

Designing for Children 2019

- Play and Learn

TAKTILE- Reggio inspired Learning-Play products

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Abstract: The importance of experiential learning for young children is a urgent necessity in today's society due to various factors. These include excess exposure to digital tools from a very young age, lack of physical activity, exposure to pollution in the form of food, water and air, engaging less time with nature, lack of social skills to name a few.

The paper is an attempt to share the learnings from a design and build project that was about creating opportunities and learning experiences for young children. The impact and inspiration of the Reggio Emilia method of engaging children, the importance of play-learning where the space and environment become a 'third teacher' and provide a platform for children to use all their '100 languages' to discover and learn for themselves through activities is highlighted.

Key words: learning-play, experiential learning, Reggio Emilia, self-exploratory, pre-school.

1. Introduction

"Children need the freedom to appreciate the infinite resources of their hands, their eyes and their ears, the resources of forms, materials, sounds and colors". – Loris Malaguzzi

The importance of experiential hands-on learning for young children is an urgent necessity in today's urban society in particular due to various factors. These include but not limited to lack of physical activity, excess exposure to digital tools and screen time from an early age, exposure to pollution in food, water and air, lack of slowness in everyday activities, engaging less time with nature, lack of face to face social skills to name a few.

Data from the Adolescent Brain Cognitive Development (ABCD) study by the US National Institutes of Health show that young children 0-5 years have been engaging with various forms of screen time ranging from 1 to 7 hours every day. Some of the negative effects of young children spending excess time with digital screens include

- Obesity: when children watch TV or engaged with the screen, they are physically inactive. This long inactive time spent not burning calories can make them overweight and obese.
- Sleep disturbance: most children have the habit of looking at screen before bed. The blue light emanating from the screens can cause insomnia,
- Children who spend more than two hours a day tend to have attention problems leading to lack of performance in academics and are prone to bullying.
- Propensity for violence: children who are exposed to violent movies, music and video games tend to imitate the actions in real life.

The American Academy of Pediatrics has issued guidelines in 2016 for infants, toddlers and preschoolers about the influence of media on young children. These include managing young

children's screen exposure times, parent child shared screen use and other healthy developmental activities

2.Experiential learning

Experiential learning involving hands-on physical activities along with assisted reflection is one of the ways in which young children can be constructively engaged. It's important for young children to have a combination of structured and unstructured learning where the teacher or parents support, encourage and nurture the child.

"For the things we have to learn to before we can do them, we learn by doing them". - Aristotle, Nicomachean Ethics

Some important characteristics of experiential learning include

- Demonstrating of the practical usage of math, science and other learning areas
- Enables children to pursue and work through problems as they arise in real life situations
- Encourages children to come up with their own strategies (with support from parents and teachers) rather than follow set formulas to arrive at solutions
- Experiential learning can be a collaborative effort that can include peers, teachers and parents
- It can bring out the all-important reality of failure and possibly ways how to overcome them
- Experiential learning enables children to find different ways to express social and emotional difficulties
- Children can learn about social interaction, peer learning, assertiveness, working in a group, give and take between peers
- Children can use role-play in their play spaces to mimic real life scenarios including enacting different professions
- Experiential learning enables children to discover new concepts in fun and engaging ways
- In experiential learning children receive information by actively engaging with the subject at hand instead of just receiving passive information from the teacher
- Experiential learning can trigger the internal curiosity of each child.

3.The project:

The client is a chain of progressive schools who have adopted the best of immersive methods of school education systems from around the world. Apart from being affiliated to established boards like the CBSE, ICSE and the IGCSE, the schools have their own internal curriculum design, training, implementation and evaluation team.

3.1 The clients brief:

- The project brief from the client was to create a 'self-exploratory activity area' and not a 'play zone'.
- It was to be used by children in the age group of three to six years including students from the kindergarten classes and Montessori environments.
- The activity zone had to work away from the role of the teacher of a conventional classroom
- The teacher, the space and the products had to enable the inherent exploratory learning process highlighted by the Reggio Emilia philosophy

- The project had to be cost effective and within budgets

3.2 The Reggio Emilia system:

The Reggio system is an innovative approach specifically addressing early childhood education in the age group of three to six years. The movement was started in the Italian region of Reggio Emilia by Loris Malaguzzi (1920-1994) in the year 1950. The system is named after the region since the community was equally involved in its beginning, development and evolution.

