



# Designing for Children

- With focus on 'Play + Learn'

## Toys as child centric multisensory play way tools for learning: Case studies focusing on usage of Channapatna toys and Montessori didactic materials

Sampurna Guha, AIRS, Amity University, Noida, [sam2015india@gmail.com](mailto:sam2015india@gmail.com)

**Abstract:** There is a dearth of research studies focusing on toys as agents of playful self-learning for children. Traditional toys are often overlooked despite their rich cultural value, environment friendliness and low cost. The present study attempts to understand the role of traditional 'Channapatna toys' and 'Montessori learning equipments' as tools for play based learning and development among children. Case study approach was used to perform an in-depth and critical analysis of role of toy based learning on development of cognitive, academic and adaptive skills among primary level children studying in inclusive settings. The findings reveal that traditional toys are non toxic, affordable, durable and attention gaining play materials which stimulate creative and joyful learning experiences while didactic materials act as age appropriate, child centric and sensorial teaching-learning materials. Thus the study supports the critical role played by toys in promoting child development and recommends factors like utility, durability, safety, affordability, accessibility and cultural value to govern the selection of toys.

**Key words:** *Toys, designing for children, Channapatna toys, Montessori learning equipments, playful learning.*

### 1. Introduction

Play is essential for child growth and development. It allows children to explore and understand the world around them in a free, enjoyable and creative manner. Child-led play helps in development of motor skills, social skills, cognitive skills, emotional skills and self expression. Such play helps in development of self esteem, self expression and positive growth (Kendrick, n.d.). Play helps to boost the psycho-social well being and teaches life readiness skills. According to Shaw (2015) curriculum for children should be centered around free play in order to promote opportunities to practice purposeful

sensory motor activities by applying the skills learnt and facilitating deeper learning in later developmental years.

Play whether guided or free, group or solitary, imaginary or simulated plays an important role in child development by imparting basic cognitive, social and daily living experience based skills. Toys are invariably linked with play for children and games for adults (UNESCO, 1988). The Montessori Method uses multisensory, practical equipments and materials as didactic toys to provide constructive teaching-learning experiences within a structured environment allowing children to learn through active exploration and sensory experiences furthering advancement towards understanding of abstract concepts (Colorees, 2017; Schilling, 2011). Hence, there are infinite benefits of play (Alfano, n.d) as shown in the figure below:

