals of the adventure playground are to facilitate children's learning and develop their new abilities through their interaction with adults and peers. "Nesting", which is similar to the adventure playground, also has the same learning goals.

2. 2. THEORIZING CHILDREN'S PARTICIPATION

"Nesting" requests that children construct their own spaces, and therefore involves a high degree of user participation. Many researchers have over the years examined child participation. In 1997, Roger Hart was commissioned by UNICEF to research on children's participation in environmental/community issues all over the world and wrote up a comprehensive report,

"children's participation", in response to UNICEF's philosophy towards the rights of children, i.e. that children have the right and responsibility to be involved in shaping their own as well as their communities' future. The report relates children's participation in several disciplines, such as environmental education. It studies cases in different contexts and argues for the importance of children's participation, not only as a right and responsibility, but also as a way to care about and sustain their environment. In order to demonstrate the varied characteristics of participation, Hart (1992) used a ladder as a metaphor to illustrate children's degrees of initiation and collaboration when working on projects with adults to fall into one of eight levels: manipulation, decoration, tokenism, assigned but informed, consulted and informed, adult-initiated, shared decisions with children, child-initiated and directed, child-initiated and shared decisions with adults. Meanwhile, Francis and Lorenzo (2002) addressed children's participatory realms in the "Journal of Environmental psychology" special issue on the theme "children and participation". After reviewing previous articles on children's participation—most were studies of specific space design and child-friendly cities-- the author focused on the goals and children's degrees of initiation and categorized the participation into seven realms: Romantic --Children as planners, children as futurists; advocacy approach--planners for children; needs approach--social science for children; learning approach--children as learners; rights approach—children as citizens; institutionalization approach—children as adults; proactive approach—participation with vision. Theis (2007) also grouped related papers under three different concepts of child and youth participation: participation as performance and responsibility, participation as a right, and participation as democratic citizenship. As shown, there are many degrees of complexity in the realm of participation, but they all center on the ideal of regarding children as autonomous and respectable subjects.

In addition to defining the degrees of child participation, Chawla & Heft (2002) have explained the behavior: adopt the concept of affordance of ecological psychology and behavior setting to theorize on participation, and evaluate if children have learned the programmed competence. Chawla & Heft argue that, based on the concept of affordance, whenever the environment relates to children's living experience, it would support meaningful participation. Participation contributes not only to shaping the physical space, but also the timing of self growth and social development.

2. 3. RELEVANT CHILDREN'S PARTICIPATORY CASES

Most children's participatory projects in Taiwan are held at schools. There are two types of participation: one aimed at the improvement of school grounds, such as that recorded in Liu (1997) about Jingtong elementary school students' participation in their school ground renovation projects; and Chou's (2002) projects, which involved elementary school children improving the main gate of their school. The second type of projects are more relevant to this research, such as Chang's (2002) curriculum for exploring the school ground, which gives students new experiences of the environment; Huang's (2005) incorporation of a construction project into the curriculum; and Yu's (2001) "Build a street" program. Yu introduced the issues of human and environmental relationships in an environmental education class for third and fourth graders. This program was centered on "contextualizing", using activities to define space and body movements to encourage students' subjectivity. Yu first let students build their individual spaces, then team spaces and grouped these spaces into a community—a street. He then held a "shopping day" event, which let students experience changes in spatial meanings in different contexts, while forcing the students to change spaces to fit into different situations. This program went beyond building spaces, also exploring the relationship between humans and space.

Several earlier publications discussed the relationship between children and the environment, and their manipulation of their environment. Hart (1974) discovered that children spent a lot of time altering the landscape and constructing personal places for play. They felt these actions were entertaining and challenging, and therefore, they kept constructing buildings and tearing them down. Based on a theory of Piaget's, Hart claimed that through their interaction with the environment, children would experience the efficiency of being a subject of change. Meanwhile, Moore (1974) argued that every child needed a secret personal space. It was important to provide a changeable environment for children to create their own space. Hence, groups in various disciplines promoted the idea of a "grassroots playground movement". Playgrounds with natural features allowed children to easily transform the playgrounds into "their space". The above articles all discuss children's potential to reshape their environment, and its importance for development. However, we need to know more about how children accomplish their tasks.

3. METHOD

Working as a consultant, I resided in the camp and assisted all the groups in accomplishing their tasks. Before intervening, I first evaluated the situation of the group and decided how much I should be involved. Therefore, of the variety of available research methods, participant observation and interviews were the most appropriate ones for my combined status as consultant and researcher. Participant observation is a systematic research method when using which the researcher is careful not to disturb the subjects while collecting data, but still participates in the social milieu with the subjects, and interacts with them (Fine& Sandstrom, 1988). Interviews were held when clarification was needed. The data was collected over a four year period (2003-2006). During that time, six rounds of the camp (summer and winter) were held, in which roughly 360 children and 90 adults participated.

