

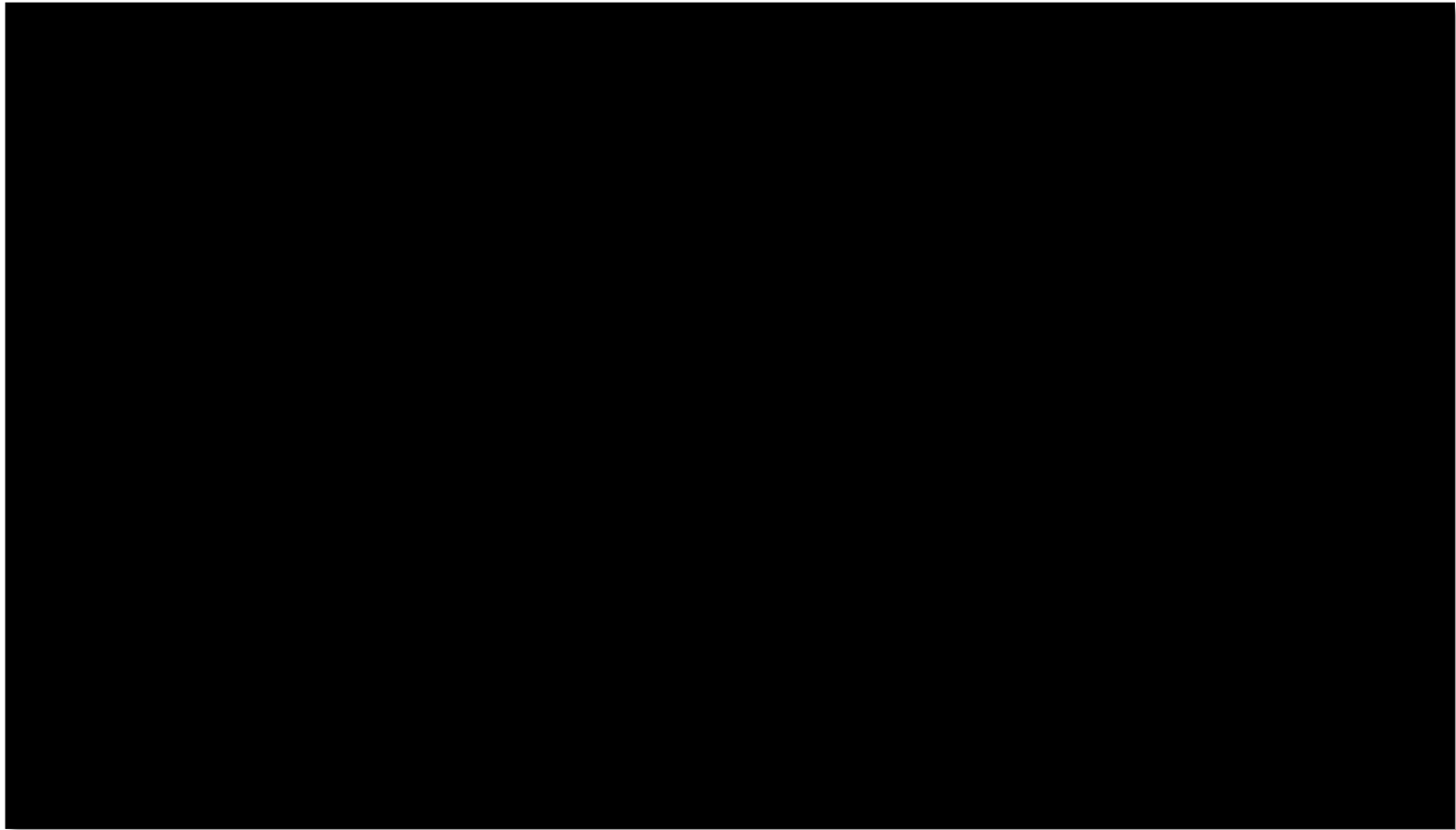
# Creating contemporary STEM learning ecologies to support transition

The STEM Bridge research project



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‘STEM education in the early years provides a context for designing active learning environments that connect with children’s natural curiosity about their world. It engages children in authentic investigations, using critical and creative thinking in systematic ways to build knowledge, acquire skills and cultivate confident dispositions for STEM learning.’ (Yelland, 2019)



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The STEM (Science, Technology, Engineering and Mathematics) Bridge research project was initiated by the Department for Education in South Australia in order to create contexts for collaborations between preschool educators, Reception teachers and leaders in six sites across the state.



