

‘KIDS IN DESIGN’: DESIGNING CREATIVE SCHOOLS WITH CHILDREN

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Abstract: There is a consensus that children should be involved in the planning and design process of their schools, and attempts have been made throughout the world. This paper introduces a ‘Kids in Design’ project, through which primary school children worked with university architecture students to design a school playground. The aim of the project was to encourage the full potential of children’s creativity and generate creative school design outcomes. From October to December 2011, the ‘Kids in Design’ project was conducted in Roslyn Road Primary School (Geelong, Australia). Through eight weeks of workshops, children in Year 5 & 6 worked with architecture students from Deakin University (Geelong, Australia) to design a school playground. Assessing the design outcomes of this project, assertions are made that creative design outcomes have been achieved. Deakin University is currently working with another primary school to replicate the ‘Kids in Design’ project in 2012.

Keywords: *‘Kids in Design’ Project, Creative School Design, Children’s Co-Design*

1. Literature review

1.1. Children’s creativity

Creativity is considered to be one of the most valuable attributes a person could have (Mason, 2003). The literature from child psychology and pedagogy highlights the inherent creativity of children, and suggests that the development of creativity is critical for the general development of a child (Smolucha, 1992). For example, Freud (1908/1970) compared the playing child with the creative writer and found many similarities between the two. Although there are controversies over children’s inherent creativity, there seems to be a consensus that children are much more free and creative in their expression than adults, and they see the world more clearly than adults (Glăveanu, 2011).

Children usually have unbiased minds that are not affected by the environment as much as adults. They see the world more clearly, which allows them to visualize the environment more imaginatively and freely. As people grow up, the structures of their mindsets are constantly re-constructed to adjust to the environment (Piaget, 1970a, 1970b). Therefore, the fact that the structure of an adult’s mind is more manipulated by the environment or education cannot be ignored.

Children’s creativity, or their less-manipulated minds, is a potential resource for creative environmental design. They will help adults to see the environment from a different perspective and will potentially generate innovative design solutions. Many people who work in participatory projects

with children and youth are continually amazed at how insightful and creative they can be (Driskell, 2002).

1.2. Designing schools with children

School environment is important to children. On average, children spend around 6 hours a day and over 1000 hours a year in schools (Ghaziani, 2008). The school environments affect children's wellbeing across many aspects such as health, work, leisure and emotions (Ghaziani, 2008). Research shows that students learn best in stimulating, safe, and resource-rich learning environments (Lackney, 1998). Schools provide not only the space, but also the time for active outdoor play (Freeman & Tranter, 2011).

Because of the importance of school environment to children, involving children in school design has become popular in the planning and design field. For example, there is the *Natural Learning Initiative* in the United States (NC State University, 2012); 'The School I'd Like' competition (Burke & Grosenor, 2003) and 'Joint up Design for School' project (Sorrell, 2005) in the UK; children's co-design of an eco-classroom in New Zealand (Wake, 2011), and the planning and design of Shimoyama elementary school in Japan (Yanagisawa, 2007).

These projects were well-received by school teacher, children and their parents; and have generated satisfactory design outcomes. However, it is argued that the most fundamental limitation of these projects is that children's creativity hasn't been stimulated, encouraged and utilized to its full potential. The participation processes of all these projects mentioned in the previous paragraph were designed and conducted by adults. Although children were given the opportunities to provide their inputs, their voices and design ideas were judged and selected by adults. This means that there is scope for children to feel intimidated to state what they truly wanted; and adults may introduce bias when interpreting children's design wishes.

2. 'Kids in design': research design

In order to address the limitation of previous children's co-design projects, we developed a 'Kids in Design' project that respected the full scope of children's creativity. In this project, each design team consisted of a small number of children (around six children) and an architecture student. Children led the design and developed architectural design solutions; and architecture students facilitated children's design activities. The participating architecture student had sufficient architectural design skills, such as using design instruments, drawing to scale, building architectural models using various materials, etc. Other adults were not involved in the design process; however, they provided the context of design activities. For example, university staff (architectural lecturers and researchers) worked with primary school teachers to provide the space and resources for design, and adjusted the design time line to fit the university and school terms.

In the design team, there was a balanced power relationship between children and the architecture student. The architecture student was both the design tutor and the design facilitator. Each architecture student was given clear instruction not to 'give' design ideas to children. Instead, they should 'encourage' children to talk, 'listen' to their design ideas, and 'translate' their design ideas into architectural design outcomes.