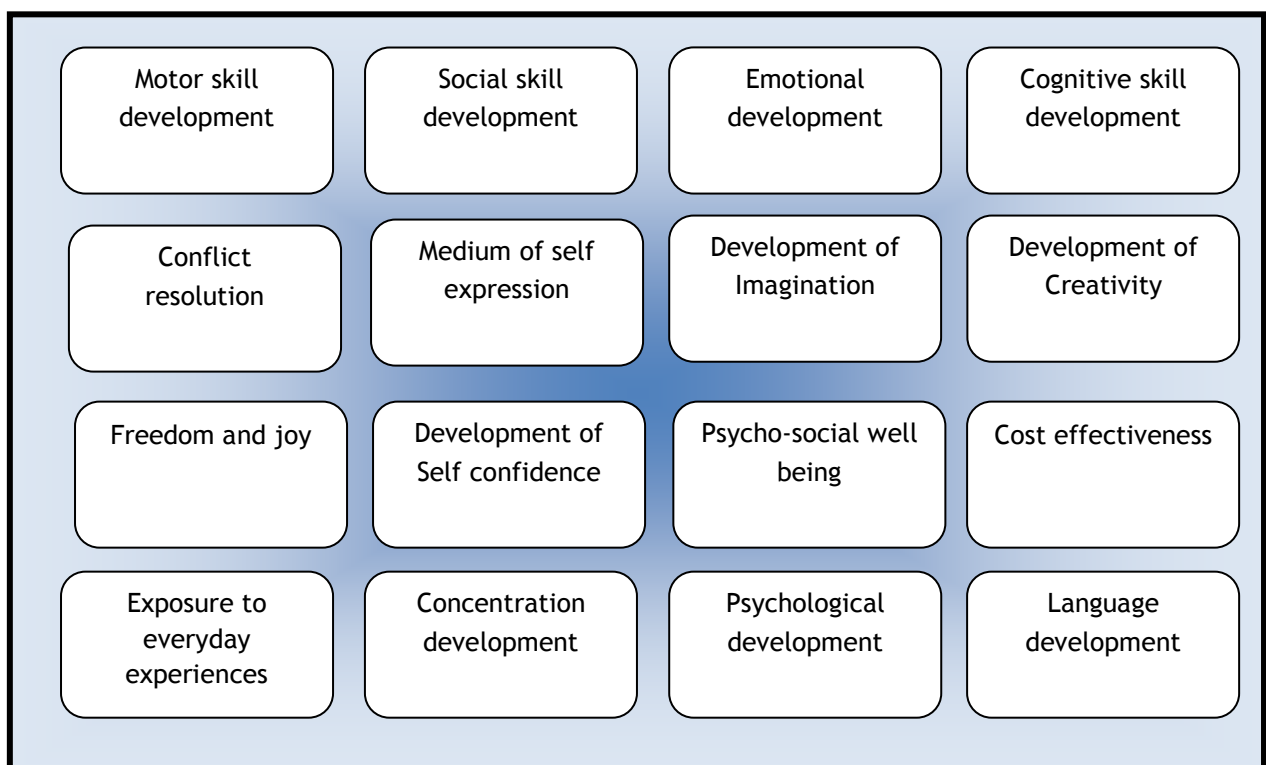


Figure -1 benefits of play for children

### 1.1 Child development and Toys

“Objects like toys are an extension of a young child” (Bhagyashree, 2017). There are different types of toys - indoor toys, outdoor toys, creative toys, educational toys and development toys. Toys play an important role in child development by fostering imagination, facilitating exploration and development of various skills. Toys need to be age appropriate and development centric (“The importance of toys”, 2017). Toys should

be chosen with care. They should not be harmful or hurting to the child. The child should understand the toys, be interested to use them and play with them. Toys help children to learn through play. Table 1 depicts the developmental stage specific nature of toys for promoting healthy child development.

Development stage	Nature of toy	Examples
<b>0 - 12 months</b> at this stage the child explores the world through senses (Piaget), grasping and chewing toys	Baby toys	Teethers, rattles, toys of varied textures, sounds, vibrant colors, chewy toys
<b>12 months - 3 years</b> At this stage the child continues skill development	Toddler toys	Shape sorters, puzzles, blocks, color cards
<b>4 - 12 years</b> At this stage the child loves challenges, application of skills learnt	Children toys	Alphabet, number games, pretend play toys, cooperative play toys

Table- 1 Developmentally appropriate toys

## 1.2 Toys as didactic materials for playful learning

Maria Montessori viewed toys as ‘developmental materials for self-education of children’. According to Montessori all toys have meaning and use. Through self manipulation and handling of toys, the child can discover new experiences and construct knowledge. The toys are arranged in a specific order from simple to complex on specific shelves which are at reachable heights for children. Learners are encouraged to teach themselves through handling and self exploration of toys. Hence under the Montessori learning system, knowledge is not imparted rather constructed through autonomous, self directed play using didactic materials as toys. Toys are further classified into four types under this system (Colorees, 2017) as shown in figure 2:

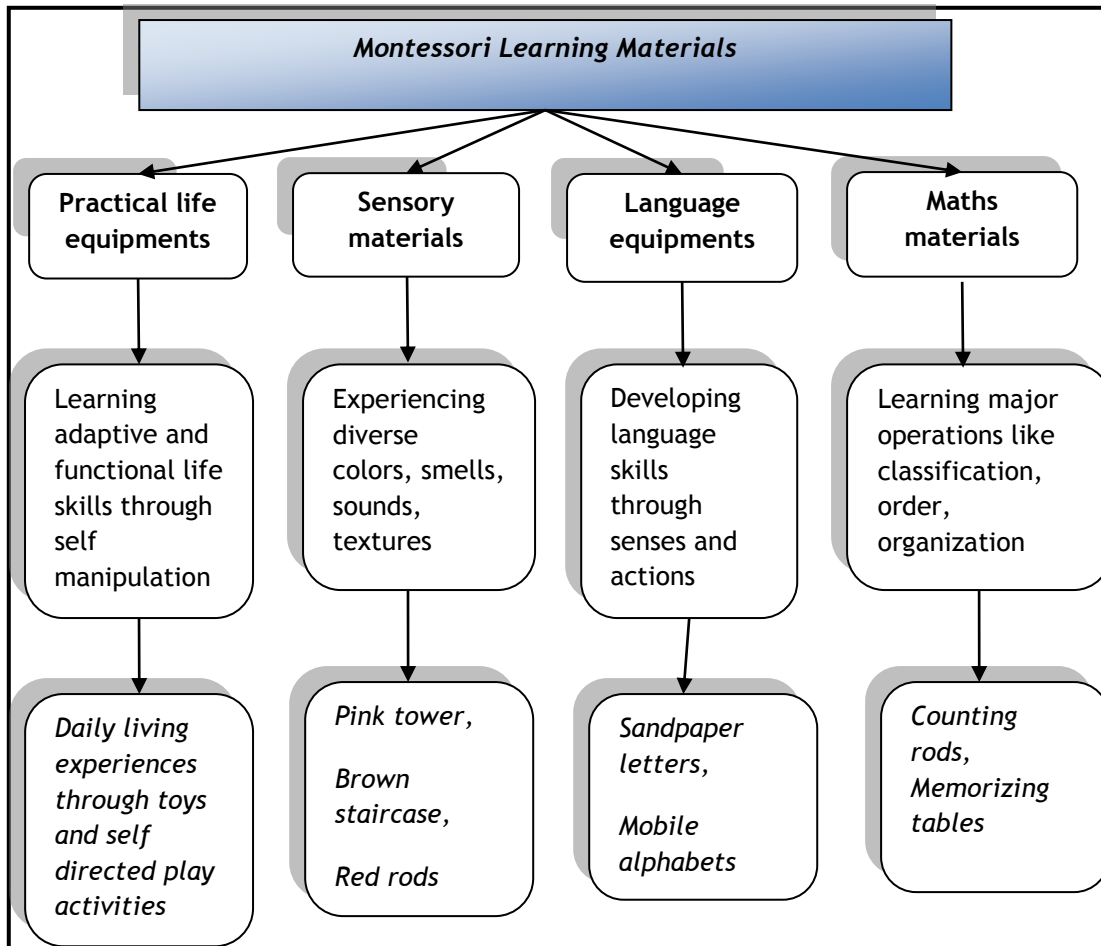


Figure- 2 Classification of toys under Montessori Learning System

### 1.3 Considerations regarding toy selection

According to Shumee (2017) there are many factors which influence toy selection for children. The safety aspect of toys is a major factor governing toy selection and usage. Small children can choke on small toy parts while playing. Parents and educators should keep in mind the following factors while selecting appropriate toys for child development:

- Age and development level appropriate
- Learning and educational materials
- Non toxic
- Colorful, eye catching and multisensory
- Interesting
- Durable
- Simple to use and fun to play with
- Open ended

- Multi-use
- Cost effective

## 2. Research Methodology

The present study makes use of case study approach to understand the role of multisensory toys as tools for learning. The study explores the use of traditional ‘Channapatna toys’ and ‘Montessori didactic learning equipments’ for promoting healthy child development through play based learning.

### 2.1 Research Objectives for the study

- To understand the role of toys in child development and education.
- To understand and explore the role of ‘Montessori learning equipments’ in child development and education.
- To understand the role of role of ‘Channapatna toys’ in child development and education.

### 2.2 Research Questions for the study

The research study is driven by the following research questions:

- ❖ What is the role of toys in child development and education?
- ❖ What is the role of ‘Montessori learning equipments’ in child development and education?
- ❖ What is the role of ‘Channapatna toys’ in child development and education?

### 2.3 Sample design

To understand the role of selected toys in learning and child development, four children in the age range of 6-10 years, studying in inclusive schools were purposively selected as sample for the present study.

<b>Gender-male</b>	2
<b>Gender-female</b>	2
<b>Age group</b>	6-10 years
<b>Educational settings</b>	inclusive
<b>Child with special educational needs</b>	2
<b>Total</b>	4

Table-2 Sample characteristics

Traditional 'Channapatna toys' and 'Montessori didactic materials' were used during the intervention spanning 30 sessions.

