What can early childhood education and care settings teach us about skills for the 21st century?

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Abstract

Early childhood education and care (ECEC) settings are naturally oriented towards promoting 21st century skills. This can be seen in Australia, where learning is defined as the development of identity, social and emotional skills, problem-solving, and communication skills. A 21st century orientation is also seen in the play-based pedagogies implemented in ECEC settings. A gap, however, exists in the ability of the ECEC sector to communicate its successes. This gap relates to the lack of measurement tools to quantify the quality of the adult–child interactions in ECEC settings, and children's growth in these 21 century skills and abilities. This paper presents evidence on the assessments available to measure children's social and emotional skills and concludes, that while there are assessment tools available to Australian ECEC educators, there is an immediate need to develop new tools that support educators to collect evidence of their impact and to quantify children's growth. This would have the benefit of developing a common language to understand the skills and abilities being fostered in ECEC settings, and support more effective communication with the school sector.

Introduction

Australian ECEC programs are distinctive educational environments that implement holistic practices, supported by pedagogies such as play, to foster thought, interactions and challenge to build new understandings (Department of Education, 2009; Victorian Curriculum and Assessment Authority, 2016). This is seen in the Early Years Learning Framework (EYLF), where learning is described in terms of the development of identity, social and emotional (SE) skills, problem-solving and communication skills (Department of Education, 2009). In order to support this learning, ECEC practitioners aim to implement pedagogies that support both the development of domain general skills – both interpersonal and cognitive – with the recognition that these support lifelong outcomes as well as latter academic (domain specific) achievement. Where the Australian ECEC sector is successful in implementing pedagogies that support the development of these domain general goals, there is much for the Australian education sectors to learn.

Australian early childhood frameworks and national quality standards are written to outline key outcomes that connect learning across developmental domains of children from birth to five years of age. In such documents, the focus is on child growth in the knowledge, skills, dispositions and values that supports their current development and prepares them for life and learning. When the outcomes of the EYLF are presented alongside the general capabilities from the Australian Curriculum and 21st century skills (Binkley et al., 2012), strong alignment can be seen. Table 1 illustrates how the 21st century skills of citizenship, personal and social responsibility, and creative and critical thinking are essential elements of teaching and learning across all education sectors. This paper focuses on the SE domain and the contribution that the ECEC sector can make in establishing a strong base for lifelong development in this area.

Table 1 Mapping of 21st century skills against the Early Years Learning Framework and the general capabilities from the Australian Curriculum

	21st-century skills (Binkley et., 2012)	Early Years Learning Framework (EYLF)	Australian Curriculum: general capabilities
Living in the world	Citizenship – local and global	Children are connected with and contribute to their world	Intercultural understanding Ethical behaviour
	Life and career		
	Personal and social responsibility	Children have a strong sense of identity Children have a strong sense of wellbeing	Personal and social capability
Ways of working	Communication Collaboration (teamwork)	Children are effective communicators	
Ways of thinking	Creativity and innovation Critical thinking, problem solving and decision making	Children are confident and involved learners	Critical and creative thinking
Tools for working	Learning to learn, metacognition Information literacy ICT Literacy		Information and communication technology capability

Social and emotional development

It is vital for young children to be able to establish familiar and safe relationships with peers and significant adults, while expressing, experiencing and regulating emotions (Ashdown & Bernard, 2012). The development of SE skills is fundamental as they relate to the embedded social nature of almost all other skills and abilities. There is a strong theory that children who can establish safe and secure relationships are more advanced in their SE development, but such skills also facilitate interactions that support learning in other domains (Barnett, 2008; Heckman & Kautz, 2012; O'Connor, Cloney, Kvalsvig, & Goldfeld, 2019). Therefore, it can be seen as a strength of ECEC environments for young children to have the freedom to interact with adults and peers in situations that are centred around their individual SE development and other learning needs.

SE skills can be thought of as a progression of increasingly more complex knowledge, skills, and abilities, ranging from early attachment to more advanced social competence (Thompson & Goodman, 2011). Defining exactly what SE skills are, or whether there are many sub-domains, is unclear. The literature describes SE skills in terms of broad concepts such as self and social management and, self and social awareness (Australian Curriculum, Assessment & Reporting Authority, n.d.; Zins, Bloodworth, Weissberg & Walberg, 2007). It also uses phrases such as 'positive peer influences and friendships', 'meaningful adult-child relationships', 'emotional self-regulation skills', 'resilience to cope with stress and challenges' (Organisation for Economic Co-operation Development [OECD], 2005), and the absence of negative behaviours including hyperactivity, introspection, and conduct problems (Goodman, Lamping, & Ploubidis, 2010). However, there is no coherent or agreed description of the sequence of advancing SE skills and abilities (particularly for children aged 0–8 years).

