

Keywords:

Early Childhood,
Gender,
STEM,
Identity,
Pedagogy

Learning areas:

Integrated STEM

There is a world-wide phenomenon that highlights that fewer women than men choose careers in STEM areas (National Research Council 2009). Improving access for girls in STEM has not solved the problems of lack of interest and retention, leading researchers to attempt to understand how girls experience STEM in schools and early childhood. The growth of young girls' STEM understandings is influenced by multiple factors as demonstrated by recent research (Hobbs et al, 2017).

One of these is the development of a girl's STEM identity which relies on interaction with significant adults/others and the availability of a positive STEM learning environment. While research (Campbell et al, 2020) reports that in the early years at school, girls have equal or greater achievement scores in both mathematics and science, girls often do not see themselves as strong in these subjects. There is also considerable evidence that gendered roles are apparent early in pre-school, for instance where girls are socialized to 'do the right thing' while boys are encouraged to explore more and take risks. It is clear, from the literature and from our informants, that the gendered construction of identity begins very early, and that this extends to orientations to STEM phenomena, including the creation of interests and perceptions of self-efficacy. (Baxter, 2017).

Undertaking research into early childhood STEM learning in bush kinders with four-five year old children across 2015-2020, our initial observations indicated that children's play appeared 'genderless'. We decided to investigate this more closely, undertaking further research to understand the components that might be affecting this. An ethnographic approach was applied to our research. Ethnographical methods can open up lines of inquiry and enable researchers to develop close and extended interactions over time, building relationships and trust with teachers, educators and children (Madden 2012; Speldewinde, Kilderry and Campbell 2021).

Data consists of the documentation of researcher observations of children and educators, interviews with educators and educators' noticing and comments. We highlight the STEM disciplines the girls were experiencing, using a number of vignettes and consider the opportunities that exist for girls to develop STEM identity in this new context in Australian early years' education. We will argue in this paper that the bush kinder settings in Australia provide young girls with opportunities to develop their STEM identity through their social interactions, but also that bush kinders act as enablers of STEM learning.