The Reggio approach views children as young individuals who are curious about their world and have the potential to learn from all that surrounds them. It emphasizes on the centrality of hundred languages, that children have the opportunity to learn in the form of many materials, expressions, points of view, working actively with hands, minds and emotions. Some characteristic features of the Reggio system are

- Teacher has a dual role of a learner along with the children and also to observe and track their growth
- Observation and documentation of the growth of both teacher and the child.
- The classroom and its environs are considered as the 'third teacher' in the Reggio system. Care is taken to create an environment that allows for the easy exploration of various interests and to explore the hundred languages
- Children are encouraged to be active learners driving at their own pace with teachers as their guides and mentors
- The Reggio approach encourages to provide ample opportunity for research, experimentation and scenarios to develop creativity, curiosity and critical thinking skills
- Collaborative learning involving teachers, parents and the community along with children is encouraged in the Reggio system

3.3 Design approach:

- The design approach was to create a learning-play system that includes a range of products where each one of them is a building block for a child's developmental need which are intuitive as well as self-guiding
- The system had to be open-ended, intuitive, experiential, multi sensorial and encourages the possibility of collaboration, teamwork and group learning.
- The space or the activity zone itself had to lend itself to the learning-play system by providing multiple usage opportunities to both children and teachers alike.
- The product system has had to be easy to use, store, maintain, mobile, reconfigurable, ergonomic and child friendly.
- The products had to be production, transport and installation friendly, modular and cost effective

4. Taktile- the learning-play system:

The learning 'categories' or 'hubs' in the Taktile system are broadly divided into five groups- Nature, Numeracy or Math, Discovery, Multiplicity and Narrative. These hubs were essentially an effort to create products that can address specific objectives, but also can be combined with each other. The hubs though divided, inherently allows cross-learning and linking through exchange of spaces, objects and components. Each of the individual hub which is the primary product is supported by a host of secondary products and accessories. The secondary products and accessories themselves can be shared by the primary hubs or they can be used as standalone entities

The Hub comprises a modular Cuboid Chassis which is made of high-quality plywood 19mm thick with dimensions 1200mm L x 600mm W x 300mm H as shown in figure-1. These dimensions were arrived based on the available size of the raw material 2440 x 1220mm in board form

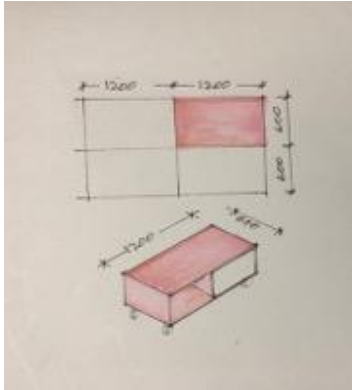


figure-1 Cutting pattern

The cutting pattern with the said dimensions leaves no wastage during production which in turn keeps the costs in check. The 300mm height of the unit is arrived at considering the comfortable working height for children who would be using the product in multiple ways and positions. The basic structure of the hub also houses two drawers to store accessories belonging to the respective hub. The unit is mounted on heavy duty industrial castors with locking facility for easy mobility. The hub has interchangeable and customizable tray tops mounted on top of the chassis as shown in figure-2 and figure-3.

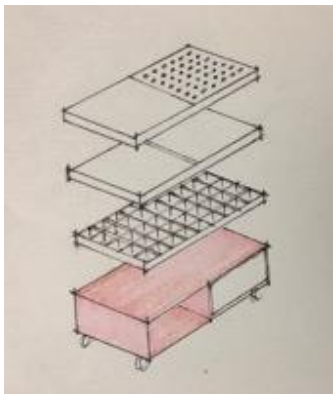


figure-2 Activity Hub Chassis

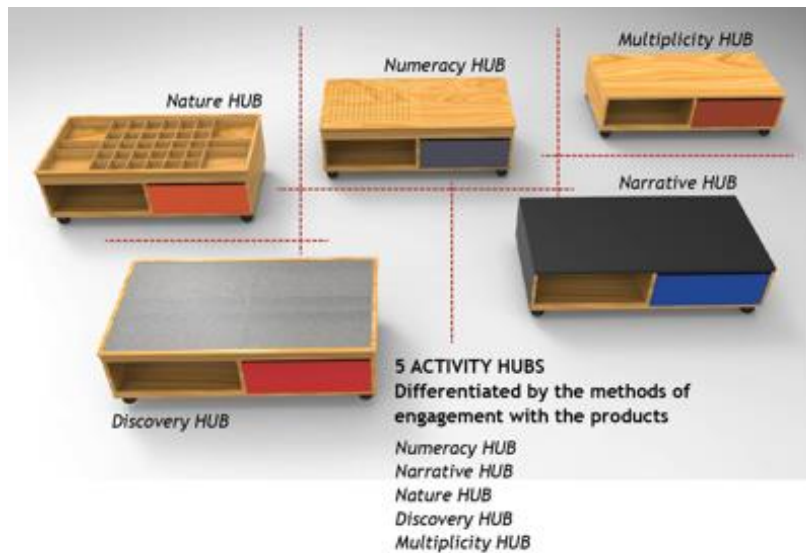


figure-3 Activity Hub

4.1 Nature Hub:

Nature hub is where children discuss and learn about samples from their natural environment. The hub has a tray with multiple partitioned compartments where children display and segregate their collection which can include leaves, stones, seeds, twigs and other natural objects as shown in figure-4 and figure-5. The teachers can act as a trigger for the whole event by placing in them some samples so that children can bring in their collection to have a 'show and tell' session. Secondary products that are used with the nature hub include magnifying lenses, magnifying frames, tweezers, thread, pouches (to hold small objects) etc