Naturalistic inquiry was chosen as the research method of this study, because it is the research method most suitable to study human behaviours in natural settings (Lincoln & Guba, 1985). During the project, the authors of this paper documented the project using digital cameras, video cameras and notebooks. They also interviewed randomly selected participants to understand their feelings and experiences (the interview conversations were digitally recorded). After the project was finished, they analysed the collected qualitative information (including photos, videos, field notes and diaries) using the techniques of content analysis and thematic analysis (Rubin & Rubin, 1995; Ryan & Bernard, 2003). The identified themes that related to children's creativity are presented in Section 4: Discussion.

3. 'Kids in design': project process

In August 2011, two teachers from Roslyn Road Primary School (a primary school in Geelong, Australia) approached School of Architecture and Building, Deakin University. They suggested a joint educational program to allow their students to design ‘something’ in the schoolyard. The goal was to reengage the disengaged year 5 and year 6 students in their school through extracurricular activities. Deakin University staff saw this as an opportunity to pilot the ‘Kids in Design’ project. After several meetings, an initial program schedule was developed.

Responding to an internal advertisement, a number of Deakin architecture students volunteered to participate in this project. An eight-week project schedule was then developed by Deakin staff, and a two-hour workshop was proposed for each Thursday during these eight weeks. Ethical permissions were obtained from both Deakin University and Department of Education and Early Childhood Development (Victoria, Australia).

3.1. Architecture is fun! (Week 1)

On Thursday 20th October 2011, a team of architecture staff and students from Deakin University launched the project in Roslyn Primary School. In order to introduce the basic knowledge of architecture and stimulate children’s interest, the theme of the first workshop was ‘architecture is fun’. An architectural lecturer from Deakin University first gave a 15-minute powerpoint presentation, showing the famous landmarks and iconic buildings across the world and introducing basic principles of architecture and geometry. After that, children were divided into eight groups of six, each facilitated by an architecture student. Each group was given an allocated iconic building (e.g., the Sydney Opera House, the London Bridge, the Petronas Twin Towers of Malaysia, etc.), and the task was to build a model from newspapers without using glue. Children’s engagement was fabulous and many of them proposed great ideas to build the models. One of the students suggested twisting the strips of Newspapers to make it like a wire, representing the cables of London Bridge. Another student folded the newspapers into shells, representing the curly walls of the Sydney Opera House. At the end of the workshop, each group displayed their models to other children and introduced their construction ideas. This workshop stimulated children’s interests in architecture and introduced the basic concepts of architecture. More importantly, children became more confident about themselves when expressing their ideas, and they built the initial trust of the Deakin students.



Figure 1. Introduction to architecture and model making with newspaper

3.2. Dragon and its shelter! (Week 2 - 4)

Since creativity and imagination are usually bound together, the aim of this stage was to stimulate children’s imagination. The theme was ‘dragon and its shelter’, and the activities included site visiting, drawing, story-telling and model-making. The program of Week 2 comprised several steps. Firstly, an architectural lecturer from Deakin gave a 15-minute presentation, showing pictures and sketches of some of the masterpieces of architecture like Le Corbusier’s Villa Savoye and Frank Lloyd Wright’s Guggenheim Museum. The aim of the presentation was to show children how sketches and drawings would represent architectural designs. After that, each facilitator (a Deakin architecture student) took the group for a walk in the schoolyard (or in architectural language, a site analysis). The facilitators walked in the schoolyard with children, and encouraged them to do some quick sketches of what they saw and what they would like to see. The aim of the site visit was to prepare children on the ‘location’ for their design. Children’s comments on their schoolyard were often un-expected. For example, when one facilitator pointed at the entrance of the school and asked the children what they preferred to have instead of the existing entrance, rather than a new

gate/pavement/pergola, one of children answered: “Harry Potter, the one who comes somewhere and then disappear”.

After the site visit, the facilitators took their groups back to the room and asked them to draw a dragon. The ‘dragon’ was defined as an imaginary creature and children produced many unexpected images. For example, one child drew a creature like a millipede with a lot of eyes and stings, and another drew a creature with 12 eyes and she called it “12 eyed”!



Figure 2. Sightseeing and children’s imaginary creatures

After drawing the dragon, each child was asked to draw a shelter for it. Again, the shelters that the children imagined were quite imaginative. One child said that his dragon’s shelter would be in a volcano, and another child drew a spaceship to accommodate her blue magical creature that eats everything around him.



