

Architecture for Children: Understanding Children Perception towards Built Environment

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Abstract

This paper discusses the importance to teach students on children's architecture base on the perception of the children, not on the presumption of adults. It focuses on the approach teaching design and planning of built environment for young children, early to middle childhood. A trans-disciplinary approach is introduced integrating the knowledge of childhood development, architecture and landscape architecture. Therefore, teaching design studio on children's architecture begins with the discussion on functioning of children to the built environment. That is, how sensorial and motoric actions as well as social activities of children are influenced by the elements of architecture and landscape. Finally, the effects on children's functioning are discussed in terms of designing and planning buildings and landscape for the children.

Keywords: Children's architecture, children's functioning, cognitive development

Introduction

Teaching architectural design studio on the planning and designing spaces for young children is generally based on adult's perception that may not relevant to the children's functioning. Form, shape, color and function are the parameters applied in designing and articulating the spaces inside and outside the architecture. The design approach is somewhat not consistent with the literature on children's functioning in indoor and outdoor spaces, which suggests that the value of a place is determined by its function rather than form and color. In other words, adults perceive space more on form, function and aesthetic (Matthews, 1992) whereas children see the space more on its functions rather than aesthetic (Christensen, 2003). As such, architects perceive a pediatric ward of a hospital as a space that accommodates beds, aisle for movement, toilets and bathrooms, a nurse station, a doctor room and a dressing room. For play, a playroom is attached to the ward which housed toys and television and a floor for rest. Studies in pediatric nursing suggest that such setting leads to boredom, anxiety, and stress to hospitalized children (Lau, 2002). Among the reasons that lead children to behave regressively are the healthcare setting are: (i) strange place to stay, (ii) no sense of control, and (iii) little choice and lack of things to manipulate (Said, 2006). That is, hospital indoor environment limits children to practice different motoric and sensorial activities. Thus studies in landscape architecture such by Westphal (2003) and pediatric psychology such as Sherman et al. (2004) suggests incorporating garden with the ward for children to be away from the stress.

Moreover, buildings designed by architectural students are final, that is, leaving little room for children to change or manipulate the architecture. According to the theory of childhood cognitive development and literature on children's perceptual psychology, such architecture may not generate sense of place attachment. Consequently, the children could not develop sense of favorite place to the architecture. As a result children feel bore to go to school or feel fear to stay in hospital. In other words, the architecture fails to stimulate the children's cognitive functioning, affords insufficient space for physical functioning on the children's terms, and allows little opportunities for the children to socialize in their own choice and control.

The domination of adults on design and planning of children's space can be seen in kindergarten. The practice most likely confines the young children inside the building and occasionally allows the children to engage with outdoor space such as garden and lawn area. In the indoor, the children may experience with a variety of furniture and plastic toys in a controlled micro-climate where temperature, lighting and humidity are similar throughout the duration of they stay in the building. In other words, much of the children's cognitive development is the result of routine experience in a confined space. Eventually, the children understand the architecture is an element that affords little changes. This phenomenon is in contrast to Piaget's Theory of childhood development that children are active and motivated learners (McDevit and Ormrod, 2002).

On the other hand, the outdoor space is spacious and open towards the surrounding that affords the children to move more freely than inside the building. It is a space that their senses are readily stimulated by greenery and animals (Kellert, 2002). Its microclimate is natural and dynamic; changes in temperature and wind and the presence of rain or snow (Prescott, 1987; Olds, 1989). Such environment affords the children to understanding the facts that nature is not man-made, it is dynamic and timeless (Prescott, 1987). Inasmuch, outdoor experience allows the children to interpret and extrapolate the differences of features and phenomena from the indoor experience.

Cognitively, therefore, the children will deduce that the architecture developed by adults without their participation as two parts: building and outdoor space. They can clearly understand the architecture is man-made and the landscape is natural. In short, they perceive that architecture is not integrated with the landscape.

In summary, even though we know that experience of childhood in built and natural environments are diverse, but are often characterized by adult control, restriction and helplessness (Pradhan, 2007). And, the design of spaces for children follows the standard requirement by the design authority or institutional agency. Such practices did not allow the views of children to be part of the design process of the architecture. Therefore, children participation in the design and planning of their built environment is ignored. In other words, children have little voice in the environment that shapes them and they are expected to obey the rules as defined by adults (Sener, 2006). It also means that they have little sense of control and less opportunity to locomote themselves freely in space in the built environment designed solely by adults. Inasmuch, the environment limits them to assume different body postures, to create their own boundaries and to manifest power and fulfill their potentials (Olds, 1989).

This paper presents a review of literature on the importance of teaching architecture in designing children's environment by trans-disciplinary approach (von Meiss, 1994), that is, integrating the knowledge of childhood development, architecture and landscape architecture. The discussion focuses on designing architecture and its outdoor space for the learning and growth development of early and middle childhood children. It emphasizes the importance to teach the theory of children's cognitive development—how children perceive spatial and attributes of place as well its meaning—in designing and planning architecture and its landscape.