Channapatna toys	Montessori materials
<ul style="list-style-type: none"> <li>• Sound toys-rattles and whistles</li> <li>• kitchen toys</li> <li>• vehicle toys</li> </ul>	<ul style="list-style-type: none"> <li>• Geometric solids</li> <li>• Fabric boards</li> <li>• Pink tower</li> <li>• Stacking blocks</li> <li>• Cylinder blocks</li> <li>• Colored cylinders</li> <li>• Sound cylinders</li> <li>• Dressing frames</li> <li>• Colorful beads</li> </ul>

Table- 3 Details of toys used in the sessions



Figure- 3 Montessori materials used for playful learning



Figure - 4 Channapatna toys used for playful learning

### 3. Findings

Case-1		Case-2	
Age	8 years	Age	10 years
Gender	Male	Gender	Female
Toys used:	<ul style="list-style-type: none"> <li>• Geometric solids</li> <li>• Fabric boards</li> <li>• Pink tower</li> </ul>	Toys used:	<ul style="list-style-type: none"> <li>• Stacking blocks</li> <li>• Cylinder blocks</li> <li>• Colored cylinders</li> </ul>

<b>Learning outcomes:</b>		<b>Learning outcomes:</b>	
<ul style="list-style-type: none"> <li>➤ Helped to achieve shape identification</li> <li>➤ Knowing about different textures-soft, rough</li> <li>➤ Helped to learn about basic concepts: size, length, big, small</li> </ul>		<ul style="list-style-type: none"> <li>➤ Helped child to learn about different shapes and sizes</li> <li>➤ Sorting, arranging, classification and ordering according to size</li> <li>➤ Learning about colors</li> </ul>	
<b>Case-3</b>		<b>Case-4</b>	
<b>Age</b>	6 years	<b>Age</b>	9 years
<b>Gender</b>	Male	<b>Gender</b>	Female
<b>Special educational needs:</b>	present	<b>Special educational needs:</b>	present
<b>Nature of disability</b>	Intellectual Disability	<b>Nature of disability</b>	Downs syndrome
<b>Toys used:</b>	<ul style="list-style-type: none"> <li>• Channapatna rattles and whistles</li> <li>• Channapatna kitchen toys</li> <li>• Channapatna vehicle toys</li> </ul>	<b>Toys used:</b>	<ul style="list-style-type: none"> <li>• Sound cylinders</li> <li>• Dressing frames</li> <li>• Colorful beads</li> </ul>
<b>Learning outcomes:</b>		<b>Learning outcomes:</b>	
<ul style="list-style-type: none"> <li>➤ Sound discrimination and localization</li> <li>➤ Learning about basic activities and everyday experiences</li> <li>➤ Knowing different transport mediums</li> </ul>		<ul style="list-style-type: none"> <li>➤ Sound discrimination and localization</li> <li>➤ Performing ADL activities like buttoning, zipping, unbuttoning etc</li> <li>➤ Development of fine motor skills</li> </ul>	

Table-4 Case study findings

The findings of the present study indicate that children with and without special educational needs can benefit from open ended toys based learning. For children with special educational needs, such toys helps to promote school readiness by fostering learning in areas such as Activities of Daily Living (ADL), social skill development and cognitive skill improvement. Skills such as dressing skills - buttoning, unbuttoning, zipping etc, functional academics-ordering, classification, sorting thereby facilitate development of independent living skills. Whereas typically developing children also achieve foundational skills such as sound discrimination, basic arithmetic skills, basic conceptual knowledge -shapes, alphabets, numbers etc through such toys and equipments. Such toys are easy to relate with, open ended in nature and level appropriate. The traditional Channapatna toys are specially designed by Indian artisans for children and are safe, non toxic, durable and affordable solutions to help children learn through play activities. Montessori equipments are specially designed to foster self learning among children to promote construction of knowledge. These toys can be used in several combinations in

child led play as they are open ended in nature. Such learning tools help in development of motor skills, concentration and cognition.

#### 4. Conclusion

The study supports the critical role played by toys in promoting child development. It further recommends the revival of specially designed traditional toys in pre schools and primary levels.

The findings indicate the need for toys made from locally available, nature friendly and cost effective resources especially in developing countries. Didactic materials promoted by Maria Montessori provide sense training and development of academic skills such as mathematics, language and sciences through self directed learning by the child.

The study recommends that the choice of toys should be based on factors like utility, durability, safety, affordability, accessibility and cultural value. Proper selection of toys can promote age appropriate learning of skills and holistic development of the child. Such findings are in line with previous studies (Guha & Murthy, 2017). Such toys can act as 'universal tools for inclusion' by promoting development of basic life skills and providing opportunities for success through their multi sensory appeal (PACER, 2013). Hence toys should be designed for children in such a way that it initiates and helps in the maintenance of self learning, creative expressions and development of target skills.

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