

Maths in the Play World of Kindergarten

Nadine Meredith

Catholic Schools Parramatta Diocese

nmeredith@parra.catholic.edu.au

Alison Busuttil

Catholic Schools Parramatta Diocese

abusuttil2@parra.catholic.edu.au

Play is a promising setting for early mathematics education that incorporates the children's perspective into teaching (Ginsburg, 2006). Recent research has indicated that the early years is a time to engage children in a range of mathematical ideas to develop their mathematical capability (MacDonald, 2018). However, tensions can arise for teachers of the early years of primary school between providing opportunities for mathematical play experiences versus more formal guided instruction lessons. Teachers in the following study did not seek to choose one approach or the other, but rather investigated whether planned play experiences at the start of the day in Kindergarten (Foundation year) contributed to students using their mathematical ideas later in the day (or week) during their daily mathematics lesson.

A group of Kindergarten teachers, and their school leaders, from nine schools in the New South Wales Catholic Schools Parramatta Diocese engaged in professional learning. This learning focussed on developing young learners' oral language and inquiry skills in the early years of school through play. In parallel with this learning, two of these nine schools were part of the Exploring Mathematical sequences of Connected, Cumulative and Challenging tasks (EMC³) Research Project (Sullivan et al., 2020). While regularly supporting one of these schools during the EMC³ project, the teachers combined the pedagogical approaches of mathematics inquiry and mathematical talk into the children's play experiences. As Helenius et al. (2016) noted, "a teacher's active participation in the play could contribute to children learning more about mathematics" (p. 154).

The teachers regularly reflected on their role during the children's play using the continuum of play-based learning (Pyle & Danniels, 2017), in particular inquiry play, collaboratively designed play, and playful learning. The lead teacher noted a Kindergarten teacher's insight that, "When you play with them, you get a better understanding of their maths knowledge." They discovered there were more opportunities to notice, explore, and talk about mathematics, and help support their Kinder students' mathematical development, than they initially anticipated. Through the teachers' active participation in the Kindergarten children's play world, they were able to gain deeper insights about their students' understanding of early mathematical concepts, mathematical thinking, and mathematical development in a playful way. Research related to this study is continuing.

References

- Ginsburg, H. P. (2006). Mathematical play and playful mathematics: A guide for early education. In D. G. Singer, R. M. Golinkoff, & K. Hirsh-Pasek (Eds.), *Play = learning: How play motivates and enhances children's cognitive and social-emotional growth* (pp. 145–165). Oxford University Press.
- Helenius, O., Johansson, M. L., Lange, T., Meaney, T., Riesbeck, E., & Wernberg, A. (2016). When is young children's play mathematical? In T. Meaney, O. Helenius, M. L. Johansson, T. Lange, & A. Wernberg (Eds.), *Mathematics education in the early years* (pp. 139–156). Springer International Publishing.
- MacDonald, A. (2018). *Mathematics in early childhood education*. Oxford University Press.
- Pyle, A., & Danniels, E. (2017). A continuum of play-based learning: The role of the teacher in play-based pedagogy and the fear of hijacking play. *Early Education and Development, 28*(3), 274–289.
- Sullivan, P., Bobis, J., Downton, A., Hughes, S., Livy, S., McCormick, M., & Russo, J. (2020). Ways that relentless consistency and task variation contribute to teacher and student mathematics learning. In A. Coles (Ed.), *For the learning of mathematics monograph 1: Proceedings of a symposium on learning in honour of Laurinda Brown* (pp 32–37). FLM Publishing Association.

(2023). In B. Reid-O'Connor, E. Prieto-Rodriguez, K. Holmes, & A. Hughes (Eds.), *Weaving mathematics education research from all perspectives. Proceedings of the 45th annual conference of the Mathematics Education Research Group of Australasia* (p. 591). Newcastle: MERGA.