Functioning of early and middle childhood children

In the perspective of child development, McDevitt and Ormrod (2002) posit that early childhood is a period of incredible fantasy, wonder, and play. They learnt the world as a forum for imagination and drama that is they reinvent the world, try on new roles, and struggle to play their parts in harmony. Through sensorial and motoric activities with peers and adults the children rapidly develop their language and communication skills. Their physical movement is much influenced by the functions of the features that they get in contact including furniture and toys in the indoors (Olds, 1987), and plants and animals in the outdoors (Kellert, 2002). "Their responses to the environments are immediate and inseparable from the sources of stimulation around them" (Old, 1987, p. 117). For example, an empirical study by Said (2006) found that hospitalized children recognized the unfamiliar conditions of their ward, thus they reacted regressively. Consequently, when they played in the ward's garden, they much aware to the presence of animals such as birds and insects suggesting their cognitive functioning has improved.

In middle childhood, children are genetically programmed for exploration of the world and bonding with nature (Cobb, 1969). That is, they learnt on how the world works in evocative way, their logical reasoning only about concrete objects that are readily observed. As such the children are active in grasping and understanding the natural world through play (Moore and Young, 1978). The play stimulates their cognitive faculties of sight, touch, taste, audio and olfactory (Yates, 2002). The children are emotionally affected to outdoor settings through direct, literal, or tactile contacts. The cognition enables the children to be active constructors of their own knowledge, leading them to discover certain logical truths about objects and concepts of the environment (Greig and Taylor, 1999). Therefore, active experience with the environment affords the children to form logical thought and able to draw logical inferences from the facts that they are given (McDevitt and Ormrod, 2002). Direct contacts with the features and factors of the environment permit the children to explore, imagine and discover (Olds, 1989; Kellert, 2002). The experience involves the "process of developing and refining fundamental movement skills in a wide variety of stability, locomotors and manipulative movements" (Gallahue, 1993 pp. 39-40).

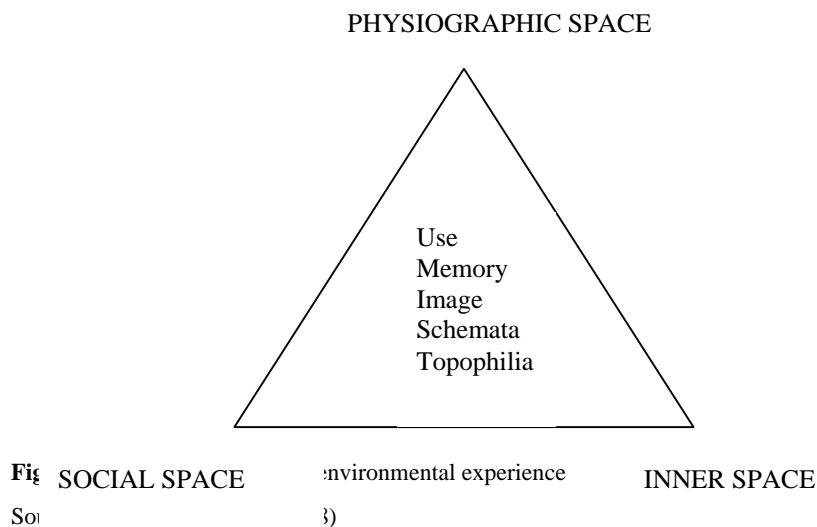
Therefore, the design of children spaces must conform to their physical, cognitive and social functioning and development. Physical functioning is the motoric actions such as fluid rolling, jumping, tumbling, running, and skipping. Physical development is the patterns of bodily growth and maturation of children interacting with the surroundings, indoor and outdoor spaces and their features. Cognitive functioning is the perceptual responses of the children with the spaces and features. Visual, audio and tactile perceptions contribute much on the development of the children's cognitive development. The cognitive development examines the systematic changes in children's reasoning, concepts, memory, and language. Social functioning is the transaction of children with peers and adults that affords them to assimilate and accommodate the actions of others. And, social development explores the changes in children's feelings, ways of coping and relationships with peers.

It is clear that the functioning and development of the children are shaped by the children interaction and transaction in the physical features and people. Inasmuch, “children shape their environment and the environment shaped them” (Striniste and Moore, 1989 p.25). Understanding of these knowledge enable architects and landscape architects to design and plan a setting, building and landscape, that affords to harness the three functioning, physical, cognitive and social.

