



# STEM Bridge research project

## STEM learning: a bridge to wellbeing

### INTRODUCTION

In 2018, educators from Park Terrace Kindergarten and Port Lincoln Junior Primary School participated in the **STEM Bridge** project, researching the practices that support children’s STEM learning as they transition from preschool to school. The project gave educators the opportunity to think differently about environments and structures that most effectively support students’ social and emotional wellbeing as they to continue to learn through play. The results from Port Lincoln’s research highlight the benefits of continuing to offer students an open learning environment that provides a choice of indoor and outdoor spaces and the staffing and structures that improve this.

### BACKGROUND

Port Lincoln Junior Primary School independently started to investigate the use of exploratory play to support and extend students’ learning in the early years of school, and the STEM Bridge project provided an opportunity to extend their research. In the initial phase, educators and leaders from both sites discussed the project, sharing their initial thoughts, opportunities and challenges.

Before the STEM Bridge project, the school’s considerations around exploratory play led them to open two classrooms into one larger space for short periods as one way that might support learning through play. During shared visits, school teachers observed how preschool children were provided flexibility to choose how and where they engaged in learning, with both the indoor and outdoor environments available throughout the day. The school teachers noticed a deeper level of engagement by children when they were leading their own learning. The staff wondered how they might use STEM learning as a catalyst to expand students’ exploratory play in outdoor environments with opportunities for them to identify real-world problems and design solutions.

The school teachers also talked about the students’ wellbeing and the limited options available to them when faced with challenging behaviours. The school teachers subsequently wondered about how they might more effectively engage students with challenging behaviours in learning – given the limited options available to them within schools and an awareness that removing students from the classroom can foster a negative attitude to learning and often disrupt the rest of the class. They recognised a lower child/adult ratio in the preschool gave the educators the opportunity to notice and respond, in a timely manner, to behaviours that may impact on the children’s wellbeing and learning. Preschool educators also used a consistent language to name emotions and support children on specific occasions. The preschool educators shared concerns that the progress many children made in regulating their behaviours could be at risk without a consistent approach and language when transitioning to school.





## THE RESEARCH

Following their initial discussions, the educators identified two research questions to explore:

- What structures and environments best support the students' STEM learning as they transition from preschool to school?
- How can we support the social and emotional wellbeing of students to improve their learning outcomes?

In response to both questions, the school combined the reception classes into a larger class with two teachers and opened the classrooms up to make a single space. The indoor environment adjoined a small outdoor area, which was previously under-utilised and lacked material suitable for rich exploratory play. With limited funding available, the students and families helped reimagine the space. The school held a working bee with teachers, students and families over one weekend to overhaul the outdoor area. Open-ended materials and loose parts were donated to support students' exploratory play.

Now, with two teachers in the classroom, they found they were better able to assess and respond to the individual needs of students as necessary. One teacher could support a student experiencing conflict or having difficulty self-regulating before it became a bigger issue, while the other continued the lesson, allowing the rest of the students to continue learning uninterrupted. Additionally, during exploratory play, one teacher could remain indoors and the other outdoors, giving students a choice of environments, both of which had a teacher present to observe, document and build upon their emerging scientific and mathematical ideas.

The school teachers also changed the way they timetabled their day. In the morning, students were invited into the classroom for a flexible period of small-group exploratory play. The morning session served several functions, allowing:

- students who arrive in a staggered fashion to enter the classroom without feeling lost or like they had missed out on learning, and without disrupting the class
- time for the teachers to have conversations with students on an individual basis to assess how they were feeling, their emotional state and their preparedness for learning that day
- time for students to pursue interests and become more intentional in their exploratory play, providing more time for teachers to identify learning.

As the two sites are co-located, small groups of reception students returned to preschool during playtime. This allowed the preschool and school educators time to observe and reflect on the learning and the wellbeing of the children as they engaged in exploratory play.



'On the surface, it may appear that this project was not about STEM. However, we knew our children had a strong desire to engage in STEM learning and when we promoted their continued exploration – created environments and practices which fostered their engagement, autonomy and wellbeing – their transition to school significantly improved.'

Gillian Jenkins – Educator,  
Park Terrace Kindergarten

## THE FINDINGS

Over the course of the research, all educators:

- deepened their understanding of what, how and where learning happens during exploratory play
- noticed more opportunities for STEM learning during exploratory play in the more open and richer indoor/outdoor environment
- saw fewer issues with behaviour and self-regulation and a higher level of engagement and collaboration during exploratory play
- built stronger relationships with students, which improved social and emotional wellbeing and consequently improved learning outcomes.

The teachers found that team teaching in a rich, open environment with indoor and outdoor spaces provided flexibility to better facilitate exploratory play in small groups, observing and supporting students in their learning. Inviting them into the classroom through an exploratory play session improved daily transition, engaged students, reduced disruptions and gave teachers time to talk to each student to prepare them for learning. The changes in the physical environment, with a much richer outdoor space, a more open indoor space and freer movement between them, allowed for a greater range of exploratory play, in which the teachers could more readily identify elements of the Australian Curriculum and more effectively plan for authentic STEM learning.

The school found that having two teachers in the classroom provided a welcome flexibility and was a key factor in improving the social and emotional wellbeing of the class. This resulted in fewer disruptions and a more positive collaborative environment; it allowed teachers to develop personalised strategies for students, improving outcomes and building stronger relationships with each individual. Teachers and families saw significant value in a collaborative approach to developing consistent language for talking to students about behaviour, self-regulation and emotions. Students identified as potentially struggling with transition in the reception classroom, instead built on their positive progress from preschool. Ensuring that the students felt secure in the classroom produced more confident and enthusiastic learners.

