

2020 BRIGHT START CONFERENCE

for the MENA region
Early Years Excellence in Practice

***Let's build! Rethinking block play to foster
young engineers***

Jo Grimmond



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

Jo Grimmond, University of Wollongong, Australia.
PhD Candidate, B.Ed (Honours)
grimmond@uow.edu.au

Block play

The benefits of blocks!

Block play is a vehicle to enhance not only mathematics learning but STEM practice through play. The block area of play is often an underestimated area of rich learning. Block play affords so many opportunities for rich mathematics and engineering learning, which involves exploring shape, geometry and shape in maths. Children engage in engineering design skills to thoughtfully plan what they are going to build and how they can use the materials available to enhance their engineering masterpieces. When children are given **time to plan, construct, and create** with blocks and **quality materials**, they develop **socially, emotionally, cognitively** and **physically**. Children explore many **mathematical concepts** including sorting, classification, ordering, counting, geometric and spatial understandings, size and shape. They are learning engineering skills and spatial reasoning skills when they experiment with **forces of gravity**, the **relationship between materials** and design to achieve **balance, stability**, and even **aesthetic sensibility** when they create aesthetically pleasing constructions.

They learn critical social skills of **negotiation, collaboration, cooperative problem solving**. They learn how to **listen** to others. They learn how to enter play, share with others, take turns, listen respectfully, **understand different perspectives** as they try out new roles. They focus their attention for extended periods of time, express their ideas and independently or collaboratively solve problems. They **are motivated to learn** and enjoy being engaged in such a rich experience. They engage in creativity and as they manipulate and arrange objects in their constructions, they organise them in harmonious and aesthetically appealing design.

“Blocks are a timeless toy. They never stop challenging, stimulating and engaging young children”
(Hansel, 2017, p. 161).

“A child’s artistry in block building is closely related to the true mathematician’s view of mathematics as a creative art”
(Hirsh, 1984, p. 63)

Development of block building

Children carry/transport blocks	Building begins	Bridging	Making enclosures	Creating designs	Naming structures	Symbolise actual structures
Children carry blocks from one place to another without using blocks for construction	Children place blocks side by side in rows (horizontal) or stack (vertical)	Children begin bridging by placing two with a space between them connected by a third block	Blocks are placed in such a way to enclose a space	Decorative designs and patterns appear and much symmetry can be observed	Children begin to name structures for dramatic play	Children try to replicate or symbolise structures they know

(Hansel, 2017; Hirsch, 1984)

Provisions for enriched block play

Materials

- Provide a good selection of quality materials with many different functions – open ended.
- Extend choices of materials as building becomes more complex.
- Encourage children to collect loose parts that they could use to enhance their building.

Time

- Allow time for children to engage with the blocks and explore functions and properties.
- Consider allowing children to return to their block play to add complexity and refine their ideas.
- Allow flexibility in your routine to allow for time to build, engineer and create.

Space

- Consider your setting and plan play spaces thoughtfully to allow for room to build.
- Consider where each play space is relative to each other.
- Plan spaces to include space for you as an intentional teacher and pedagogue.

(Hansel, 2017; Hobenshield Tepylo et al. 2015)

Posing design challenges with children!

Design Briefs:

1. Design and engineer a marble track

- Collect materials including blocks and loose parts
- Engineer your design
- Test it with a marble and a popsicle stick to push marble around track. You could even use a golf ball or ping pong ball and straw to blow.
- Draw it!

2. Design and engineer a 3D symmetrical building

- Explore internet for examples of human-made symmetrical architecture for inspiration and provocations (e.g. Taj Mahal, Eiffel Tower)
- Have children work together with a partner or independently on their own to represent the design
- For older children: Draw your design first – plan what you are going to make.
- Engineer your design
- - Draw it!

Guiding deeper engagement in block play

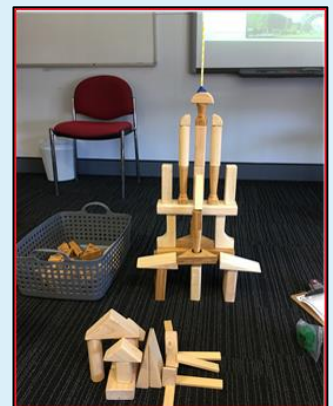
(Hansel, 2017)

Asking questions to guide observations

- What do children already know about block building?
- What do children talk about and wonder as they are building?
- What do I notice as I observe children building?
- What role will I play in this block investigation?
- What strategies could I employ to extend and deepen the children's thinking?

Using provocations

- Pose design challenges and design briefs
- Engage children in project work, embed construction activities into other areas of play (e.g. dramatic play, music)
- Encourage children to represent their designs (provide clipboards in the block area).
- Provide non-traditional materials in block area



Asking open-ended questions

- I wonder if.....?
- What could we do.....?
- Can you find a way to.....?
- What would happen if.....?
- Why do you think that happened.....?
- What did you notice about.....?

Mathematics, engineering and design

Exploring symmetrical design

- Children explore symmetry by designing reflective and rotational symmetrical patterns with blocks

Exploring patterns

- Children explore repeating patterns with blocks

Comparing and measuring

- Children use blocks and other materials as measuring tools to compare lengths, heights and widths of their designs

Project work

- Children engage in groups projects linked to interests and themes that have emerged through play

Representing designs

- Provide clipboards and drawing tools in the block area for children to engage in design and also represent their engineering masterpieces.
- Talk about changes and modifications they have made

Other ideas: Use non-traditional materials and loose parts to add to constructions and enhance imaginative play in the block area (e.g. tins, CDs, stones, beads, carpet squares, material, paper rolls)

Remember to be the intentional pedagogue: plan, scaffold learning, question and provide thoughtful provocations!

“.....the pleasure of blocks stems primarily from the aesthetic experience...learning results from the imaginative activity, from the need to pose and solve problems.”
(Hirsch, 1984)

Resources



To find out more about some wonderful sustainable bamboo blocks featured in the workshop, that are designed in Australia by Steven Kidney-Brooke visit

www.blockplay.com.au To order, email: sales@blockplay.com.au



References

- Hobenshield Tepylo, D., Moss, J., Stephenson, C. (2015). A developmental look at a rigorous block play program. *Young Children, NAEYC*.
- Hansel, R.R. (2017). *Creative Block Play: A Comprehensive Guide to Learning through Building*, Redleaf Press: St Paul, MN.
- Hirsch, E. (1984). *The Block Book*. National Association for the Education of Young Children: Washington.
- MacDonald, A. (2018). *Mathematics in Early Childhood Education*. Oxford university Press: Victoria, Australia.