Children’s experience of place and architecture

Children physical movement, cognitive scanning and social transaction in a space directly influenced by the spatial and properties of the environment. These interactions involve complex sensorial and motoric actions. Perceptual responses (sight, tactile, audio, smell and taste) and mobility in an environment reveal a lot of significant information. In other words, perception is an active experience, in which a child finds information through mobility (Kytta, 2003). “We must perceive to be able to move around, and we must move around to be able to perceive” (Gibson, 1979, p.23). This is an ecological perceptual psychology framework which recognized by a few environmental psychologists including Gibson (1979), Heft (1999) and Kytta (2002, 2003). Since children contact with architecture involves perception and movement, it is appropriate to teach architecture using this framework. Therefore, studio project on children’s architecture should begin with the introduction of how children perceive the spatial and properties of the environment. To give an example, Sener (2006) found that architectural projects involving children’s participation facilitate architects to create innovative design in accord with the children’s perception and affection to space and building. Notwithstanding, the architecture and its landscape should be designed both to support function and to nourish the child’s sensory and aesthetic sensibilities. For example, a hospital ward functions as a place to recover health and its garden for play and rest (Said, 2006).

A built environment that affords a child to be cognitively alert to the external stimuli through movement and social actions will encourage him or her to affiliate or create bonding with it (Chawla, 1992; Khan, 2002). According to Moore and Young (1978), the bonding is called as *inner space* (Figure1) created by children through three types of sensual experiences: cognitive, affective and evaluative (Wapner and Demick, 2000). Cognitive experience is the formation of thinking and problem-solving skills; affective experience is the emerging of emotional and feeling capacities; and evaluative experience is the creation of values, belief and perspectives to the environment (Kellert, 2002). For example, after experiencing more than two days in a hospital garden, ill children established sense of attachment to the garden that is intending to come back to the hospital if they get ill again (Said, 2006).



Referring to Figure 1, an architecture and its landscape is understood by children as *physiographic space* affording a child to show his physical strength and dexterity to make contacts, both perceptual and physical, with the elements and climatic forces of the place, either routinely or occasionally (Wapner and Demick, 2000). In other words, the space is where children's senses are stimulated through sensual and motoric activities. Olds (1987) posits that movement in play such as in playroom stimulates a child senses in a rhythmic patterns of predictable sameness. However, the playroom should also allow gradual change or moderate diversity that would trigger fascination and satisfaction. In childhood psychology, the phenomenon is known as difference-within-sameness (Olds, 1989) that affords a child to develop a mental construct that the architecture is a *structure*, and structure develops (Khans, 2002). Such development occurs frequently in the natural world. For example, in a forest setting, Fjorfort (2004) discovered that middle childhood Finnish children recognise the forest as a place affording them functional and construction plays, and these plays improved their motor abilities. And, in hospital setting, Said (2006) found that hospitalized children increased their locomotion and dexterity in experiencing hospital garden.

Moreover, children's physical participation with the architectural features and natural landscape elements extend to satisfaction and the experience stay in their memory (Sebba, 1994). And, memory is a derivative of place attachment. Positive emotions to a place of play permit a multitude of affective opportunities for engagement, discovery, creativity, revelation, and adventure surprise (Kellert, 2002). In turn, the affection allows the children to evaluate the place with values. Therefore, experiencing the environment is an essential, critical and irreplaceable dimension in the growth and functioning of children (Kellert, 2002).

The empirical studies by Fjorfort (2004) and Said (2006) implicate that kindergarten or hospital ward should be integrated with the outdoor spaces especially greenery. The architecture not only a milieu for learning or health recovery but also a physical setting that triggers the positive behavioural responses such as place attachment and place identity. Figure 2 illustrates a design of a kindergarten by an undergraduate student. The design begins with rigorously understanding of childhood cognitive development. And, the design views the building and outdoor landscape as holistic entity to for young children to learn and grow. The design anticipates the children are attached to a place. Place attachment is when they show happiness at being in it and regret or distress at leaving it, and they value it not only for satisfaction of physical needs but for its intrinsic qualities (Chawla, 1992 p.64). It will not surprise to find children longing to come back to school after leaving for home or going back to hospital after being discharged.



Figure 2: Interactive and explorative Montessori kindergarten
Source: Chee Wai Yee's undergraduate thesis (2007)

Finally, the architecture and its landscape is also a *social space* where children play with peers or adults and create friendship, acquaintanceship, reduced social regressions and reduced social withdrawals (Ladd, 1999). These are progressive responses of children's social development (Ladd and Coleman, 1993; Ladd and Price, 1993). This is because during social play children expand their cognition of the place by assimilating the actions of others particularly peers (McDevitt and Ormrod, 2002). Assimilation is a process of dealing with a feature or event consistent with an existing schema (Greig and Taylor, 1999). Overtime, through repetitive encounter, children accommodate their actions creating a new schema which is an expansion from the previous one (Yates, 2002). Thus, interaction in a social space such as communication and turn taking offers more stimulations and feedbacks to the children (Ladd and Coleman, 1993). Therefore, the children's cognitive faculties including schema to the place is expanded.

Conclusion and Recommendations

The review of the literature on teaching architecture to design and plan children's environment reveals the following considerations:

1. The knowledge of childhood cognitive growth and development is crucial in design studio program. As such, lectures and supervisions from childhood psychologist is necessary to give the students accurate understanding on the children behavioral response to built and natural environments.
2. Teaching children's architecture demands a trans-disciplinary approach including student participation in the children's contexts of living and playing.

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