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6 STEM Play  
Inquiry Project

6 STEM  
Works sites

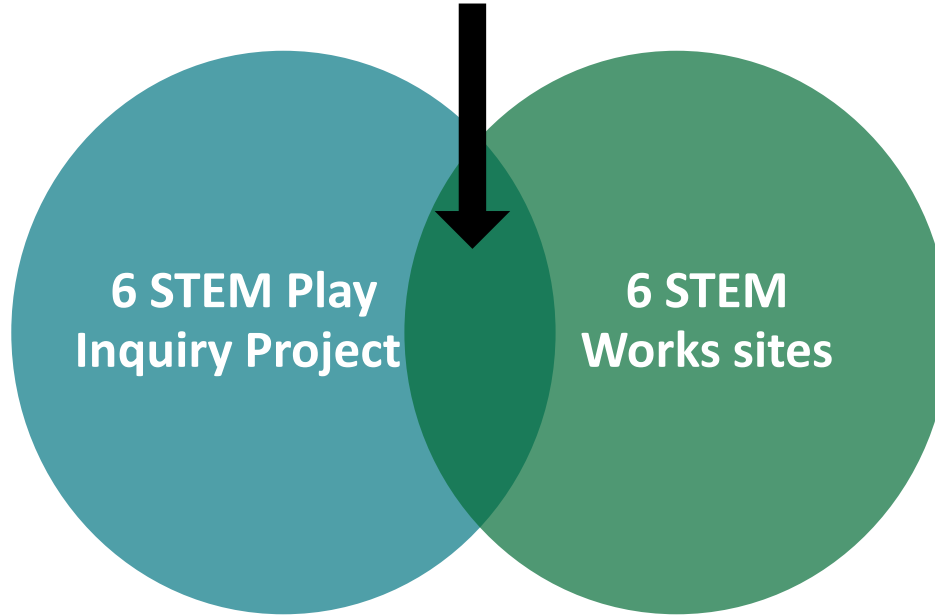


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# The STEM Bridge research project



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Using **STEM learning** as the context, the focus of the project was on **building bridges** to support the **transition of learners** between preschool and school.

### Research questions:

- In what ways can preschool and reception teachers **collaborate** to support continuity of pedagogy in STEM and facilitate transition?
- Is a shared STEM learning vision useful **context** for encouraging collaborative learning design for preschool and reception learners?
- What **pedagogies** are enabled in this collaboration and how do they support curiosity and critical and creative thinking?



# Early Conceptualisations of STEM

- *STEM*
- *Play based learning*
- *Documentation*
- *Pedagogy*





# The collaborations

## **Educators met regularly to collaborate and discuss their teaching ideas**

- Early Childhood leader (ECL)
- School Principal/Curriculum leader
- Preschool Director and teacher
- Reception teacher
- Project Officers from the Department for Education
- An academic from Flinders university

This enabled professional conversations around:

- Child Voice and advocacy
- The practices of thinking and generating questions about the educators own practice
- Authentic child led learning
- Extending play based pedagogies into a school context



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# The challenges

## **Perceived challenges in planning for children's STEM learning in different early years contexts:**

- Early Years Learning Framework vs Australian Curriculum
- Adult /child ratio
- Documentation and assessment of / for children's learning
- Environments and materials needed to support children's exploratory learning, in particular critical and creative thinking



# STEM learning scenarios **were** a useful means of supporting transition and learning from preschool into the foundation year of school

This enabled professional conversations around educators and sites own practice:

- Child Voice and advocacy
- The practices of thinking and generating questions about the educators own practice
- Authentic child led learning
- Extending play based pedagogies into a school context



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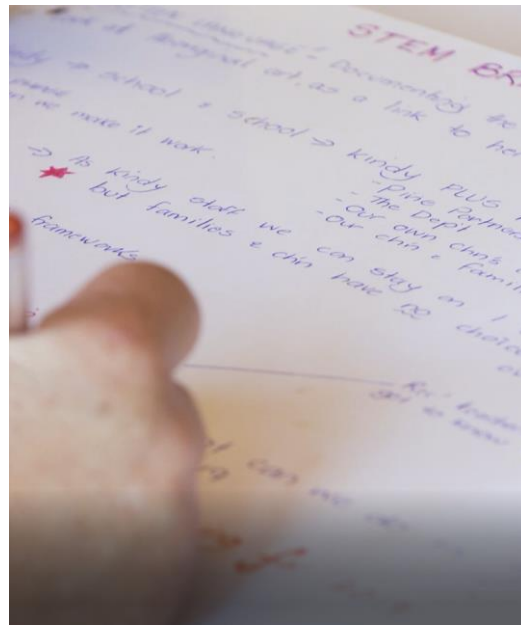
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# Documentation of the learning

All participants were involved in documentation and critical reflection

- Childs Inquiry
- Educators Inquiry
- Meta inquiry – Flinders University and the SA Education Department

