DOCUMENTATION, ASSESSMENT AND PLANNING RECORD

Context:	**Observation Date**: **Group**: Four children aged 4–5 years. **Context**: Small group STEM learning experience using wooden blocks and recycled materials to design and build a bridge. **Observation Notes**: They gave the children this challenge, "Can you make a bridge that can support the toy cars across?" They started right away to look at the materials available: wooden blocks, cardboard tubes, and craft sticks. Experimentation on trial and error level, they talked about what kinds shapes and significant positions would make the bridge much more efficient. One of them proposed a triangle shape to make the bridge stagnant, whereas another tried to experiment on the bridge and kept weighing different weights. The teacher prompted cogitating making her pose queries that were open-ended and stimulating companionship intellectually. The team cheered after the bridge held the entire cars of toys.

DOCUMENTATION

ASSESSMENT

Each portion of the documentation above is to be reflected on and identified domains, milestones and dispositions must be linked to where the skill was demonstrated in the observation and referenced.

Domains	Milestones	Dispositions
1. Cognitive: Problem-solving, pre-engineering knowledge, cause and effect-reasons (Vygotsky, 1978). 2. Languages and Communication: Dialogue, exchange of ideas, thought explanation, bargaining of positions. 3. Fine Motor: Using small construction material in an accurate way. 4. Social-Emotional: Working together, sticking with it, sharing success.	4-5 years: Ability to solve problems cooperatively, apply technical language, and display ability to concentrate (DEEWR, 2009).	4-5 years: Ability to solve problems cooperatively, apply technical language, and display ability to concentrate (DEEWR, 2009).

LEARNING and CURRICULUM

Each portion of the documentation is to be analysed for learning that is occurring and the curriculum areas the children are engaging in

Learning	Curriculum Areas
The children learnt about STEM, balance, stability, as well as weight distribution, as they also learned team working skills (Siraj-Blatchford, 2009).	• STEM: Science Technology, Engineering and Mathematics. • Language & Literacy (co-operative discussions). • The Arts (design and creativity).

THEORY and FRAMEWORKS

Development and Education Theory	Early Years Learning Framework Principles, Practices, Outcomes
• **Constructivist Theory of Piaget** Practical experimentation enabled the children to build up knowledge by way of manipulating materials, dynamically (Piaget, 1952). • **Sociocultural Theory of Vygotsky**	**Principles**: to expect high, respect diversity, to partner with children. **Practices**: Teaching and learning through play, intentional teaching and responsive interactions. **Outcomes**:

Together problem resolution and educator scaffolding facilitated a more profound comprehension (Vygotsky, 1978).	Outcome 1: Good sense of identity. Outcome 4: Engaged confident learners. Outcome 5- competent communicators.

PEDAGOGICAL SKILLS AND KNOWLEDGE

Each portion of the documentation is to be analysed for pedagogical skills and knowledge demonstrated by the educators.

Play-based Pedagogies	Teaching Strategies	EYLF Educator Evidence	Child Development
Loose part activity that involves creativity and experimentation through open-ended STEM challenge (Edwards, 2017).	Creating structures (and encouraging hypothesis-testing, etc.), prompting questions, and helping peers give feedback (Fleer, 2021).	Children were inclined to problem-solving, they performed tests, and communicated the outcomes effectively	Improved problem solving as well as, fine motor coordination and cooperation abilities.

PLANNING

Objective for future holistic learning and development

To help foster STEM exploration through the introduction of more complex design problems with the incorporation of measurement and pattern recognition.

Learning Experience

Learning experience name		Brilliant Bridges STEM Challenge
Experience rationale		Inspires critical thinking, teamwork and introduction of early engineering ideas (DEEWR, 2009).
Development and learning goal:		• Utilise problem solving strategies on workplace issues. • Write in mathematical as well as descriptive terms. • Labor as a team towards common objective.
Experience outline:		Offer textures and size-different materials. Promote building design pre-sketches prior to construction. Test bridges of various loads. Consider collectively what and why went well.
A list of materials required with photo(s):		Wooden blocks, cardboard tubes, craft sticks, string, and toy cars, measuring tape
EYLF child evidence links		Outcomes 1, 4, 5.
Implementation plan	**Introduction**	Introduce the bridge challenge.
	Body	Design, test and adjustments.
	Conclusion	Group learning outcome discussion
	Engagement questions	1. Which type of a bridge is going to be stronger? 2. But how shall we ever get it balanced? 3. What will be the case when we add more weight?"

ACTING and DOING

Play pedagogies	Loose parts to build in an exploratory way.
Teaching strategies	Promoted problem-solving, modelled testing and revision of designs with a peer, who led.
EYLF links	In keeping with Outcomes 1, 4, 5.
Child development	Acquired resilience, collaboration and space thinking skills.
Documentation and/or digital evidence of implementation, acting and doing	

REFLECTING and REVIEWING

How did the children respond? Did they achieve the learning objective? Were there any unexpected outcomes? What was your role? How did you support and teach the children? Would you do anything differently? Where to next?

Children showed much interest getting involved in experimentation and perfecting techniques of bridge design until they succeeded. STEM learning, communication and persistence were enhanced by the activity. In the future, real measuring tools shall be introduced as learner takes his/her engineering skills to new extensions and fuses construction activities with mathematical decision making along length, weight and balance issues that matter more.

References

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- Edwards, S. (2017). Play-based learning and intentional teaching: Forever different? *Australasian Journal of Early Childhood, 42*(2), 4–11. https://doi.org/10.23965/AJEC.42.2.01
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- Piaget, J. (1952). *The origins of intelligence in children*. International Universities Press.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.