

Assessing young children's literacy and mathematics understandings



Collette Tayler

The University of Melbourne

Professor Collette Tayler will act as moderator for this symposium.

Professor Collette Tayler has held the Chair in Early Childhood Education and Care in the Melbourne Graduate School of Education since 2007. Professor Tayler is an educationalist; she conducts local and cross-national studies of the ways that social, family and educational policies and practices affect early childhood education and care outcomes. Her work addresses program access and engagement; public and private investments; program standards and quality; the curriculum and pedagogy applied in different services; leadership and staff development; child and family involvement and program outcomes. Her research seeks to explain both universal principles and contextual variations needed to provide exemplary care and education for young children. Professor Tayler holds a PhD in education from the University of Western Australia.



Joanne Mulligan

Macquarie University, New South Wales

Joanne Mulligan is Professor of Education in the Department of Education Faculty of Human Sciences at Macquarie University, Sydney. Her background is in early childhood and primary teaching and professional development of teachers in mathematics education. She conducts a range of research projects focused on early number and spatial development, including the development of children's multiplicative reasoning, and early algebraic thinking. Over the past decade she has developed the Pattern and Structure Mathematics Awareness Project with children aged four to eight years. She is currently Project Leader of the Opening Real Science program funded by the Australian Government, which is aimed at improving pre-service teacher education in mathematics and science.

Abstract

Current research indicates that young children are capable of developing mathematical concepts and reasoning much earlier than previously considered. The development of mathematical concepts emerges out of children's understandings about pattern and structure from interaction with the real world. An early mathematical assessment interview, the Pattern and Structure Assessment (PASA) focuses on a range of concepts and processes and is linked with mathematical attainment in the ACER Progressive Achievement Tests in Maths (PATMaths).



Maurice Walker

Australian Council for Educational Research

Maurice Walker is a Principal Research Fellow at the Australian Council for Educational Research and currently directs ACER's Monitoring Trends in Educational Growth program (Afghanistan) with assessments in reading, writing and mathematical literacy for Grade 3 and Grade 6 students (via a tablet-based application). Maurice also directs a technical support program for India's national assessment at Grade 10 and is responsible for support to Indonesia's national assessment centre, including strengthening a national computer-based testing program.

Abstract

ACER is piloting early-years technology-based tools, such as the Digital Early Reading and Mathematics Assessment (DERMA). DERMA is an audio-based assessment of early reading and mathematics skills delivered on offline tablets fitted with headphones. The practice program enables young students who have never used a computer before to gain sufficient skill to independently work through the assessment. DERMA promotes the message that reading is a meaningful activity with tasks that model good classroom practices. It also promotes authentic mathematics tasks where students can drag and drop objects to count, sort and compare groups and order numbers. DERMA has been successfully used in Afghanistan in 2014 in a large-scale survey conducted in Dari and Pashtu with Grade 3 students. It has also been successfully used in pilot studies in Lesotho and with remote Indigenous communities in Australia. ACER is currently piloting a version of DERMA for use with Australian students in the first three years of school. This workshop session will demonstrate DERMA and cover the five main reasons for using DERMA: motivation of the students, portability of the medium, validity and content coverage, reliability, and efficiency of gathering sample data.



Prue Anderson

Australian Council for Educational Research

Prue Anderson has worked at the Australian Council for Educational Research managing international and national system-level school assessments of literacy for 16 years. She has developed assessments of literacy for students in the early years of school including extensive diagnostic assessments. Her most recent work in this area has been in the development of interactive computer-based assessments with audio that allow students to independently navigate through the tests.

Her literacy assessment expertise ranges from the early years of primary school through to middle high school. She is currently an expert reading consultant for the 2016 Progress in International Reading Study (PIRLS). She has developed many of the PIRLS reading assessments and delivered scorer training.



Marion Meiers

Australian Council for Educational Research

Marion Meiers is a Senior Research Fellow at the Australian Council for Educational Research. Over several years, she has directed a series of longitudinal studies focused on growth in literacy and numeracy learning in the early years of schooling. Recently, literacy and numeracy development in preschool has been included in this longitudinal research. Other major research interests include curriculum development, assessment, program evaluation, and teachers' professional learning. Marion was a member of the Australian Curriculum, Assessment and Reporting Authority Kindergarten to Year 12 Curriculum Advisory Committee for the *Australian Curriculum: English*. In recognition of her work in literacy education she has been awarded Life Membership of the Australian Literacy Educators' Association.

Abstract

The ACER 1999–2005 Longitudinal Literacy and Numeracy Study (LLANS), and several subsequent studies, investigated growth in literacy learning in the early years of school. A key finding was the wide distribution of achievement at school entry and the next two years at school. A further study with a random sample of Australian children drawn from preschools in the year prior to school entry, the LLANS Transition from Preschool to School, has investigated literacy development from preschool to Year 1. Following the LLANS methodology, one-to-one interview assessments were based on tasks and activities designed to provide information

about students' achievement in critical aspects of literacy: comprehension, reading fluency, phonemic awareness and phonics, concepts about print, and writing. Data were gathered from the preschool students in mid-2012, at the beginning of Foundation in 2013, and in Year 1 in 2014. A wide distribution of achievement across these three years was evident. For example, in preschool, 49 per cent of children knew where to start reading a story, rising to 77 per cent among students in Foundation. These assessments have clear potential for identifying starting points for teaching and planning to support progress in learning.