4. RESULTS

Although the buildings were not complicated, there were interesting phenomena to be discussed as follows.

4. 1. CHILDREN'S BUILDING BEHAVIOR

Unlike the skillful architects we assumed them to be, the children's building behavior was a cycle of design-build-use. In the first cycle, the activity staff and children roughly discussed the theme of their "house", built a basic structure with a cover/roof and started using it. Afterwards, the team would start another building cycle which did not necessarily follow previous ideas. Whenever a space was declared, the children entered the space and gave it meanings, transforming the space into their place, such as "a rest place", "play base", "our place", etc. and started building place attachment. After "living" in the place for a while, the children discussed the next move—beginning the next round of the building cycle.

During the building work, concrete experiences were favored over abstract thinking. On one occasion, one team's members discussed their next move. The following excerpt shows how they used body scales to communicate (the underlined and bracketed explanations are added by the author). *C1: Hey, our house is too low, let's make it taller; C2: OK, how much taller? Say, we*

need to allow room for an adult to be able to come in. Since she (one activity staff) is one head taller then our house, how about a head or two taller? C3: Two heads is too tall (to handle), one and half heads is appropriate.

These children then bound pieces of wood one and half heads in length at the foundation of the "house", therefore lifting its height (Figure 1).

In addition, in most cases, function was prior to form. For example, a group of children created a space by using some material as the base and attaching a door frame on it, even though no wall or roof was present. Whenever the children defined a function for a space, in this case, their "home", each one owned a "bed"—represented by plywood boards-- and they claimed they had built a building (Figure 2).

Figure 1 (left): A child lifted the "house" by adding a "one and half head" length wood.

Figure 2 (right): Children's place attachment was more important than form.

4. 2. DIFFERENT DEGREES OF CHILDREN'S PARTICIPATION

Participation is one of the main concerns of "Nesting". However, in the different phases, the children participated to different degrees. Usually the children were enthusiastically involved in the planning/design phase and came up with various ideas, but later, their enthusiasm dropped in the building phase, perhaps owing to diffidence in their construction skills. In particularly complicated cases, the children even withdrew. For example, some of the children wanted a tree house which was beyond their ability to design and build in this 5-day camp. During the building

phase, these children did whatever the staff told them, i.e. the participation level then was at the fourth to the fifth level as defined by Hart (1992) – assigned but informed, or consulted and informed. It was not until the end, when the staff encouraged these children to elaborate their ideas that their involvement was raised to the sixth level—adults initiating and sharing decisions with children. In another case, a group of children took advantage of the environment and tried to build a slide. The required skills seemed easier than those required to build a shelter and so these children were at a higher level of participation. Throughout the whole process, the children initiated and executed their designs by themselves except for a few instances when they consulted with adults. These phenomena can be explained in terms of Chawla & Heft's (2002) concept of affordance: a slide is more relevant to children than a tree house in motivating children to direct the process by themselves. In other words, these different levels of participation in the different tasks or stages were also related to the scaffolding provided for the children with different building abilities.

4. 3. SCAFFOLDING CHILDREN'S BUILDING ABILITY

"Nesting", based on the concept of scaffolding, lets children and adults learn through interactions with each other. Adults as "experts" scaffold children's development. Peers also play a role in helping children solve problems. As Berk et al (1999) argued, the ability to solve problems jointly is the main ingredient of scaffolding. Knowledge is established on activities. The most efficient learning is achieved through cooperation with other people to actively solve problems. It is reasonable to presume that the activity staff had more building experience and architectural knowledge than the children. Therefore, during the building process, they could arrange appropriate activities for the children to participate in. The adults evaluated the children's ability and provided scaffolding in the learning process by discussing the next move and letting the children learn through trial and error, assisting them if needed. The adults also urged the children to share their findings with team members, thus building on each others' abilities. In reality, most situations followed the above presumptions. Occasionally, peers with stronger opinions or more experience took the lead. In these cases, they also played the role of "experts" to assist other team members in developing their abilities. Sometimes the adults were also inspired by the children's ideas, their intuitive thinking and creativity. The changing leadership therefore built a network of scaffolds within the camp in which the participants were able to grow on each others' abilities collectively.

