

QUALITY SCIENCE EDUCATION IN THE EARLY YEARS: A CASE STUDY OF ENGAGEMENT WITH THE LOCAL COMMUNITY FOR AUTHENTIC PROFESSIONAL LEARNING.



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THE STIMULUS OF THE PROJECT:

“It depends on the teacher’s awareness, to bring science to the surface, to make it visible for the children, because if they’re not aware then it will pass and it does not go anywhere”

(Campbell, Jobling & Howitt, 2015, p. 21)

- How can we assist educators to improve their knowledge, skills, and dispositions towards the use of science-related activities through on-site professional development?

WHEN, WHERE & WHAT: THREE CASE STUDIES

- The project visited monthly across a 10 month period three (3) case study sites – Long day care settings:
 - One on a University Campus (not ECU)
 - One as part of a school / church community
 - One was the Hub of a community parenting program
- Utilised the Preschool Rating Instrument for Science (PRISM) and the science elements of the Early Childhood Environment Rating Scale - Revised (ECERS-R) to examine the environment before and after implementation
- Interviewed staff with elements of the Preschool Teachers' Attitudes and Behaviours Towards Science (P-TABS) in the questions both at the beginning and the end of the project
- Presented a staff professional learning session sharing stories from best practice site visits
- Modelled science exploration with the materials they had prepared within the learning environment on each visit

FOCUS CASE STUDY:

- Two rooms in the Early Learning setting (shared space and program)
- 3-5 year-olds
- Setting on a University campus - access to surrounding parkland and facilities
- Two early childhood teachers and two education assistants in the rooms
- First visit – *Birds of Prey* incursion



ENVIRONMENTAL REVIEW: PRISM (PRE)

Checklist Item	In class during observation	Evident but not on display
Materials		
Materials for biological and non-biological science explorations	X	
Materials to support reading about and representing science	X	
Staff Interactions		
Classification and seriation	X	
Science explorations, experiments, and discussions	X discussion during incurs	
Observing and predicting	X	
Recording science information	X	

ENVIRONMENTAL REVIEW: ECERS-R NATURE / SCIENCE ELEMENTS (PRE)

Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
<p>1.1 No games, materials, or activities for nature / science accessible</p>		<p>3.1 Some developmentally appropriate games, materials or activities from two nature / science categories accessible 3.2 Materials accessible daily 3.3 Children encouraged to bring in natural things to share with others or add to collections</p>		<p>5.1 Many developmentally appropriate games, materials or activities from three categories accessible 5.2 Materials accessible for a substantial portion of the day 5.3 Nature / science materials are well organised and in good condition 5.4 Everyday events used as a basis for learning about nature / science</p>		<p>7.1 Nature / science activities requiring more input from staff are offered at least once every 2 weeks 7.2 Books, pictures and / or audio visual materials used to add information and extend children's hands-on experiences</p>

OUTDOOR ENVIRONMENT



OBSERVATIONS ACROSS THE VISITS

- Responded well to the PL session that introduced ideas from the Melbourne settings
- Overall felt parents would be happy with messy play and water-based experiences that could be incorporated into science
- In response to the presentation and in preparation for the observation visit, staff commented:
 - “the girls have been inspired by what you showed us in your presentation and have adapted the ‘bush walks’ to suit our slightly more urban surroundings; the children will go on 5 excursions to different natural areas over a series of 5 weeks to explore different ecosystems i.e. river, beach, lake, bush– Matilda Bay, Kings Park Naturescape, City Beach, Kings Park DNA tower & treetop walk, and Herdsman Lake”
- New resource books were purchased and staff accessed these

OBSERVER FEEDBACK (ELAINE)

- Both [educators] were interested in how scientific investigations could happen within the classroom using what was already there. Here are enthusiastic educators who are loving the idea of their nature excursions but had NOT thought about using what was 'here' (like the air-conditioner and door hinges, elastic and spine). Listening to children's questions and evoking interest in things surrounding them seemed natural enough and released the pressure to contrive science 'things'.
- The environment was uncluttered and well maintained. It had a sense of purpose and place for resources that encourage deep learning experiences (as opposed to superficial experiences). Resources, such as magnetic blocks were open-ended, clay modelling enabled creativeness, magnetic fishing encouraged risk taking and the 'dinosaur park' brought creative play.
- The response from both educators was refreshing as now they will be looking for opportunities, based on science according to everyday use, and see that science as more than biology.

ENVIRONMENTAL REVIEW: PRISM (POST)

Checklist Item	In class during observation	Evident but not on display
Materials		
Materials for biological and non-biological science explorations	XX	
Materials to support reading about and representing science	XX	
Staff Interactions		
Classification and seriation	XX	
Science explorations, experiments, and discussions	XX	
Observing and predicting	XX	
Recording science information	XX	

ENVIRONMENTAL REVIEW: ECERS-R

NATURE / SCIENCE ELEMENTS (POST)

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OVERALL RESULTS FOR THIS SITE

- There was improvement in the environmental rating in terms of the interactions of the educators and their awareness of science
- The two were on the same page and the children were really enjoying the nature walks and excursions to various playscapes
- Still quite biology based when other options may be there
- Concerns were present as one of the educators was leaving at the end of the year and there were concerns of how the momentum would be maintained once that occurred

KEY LEARNINGS

- The environment did have small improvements but it was the interactions that were the key driver for the improvement in this case study site
- The modelling of good practice had a direct impact on the staff within the environment who adapted to meet their own setting
- Educator awareness of science and interactions within this domain were key to success and this was under threat with upcoming staff changes
- Connections with the local environment were critical in the growth of science for these educators and the children in their care

QUESTIONS & CONTACT



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