Figure 3. Dragon’s shelters

With the help of the architecture students, children re-produced their creatures and the shelters using tracing papers. Tracing paper is a dynamic/interactive drawing media for children: it’s transparency enabled them to put the dragon and the shelter over each other and check the scale of the dragon’s house. At the end of the workshop, several children presented the drawings to the rest of the class, and told stories of these dragons. Imagining and visualising the dragons and the shelters prepared them for the activities of the next workshop.

The activity of Week 3 and Week 4 was to build models of the dragon’s shelters. Each group was asked to discuss and consolidate their imaginations of the dragons, and come up with a design idea of a shelter/sculpture to be built in the school playground. During this process, the important architectural concepts of ‘human scale’, ‘location’, and ‘form’ were introduced to the children by architecture students. A1 size paper, aerial map of the school, tracing paper, play dough, ice-cream sticks, and other materials were used to facilitate their discussion and model making. The facilitator (architecture student) engaged the group in a discussion of what they wanted to see in their school yard, and asked questions such as “what does it look like?”, “where can it be placed?”, “how big is it?” and “what is it used for?” All children were engaged in the discussion and they were excited to build the models. The facilitators also helped children to take measurements of their bodies and the lengths and heights of the classroom furniture, in order to give them an idea of ‘scale’.

As expected, the scope of children’s imagination was wide. For example, one child explained: “We made an *Eco-Dome* with glass facade. This dome is very sustainable in terms of energy consumption. There will be a learning centre inside”. He added: “To avoiding from being too hot in summer, we propose to plant some grass over it”. He also explained: “We measured the scale of the dome by this method: Our unit is something called **Reney** (name of one of the students!), and one Reney is 150

centimetres”. Another child in the same group explained, “The dome can be a 10 Reney wide and 3 Reney high”. Another group proposed an *Underground house* with solar panels on top, a big 10million plasma TV, X-Boxes and a swimming pool. The way to enter this *Underground house* was to dive on a trampoline that was located in an outdoor swimming pool in the house.

The design ideas of a few other groups were more closely linked to the drawings from Week 2. For example, one group built a house resembling a turtle, and inside the turtle were tunnels that children can crawl through. The turtle was looking exactly like one of the group member’s drawing of the dragon’s shelter (and the dragon he drew was something looking like a worm). Another group built a *Dragon’s cage*, which has a cage-shaped structure with different spaces inside. The children in that group used play dough to make models of all the dragons they drew in Week 2, and put the dragon models inside the *Dragon’s cage*.

3.3. Design presentation (Week 5)

In the fifth week, Roslyn Road Primary School hosted an exhibition to show children’s work from the previous four weeks. Children from another primary school, parents, and community members were invited to the exhibition. All of the children who participated in this project had the opportunities to speak about their favourite places in the school yard and their design ideas. All the visitors were impressed by these children’s work and many children from another school expressed their wishes to have the project replicated in their school.



Figure 4. Children’s creative designs presented in the exhibition

During the exhibition, all of the children voted for the best design idea. *Dragon’s pod* was most popular as it was considered to be the most creative concept. The *Dragon’s pod* was a place for doing, thinking, feeling and being. The group explained the story behind the *Dragon’s pod*: “One day a dragon landed on the school yard from a distant planet, because he was badly wounded. Children looked after the dragon and he became a good friend for the children. When he was fully recovered, he decided to fly back to his planet to live with his parents. As a gift to the children, he decided to leave his skin in the school yard, which became a playground structure for children to play in and remember him”.

3.5. Design documentation (Week 6 – 8)

As the *Dragon’s pod* had the most votes, it was chosen as the design idea for the shelter being built in the schoolyard. The tasks of the last three weeks, therefore, were to develop documentation drawings for the *Dragon’s pod*. Each group was allocated one piece of the *Dragon’s pod*, such as the tail, the body, the head, etc. By engaging children in the documentation activities, they learnt the concepts of ‘scale’ and ‘perspective’. They were asked to represent their allocated structures from at least three different perspectives (such as the view from the top, the south façade and the north façade), and they were required to draw to scale. It was interesting to note that some children understood these concepts very quickly. For example, architecture students suggested the children draw in the scale of 1:10 as it was easy to calculate the dimensions. However, a few children developed drawings in the scale of 1:20 as they wanted to represent more things on their A3 papers. Moreover, a few children did section drawings, as they wanted to represent the inside of their structures. There were some children struggling to understand the concepts of ‘scale’ and ‘perspectives’, and the architecture students gave them guidance to develop the documentation drawings.