figure-4 Nature Hub



figure-5 Nature Hub top

4.2 Numeracy or Math Hub:

The math hub has a specific top on the chassis which has a grid with precise holes laser cut into half the surface as shown in figure-6. Pegs can be inserted into these holes to understand various math related concepts including areas, fractions, telling time using rubber band, string etc. The other half can be used with other secondary products like pattern building blocks, Cuisenaire rods, tangram etc.



Figure-6 Numeracy/Math Hub

4.3 Discovery Hub:

This hub emphasizes on the discovery of shapes, profiles, sizes, textures, transparency, and details when objects are placed on an illuminated surface. The discovery hub has a special soft-light illuminated tray with a translucent acrylic top as in figure-7. Children can place various objects on the illuminated surface and observe them through magnifying lenses, lens frames, or plain eyes. The objects can include various leaves, shells, dried leaves. Secondary products include magnifying lenses, lens frames, Tangram, Eggram, and Heartgram.



figure-7 Discovery Hub

4.4 Multiplicity Hub:

Multiplicity hub has a plain chassis surface that can be used for arranging free-paly blocks, samples, rocks etc as shown in figure-8. The hub can be used as standalone unit or can be combined with as an extension with other hubs or as a prop during various other activities conducted in the activity zone including storytelling and theatre activities. Secondary products include freeplay blocks and other props.



figure-8 Multiplicity Hub

4.5 Narrative Hub:

The narrative hub is where the children and teachers explore their story telling and narration activities in the form of sketches, scribbles etc. as shown in figure-9. The surfaces of the hub are painted black using blackboard paint where Chalk can be used to depict various scenarios being explored at that time. Black painted blocks are part of the secondary products along with regular wooden blocks and human figures. Splash of color was introduced by Channapatna turned wood components for trees and other props.



figure-9 Narrative Hub

Apart from the five main activity hubs, a number of significant secondary products were designed and executed for the activity zone. They include

4.6 Multi-use platforms:

Tires of various sizes including a Dump truck were fixed with plywood and carpet to create platforms. These were used during story telling sessions, as a stage to enact a play or just as seating during some show and tell activity.

4.7 Theatre unit:

An exclusive theatre unit with provision for hanging layers of screens and its own storage was created for the activity zone as shown in figure-10. The unit is mounted on industrial grade castor wheels to make it mobile. The students and teachers can create their own props and scenes using the primary hubs and other objects of the activity zone.



figure-10 Theatre unit

4.8 Mirrors:

Acrylic mirrors of various sizes and configurations are used for children to observe themselves as in figure-11. The configurations include hinged, three leaved straight mirror, concave and convex mirrors to understand the various appearances of objects and themselves.



figure-11 Mirrors

4.9 Magnifying frames:

To address and trigger curiosity amongst children, 150mm diameter magnifying lenses are mounted on to horizontal and vertical frames to look at objects.

4.10 Colored viewing frames:

Another product to come out for this project is the simple colored viewing frames where a wooden frame of 300 x 300mm houses 3mm acrylic sheet of various colors is framed as in figure-12. This product again is a curiosity trigger for children



figure-12 Colored Frames

4.11 The environment:

The environment or the third teacher was handled with sensitive design intervention. The design interventions were in the form of making provisions for the children and teachers to customize, display and change their space to suit their requirements. Walls and ceilings have been fixed with anchor bolts and connected with GI wire for hanging and displaying the work of children. Ropes are used as vertical partitions to hang the children's images with clips

5. Conclusion:

The Taktile learning-play system is an attempt to introduce products that address specific areas of preschool learning. The Reggio system itself does not have any rigid rules or evaluation methods to evaluate their approach. The products, which are open-ended by design allows additions, combinations to the products and be interchanged and used for various learning

objectives depending on the context of use. The product-system's main objective was to develop an activity zone that is free from the regular classroom and teacher driven approach, but still can be part of the schooling system that can be accessible to the majority. The need of the hour is to have trained teachers who can understand the importance of being observers, triggers and guides for young children. This will form a strong foundation for the children to grow, explore, understand and pursue their own interests and strengths.

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