Social and emotional skills assessment

It is a professional expectation that Australian educators will collect evidence to promote children's learning (Department of Education, 2009; Victorian Curriculum and Assessment Authority, 2016). Cloney, Jackson, and Mitchell (2019) have identified tools that are not only appropriate for measuring SE learning, but are accessible and appropriate for Australian educators to use in the classroom. Their recent analysis found several tools that fit this description, including open-source measures such as the *Measuring Early Leaning Quality*

and Outcomes (MELQO) (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2017) and the Social Skills Improvement System (SSIS) (Anderson & Catroppa, 2016). However, only one tool contains a well-described continuum of SE learning – the Early ABLES – a measure currently only available to educators supporting the learning of children with identified additional needs (Department of Education and Training, 2015).

In ECEC settings, desirable assessments would be those that map children's growth in specific SE skills and have classroom application in making decisions about what comes next in learning. Such assessments would provide educators with a shared understanding of how SE progresses and a common language to discuss the knowledge, skills, dispositions and values that young children are learning. It would allow educators to remain true to the beliefs about young children's learning and development by identifying what children can do; as well as for planning and reporting purposes. The assessments would be designed to be used in environments where children play and learn, by mapping development so it could be shared with other educators and service providers, parents/caregivers and the children, to communicate successes and future goals.

This paper will therefore explore the challenge in the ECEC sector effectively measuring children's social and emotional development in order to demonstrate the relationship between high quality ECEC practice and children's developmental outcomes. Such evidence is critical to not only the ECEC sector, but also to the education sector, if it is to collectively learn from the practices of the ECEC settings. This manuscript addresses this through two research questions:

1. What skills are measured by the SE assessments available to ECEC professionals?
2. Can measures of SE assessment that are available to ECEC professionals be used to measure growth?

Method

This manuscript implements a mixed method to address the research questions using a:

1. Qualitative literature review and critique of the available social and emotional instruments
2. Quantitative assessment of one measure of social and emotional skills.

The quantitative data are taken from a five-year longitudinal research project in a southeast Asian country on which ACER is providing technical leadership[1]. This study collected data on the learning and development of more than 3400 children in maths, literacy and social and emotional skills.

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1 Prior to release of the final report, the partner has requested that their name and country not be revealed.

Analytical approach

Assessment tools are identified using the criteria established in Cloney, Jackson, and Mitchell (2019). For each identified assessment tool, the main constructs were measured and compared, along with any published examples of the tool being used to describe growth in SE development.

A linear mixed model (LMM) is fit to the quantitative data to account for the complex residual variance–covariance structure in the estimation of data with repeated observations within children using the lme4 in R (Bates, Mächler, Bolker, & Walker, 2015). As the interest is only in modelling the average trajectory, a second-order polynomial is chosen as the best fit to the data (given by the change in AIC), and the mean intercept and slope parameters are plotted.

Results

Measures of social and emotional development

The instruments identified are summarised in Table 2. It is clear that each of the first three measures (SDQ, SSIS, MELQO) include detailed assessments of negative behaviours. Each also relies predominantly on Likert style items. In the cases where prosocial or helping behaviours are measured, these are limited to simple frequency style assessments, such as: 'How often does (name) offer to help someone who seems to need help? (Never, sometimes, often/always)' (UNESCO, 2017). None of these three measures focus on specific behaviours in specific social contexts and none of them is associated with SE learning progressions or detailed descriptions of SE development. Conversely, the Early ABLES is designed to align with a described scale; however, the measure is severely restricted in its availability and is only available to educators working with children with a developmental delay or diagnosis for a range of disabilities.

When considering growth in SE skills, Figure 1 summarises the differences in two measures' (one for mathematics, the other for SE skills) ability to describe growth over time. The social and emotional assessment has serious ceiling effects and erroneously suggests there is no growth in social skills over time. Both curves are second order polynomials, but in the case of SE skills the growth is essentially flat after approximately one year. This is not because the growth of these children has reached a peak (these children are age 4–5 years at entry to the study), but rather evidence of a measure where the majority of children are in the category 'always' for Likert-style items that mostly reflect the absence of negative behaviours or simple rule-following behaviour.