4. Discussion

This project was greatly enjoyed by children and architecture students. All children were actively involved in the design activities (drawing, walking around, building models), and all children thought these activities were ‘fun’ and they enjoyed the process. Lot of children made ‘thank you’ cards to the Deakin team and wrote nice words. The architecture students regarded this project as an opportunity to broaden their skills as an architect, and they said they have developed the skills of communication, teamwork, and leadership through this project.

4.1. Comparing ‘Kids in Design’ project with previous children’s co-design projects

As reviewed in section 1.2, many successful attempts have been made throughout the world to involve children in the planning and design process of their schools. Quite different from previous children’s co-design project, this ‘Kids in Design’ project was the first one that let children drive the design process. For example, in New Zealand’s eco-classroom co-design project, teachers and architects collected children’s views regarding the eco-classroom design. The project was a great experience for children to learn eco-principles, but their design wishes were only realised to a limited degree (the eco-classroom co-design process was reported in Wake, 2011). Similarly, in Japan’s Shimoyama elementary school design project (Yanagisawa, 2007) and UK’s ‘The School I’d like competition’ (Burke & Grosenor, 2003), children’s voices and design wishes were collected, however, there barriers to realise children’s design wishes as adults controlled the design process.

In the ‘Kids in Design’ project, we carefully monitored and supervised the design team dynamics to ensure that there were balanced power relationships between architecture students and children. Our purpose was to provide a healthy environment in which children’s innovation and creativity were nurtured and inspired, and their design wishes were translated by the architecture students without introducing too much bias.

4.2. Were the design outcomes creative?

Various tools have been proposed to assess creativity in design. For example, Sarkar and Chakrabarti (2011) proposed that ‘novelty’ and ‘usefulness’ are two dimensions for creativity. Sternberg and Lubart (1999) defined creativity as ‘novel’ and ‘appropriate’ products; and Weisberg (1993) defined creativity as ‘novel’ and ‘valuable’ products. Although creativity remains a ‘slippery’ concept and the definition is still vague (Kokotsaki, 2011), ‘novelty’ seems to be accepted as one of the properties that apply to all creative products (Haller, Courvoisier, & Cromptley, 2011). As the definition and evaluation of creativity are not the focus of this study, we use ‘novelty’ to assess the creativity of our design outcomes.

The outcomes of the ‘Kids in Design’ project demonstrated innovative shapes, colours and materials (Figure 5). Comparing our design outcomes with previous children’s co-design projects (e.g., New Zealand’s Hukanui School eco-classroom project, as shown in Figure 6), we could see that the outcomes of our ‘Kids in Design’ project were more novel, thus more creative. We argue that our project has achieved more creative design outcomes through fully respecting children’s design wishes and translating their design ideas without introducing biases. In addition, the creative design outcomes of our project supported the literature of children’s creativity, in that children have inherent creativity and they see the world more clearly than adults (Glăveanu, 2011).



Figure 5. The design outcomes demonstrate novel colour, shape and materials



Figure 6. The design outcome of New Zealand's Hukanui School eco-classroom project.

Source: (Hukanui School, nd)

4.3. How we addressed the challenges during the pilot project

There were several challenges that we faced during the project. There were a few 'loud' children who were fast in understanding the architecture concepts and who tended to play a dominating role in the group discussions. For example, when we asked children "who can tell us what scale means?" and "who can tell us what façade means?", the same children always raised their hands and answered the questions. In one of the groups, a girl played quite a dominating role and she allocated tasks to other children. The creative forum enabled the confident children to express themselves fully, while the less confident children were supported to voice their opinions by the architecture students.

There were also difficulties to engage all children in the documentation of the *Dragon's pod* in Week 6. Although *Dragon's pod* had the most votes in Week 5, many children from other groups had no attachment with this design idea and they did not want to work on this one in Week 6. We tried to reengage them by dividing the *Dragon's pod* in to different parts, and allocating one part to each group. After that, each group felt that they started a new project and they felt they were in charge again. For example, the group who were given the dragon's tail was involved in designing and thinking about the functionality of the tail in school yard, and they decided to make the dragon's tail a giant slide. This again highlights the desire for children to feel ownership for their surroundings, once given the space to express their ideas they became reengaged.

5. Conclusion

The 'Kids in Design' project stimulated children's creativity and generated creative school design solutions. A few schools in the Geelong Region have expressed their interests in replicating the 'Kids in Design' project in their schools. Work is underway to conduct another 'Kids in Design' project in 2012, with financial support already obtained from an external funding source.

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