4. 4. INTUITIVE BUILDING EXPRESSES "CREATIVITY"

Children build intuitively. This intuition evolves from everyday life experiences, or immediate physical experiences, that is, trial and error, and sometimes seems creative. For example, when building a cube, instead of directly constructing a structure like the "professional way", some of the children started by erecting pillars and fixing them in the ground one by one before connecting them with crossbeams. They also used exceptional ways to erect pillars, such as stabilizing the foundation by binding shorter planks to the bottom--enlarging the area of foundation-- or, using a spur of the moment idea to bind wood with ropes which were nailed to the ground in different directions (Figure 3). Regarding jointing materials, one kid used polyester foam instead of screws to link pillars and crossbeams—an easier way to complete the objective (Figure 4). In other situations, children's intuition comes from superficial understanding of the real world. For example, some of the children believed adding water to sand would produce a cement-like material which could be used to stabilize bricks. They learned the concept in a previous observation experience, which was later proved wrong when handling the hands-on task.

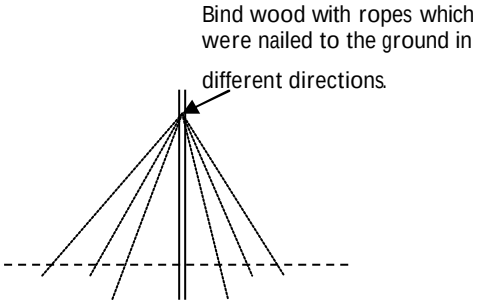

Figure 3: A children's way to erect a pillar.

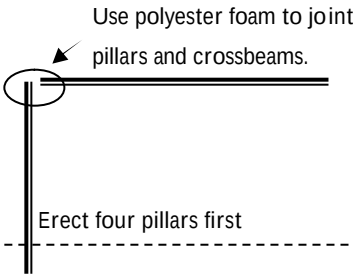

Figure 4: A children's way to form a cubic structure.

In addition to innovative structuring, the children also had various ideas for doors, walls, and roofs of different functions, such as swing doors, blinds, colorful windows, ground spotlights, open roofs, etc. In sum, the children used unfamiliar materials to represent their everyday life experiences thus adding an element of individuality to their hands-on work. As Yu (2001) argued, creativity also comes from the will for self-fulfillment, to conquer difficulties and establish one's independence and confidence. Learning should be learner-centered and begin with personal experiences.

Secondly, children's immediate physical experiences in the environment also inspire them to invent various games. They cleaned up hills to be used for sliding, dug a series of holes on slopes as footsteps for climbing, took advantage of the characteristics of fresh bamboo--elastic and hollow-- to make fish poles, bows, water pumps, wind chimes and they bent plywood boards to create musical instruments. Moreover, when visiting other team "houses", the children experienced the place and also internalized others' ideas and incorporated them into their own designs. All these situations suggested that children's personal experiences were the basis of their creativity.

4. 5. Individual differences are larger than age/gender differences

In "Nesting", children were age and gender mixed in each group, and most tasks were team projects, and thus it is not easy to conclude if the children's building behavior was age or gender specific. Rather, individual differences were more notable. Of all the camps, only one recruited children under the third grade. Compared to other camps, the completion rate of building projects in this camp was lower, because too many factors were beyond our control. However, I would not conclude that younger children are less capable than older ones. The same is true for gender differences. Some activity staff pointed out (and also presumed) that boys and girls performed differently in general. However, boys and girls were grouped together so we are not sure if either gender was more capable than the other. Even if some evidence of performance difference existed, we are still unable to attribute the differences to gender only, since the goals of the camp focused on cooperation rather than differentiation. The children were encouraged to learn from, and appreciate the differences of others, and build on the knowledge of others.

5. CONCLUSION

This hands-on, children-centered, structuralized adventure playground summer camp inspired children, adults, and professionals. The children experienced a participatory building process through the hands-on tasks. The adults and children constructed a scaffold net collectively. The professionals got to understand children's building behavior as differing from theirs, and realized the importance of involving children in projects. Some might question whether children's building ability is naturally inherited. In this case, we believe it is, to some extent. However, their ability does need to be developed by providing certain milieu to motivate children's participation in the tasks. In addition, the scaffolding process assists children in polishing their abilities, i.e.

cooperation, communication and construction skills, which enhance their overall building ability. It is important to attend to space/place issues for environmental education.

6. NOTES

[1] This paper is a revised version of my paper, "Children's participating environmental action—Summer camp 'Nesting' case studies" (in Chinese), presented at 2004 Annual conference of CSEE (Chinese society of environmental education), Kaohsiung, Taiwan.

[2] The professionals include architects, professors in the department of architecture, planners and educators. These professionals are the resident consultants in the summer camp.

[3] Building materials are plywood boards, bamboo, wood, canvas sheets and nets. Tools are hammer-nails, saws, wrench-screws and ropes. These materials are pre-determined by consultants.

[4] Here I use "building education" to differentiate it from adults' professional training program.

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