Conclusion

This manuscript makes the case that Australiana ECEC settings are strongly aligned with the promotion of 21st century skills, especially SE skills. SE skills are prioritised in the EYLF. The focus of pedagogies embedded in play, and oriented to discovery and interactions are theoretically strongly aligned with the promotion of these skills. Together, it is clear that where there are

Table 2 Summary of common social and emotional assessment available to ECEC educators in Australia

Assessment tool	Informant	Sub-domain	Items (no.)
SDQ	parent or teacher (self-report for children 11 years and older)	hyperactivity/inattention	5
		emotional symptoms	5
		conduct problems	5
		peer problems	5
		prosocial behaviour	5
SSIS	parent or teacher (self-report for children 8 years and older)	competing problem behaviours (externalising bullying hyperactivity/inattention, internalising, autism spectrum	38
		social skills (communication, cooperation, assertion, responsibility, empathy, engagement, self-control)	46
MELQO	parent or teacher (direct observation of child by enumerator for perspective-taking/empathy understanding feelings)	perspective-taking/empathy	3
		understanding feelings	1
		social and emotional development	20
Early ABLES[2]	teacher	personal and social capability	

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2 The Early ABLES is not a publicly available tool and users are required to register with the Victorian Department of Education to access materials. Assessment takes approximately 30 minutes.
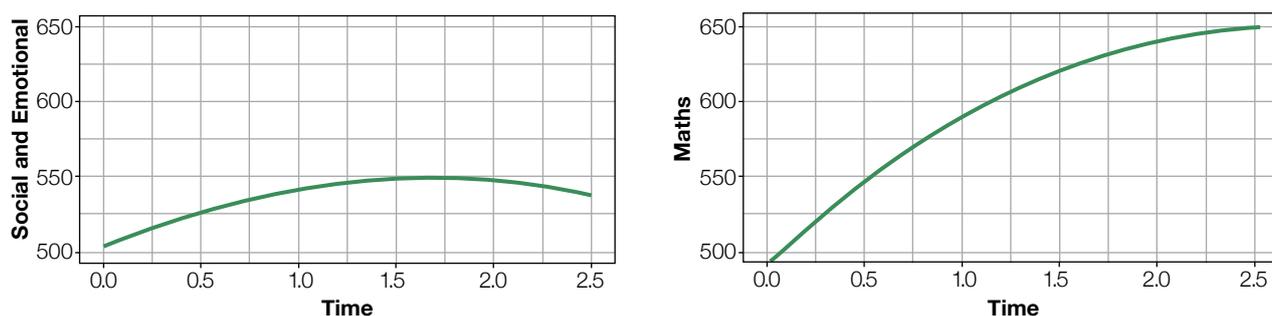
Figure 1 Comparison of mean growth trajectories of children's mathematics and social and emotional development

high quality ECEC settings in Australia, there is much potential for the modelling of best practice in the scaffolding of SE skills.

There are, however, barriers to the ECEC sector demonstrating its impact. There is, at present no coherent description of what SE skills look like as they develop. There is little clarity about what specific curriculum material and pedagogies are optimal for children at different levels of SE development, resulting in there being little in the way of high-quality assessment of SE skills for young children. There is even less if it is considered a perquisite of assessment that it be available and accessible to educators to use themselves.

The available assessment tools that ECEC educators can realistically use in Australia are limited and tend to focus on minimising problem behaviours and knowing classroom rules. Consequently, these tools err on the side of a deficit focus, and place children above and below cut-offs for different clinical definitions of social and behavioural problems (Goodman et al., 2010; Goodman, 1997). While some measures do include aspects of positive behaviours, these are limited to narrowly scoped helping behaviours like sharing (Anderson & Catroppa, 2016; Greenfield, Iruka, & Munis, 2004; Goodman, 1997) and do not focus on more nuanced SE skills, such as navigating conflict and working well in groups (Coles-Janess & Griffin, 2009; OECD, 2005).

Because of this, the data presented in this manuscript show that children's SE skills seem to hit a ceiling. This lack of growth over time is unlikely to do with the acquisition of the full gamut of SE skills, but rather a lack of quality in the measurement to capture higher order SE knowledge, skills and abilities.

Recommendations

The Australian ECEC sector needs to be supported to demonstrate the impact it has in promoting children's SE skills. This support should come from the development of a national SE learning progression,

describing children's SE learning. From this, a set of measures should be developed to allow educators to assess the growth of young children and to communicate this learning to ECEC communities and families. A common learning progression would also provide a shared language and understanding for Australian ECEC educators to engage in continual quality improvement through peer interactions and feedback processes (Cloney, 2018; Cloney & Hollingsworth, 2018).

Any such learning progression should be linked to the national school curriculum, to demonstrate that the growth and acquisition of SE skills is part of a lifelong progression. Such a linkage would support the esteem of the ECEC sector, as it would determine how early learning impacts school and lifelong learning.

Limitations

It should be noted that the associations presented in the quantitative analysis are not conditioned on a full set of contextual covariates and may be impacted by selection effects and this may introduce bias in the magnitude of the effects of the standard errors (Duncan & Gibson-Davis, 2006).

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