Short documentary and accompanying resources from each site – capturing the voice of the educators and the leaders and the pedagogical shift



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Beyond traditional learning environments to environment's that embodied:

- Conversations
- Questioning
- Noticing
- Describing analysing and recording
- Re-launching ideas and inquiries
- Inquiry based learning



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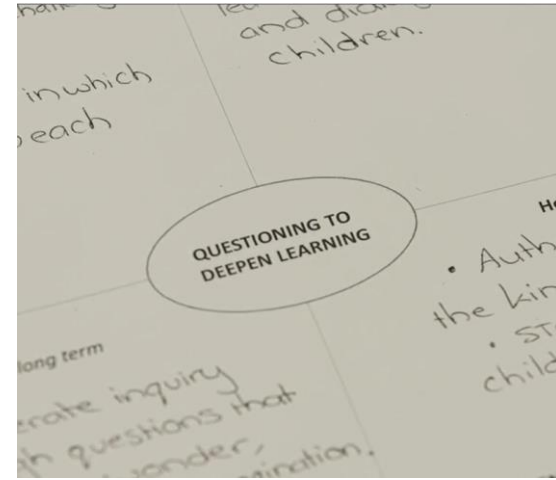
# Beyond traditional learning environments



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## *“Why is it so quiet in the Wirra today?”- Cocoa*



**Re-launching** was a method used in both contexts to: remind student's of past questions, investigations or theories and to deepen their exploration and promote ongoing learning.



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# Dialogue: Questioning and *conversations*



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# Findings

The project:

created a context to extend the educators ***pedagogical repertoire***, and having access to the professional language to articulate the shift in pedagogies over the course of the year.

**elevated pedagogical conversations** around children's voice and advocacy, the practices of noticing and generating questions as the basis of investigations, and extending play-based inquiries into the school context.

In re-thinking the ***learning ecologies*** that the young children were immersed in, the educators reflected on the changes in their ideas and attitudes to learning over the year.

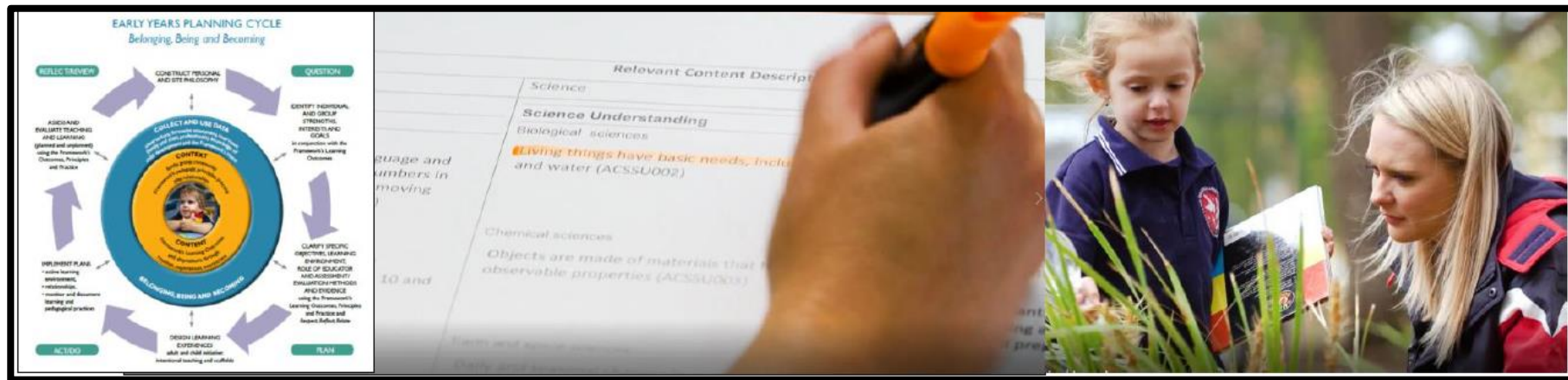


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The educators highlighted their increased awareness about the value of flexible approaches to the use of **space and shared materials**, to build the connections between the preschool and school environs, and approaches to pedagogies and learning. They also reflected on the ways in which their **different curriculum imperatives** could be incorporated into these **changing learning ecologies**. Finally, the educators reflected on the shift from a **traditional view of transition as being 'school ready'** to one in which discussions of pedagogy were elevated to focus on the learner.



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# STEM QUEST

<https://dlb.sa.edu.au/stemeymoodle>



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*“This project has provided me with the opportunity to experience and support learners in a play-based environment. Educators mentor and support each other around possibilities and missed opportunities as we reflect and modify our practices. For example.... Feeling supported and having permission to continue with sustained interactions in play spaces.” Teacher, Reception Class*

*One sites story*



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