INQUIRY INTO EARLY CHILDHOOD EDUCATION AND CARE SECTOR IN NEW SOUTH WALES

Organisation:University of New EnglandDate Received:26 May 2025



School of Education University of New England Armidale NSW Australia 2351

Portfolio Committee 3 – Education NSW Legislative Council Government of New South Wales

June 2, 2025

A submission to the NSW Government inquiry into the early childhood education and care sector in NSW

We refer to the terms of reference provided to the University of New England. As an institution of higher education that delivers initial teacher education and undertakes research in early childhood education and care (ECEC), we would like to respond to:

(b) the quality of ECEC services and the educational and developmental outcomes for children attending ECEC services.

Our response is predicated on the common understanding that children's health is a "crucial enabler for learning and development from birth" and their wellbeing from birth is "both a prerequisite for and an outcome of learning" facilitated by supportive relationships with adults (VCAA, 2016, p. 2). Health and wellbeing are thus threshold conditions for learning.

Our response is presented in five sections, the first three of which should be read as interconnected:

- 1. Quality delivery in ECEC services
- 2. Links berween quality ratings and child outcomes
- 3. The Early Years Learning Framework Version 2.0
- 4. Recommendations
- 5. References

Quality delivery in ECEC services

Early childhood teachers navigate a multifaceted and dynamic environment. Children vary widely in their backgrounds, learning needs, and capabilities. Constrained resourcing, workforce challenges, regulatory compliance, and other demands add to the everyday pressures. To support children's learning in such environments, educators must not only possess strong pedagogical content knowledge, but also demonstrate flexibility, creativity, and the capacity to respond appropriately to the needs of children and their families as they arise (OECD, 2025). **In early childhood education and care (ECEC), quality is a multidimensional construct** that includes teacher qualifications and ratios (structural quality), as well as the nature of educator-child interactions and opportunities for learning (process quality) (Raikes et al., 2023). Raikes and colleagues address the importance of tracking both ECEC access and quality, as well as the critical point that all children should have access to quality, regardless of their family circumstances and where they live.

All stakeholders have a role to play in improving the quality of ECEC: Cohrssen et al. (2023) have argued the importance of 'distributed responsibility' for quality, rather than placing the responsibility for enacting quality solely on educators' shoulders. It is important to note that since the introduction of the National Quality Standards (NQS) (Australian Children's Education & Care Quality Authority (ACECQA), 2017) NSW has achieved remarkable improvements in the quality of ECEC service provision in all seven Quality Areas (see Table 1).

Table 1

	Year		
	2013	2024	
Quality Area 1 Education program and practice	36	4	
Quality Area 2 Children's health and safety	31	5	
Quality Area 3 Physical environment	33	2	
Quality Area 4 Staffing arrangements	14	3	
Quality Area 5 Relationships with children	16	1	
Quality Area 6 Collaborative partnerships with families and communities	18	1	
Quality Area 7 Governance and leadership	31	5	

NQF Q4 Snapshot data summary indicating reducation in percentage of NSW services *"working toward NQS"* by quality area as assessed against NQS, 2013 and 2024

Notwithstanding the improvements in all areas, quality areas most likely not to meet the NQS have remained fairly consistent over time. These are:

Quality Area 1 Education program and practice

Quality Area 2 Children's health and safety

Quality Area 7 Collaborative partnerships with families and communities

The Australian Government is committed to charting a course towards universal access to "high quality, equitable, affordable, accessible and financially sustainable" ECEC (Australian Government, 2024, p. 39) yet the tensions observed in the translation of NQS quality to child outcomes – or, at the very least, the absence of adequate child-level data associated with particular levels of quality – are red flags. In this submission, our focus is on Quality Area 1, the aim of which is "to ensure that the educational program and practice is stimulating and engaging, and enhances children's learning and development".

Table 2

Year*	* Quality Area 1		Quality	y Area 2 Quality Area 3		Quality Area 4		Quality Area 5		Quality Area 6		Quality Area 7		
	National	NSW	National	NSW	National	NSW	National	NSW	National	NSW	National	NSW	National	NSW
2024	6	4	5	5	3	2	2	3	2	1	6	1	6	5
2023	7	5	6	7	3	3	3	4	2	1	2	1	7	7
2022	8	6	7	8	4	4	3	4	2	1	2	2	8	7
2021	10	9	8	11	5	5	4	5	3	2	3	3	9	10
2020	12	12	10	14	7	8	5	7	4	3	4	5	11	13
2019	15	18	13	19	9	14	6	9	4	5	6	9	13	18
2018	16	19	13	18	11	15	6	9	5	6	7	10	14	18
2017	18	21	15	19	14	18	7	9	6	7	9	12	15	19
2016	21	25	17	22	17	22	8	10	7	8	9	13	17	21
2015	23	29	19	25	19	25	8	11	8	10	10	13	19	25
2014	26	32	20	28	21	28	9	13	10	12	11	15	20	17
2013	31	36	23	31	26	33	11	14	13	16	15	18	24	31

Available NQF Q4 Snapshot data (2013 – 2024): percentage of services "working toward NQS" by quality area: national and NSW

Note:

*Typically reported in the first quarter of the following year

Shading: top three quality areas rated as "working towards NQS" (dark grey – highest % of services "working towards NQS", mid grey – second highest, light grey – third highest). Where % of services "working towards NQS" is the same, more than top three are shaded

2013: NSW data: number of services reported as % of total services with quality rating (1,783)

Links berween quality ratings and child outcomes

The only Australian longitudinal study to investigate typical early educational experiences of children, namely the E4Kids study (Tayler, 2016; Tayler et al., 2016), commenced data collection in Victoria and Queensland in 2010, shortly after the roll-out of the original version of the Early Years Learning Framework for Australia (Department of Education Employment and Workplace Relations (DEEWR), 2009).

Children's learning and development trajectories were directly observed between 2010 and 2013 from age three to four years. The sample sites were randomly selected to represent different types of communities in Australia (Tayler et al., 2013) and consequently it can be inferred that the findings would similar to the NSW context. The study found high and moderately high levels of emotional support, moderate levels of room organisation that facilitates children learning and participation in stimulating activities, and **low levels of instructional support** (p. 7). Instructional support is the element of quality most similar to NQS QA1 and most closely associated with cognitive and academic growth (p. 8): "across all ECEC settings in all locations **only one per cent of children experienced 'high-quality' rated Instructional Support** within the play environments". Analysing E4Kids data, Hildenbrand et al. reported:

no relationship between children's verbal ability and the early childhood education and care programme attended, but...children who consistently attended only informal care outperformed children who either consistently attended a formal early childhood education and care service type or attended a mix of formal and informal care. The development of mathematical and verbal competencies between first and second measurements, 1 year later, did not differ between children who attended different types of early childhood education and care (2015, p. 144).

Nearly ten years after the E4Kids study began, Harrison et al. (2019) reported on a small study undertaken in five ECEC services in QLD and NSW to understand and quantify the complexity of educators' work. The results may serve to illuminate the E4Kids instructional support findings.

- Educators spent 13.81% of their time providing "teaching and learning experiences that are deliberate, purposeful, and thoughtful with intent) and either planned or spontaneous" (p. 530) and 3.24% observing, assessing, planning and evaluating children: in total, 17.05%.
- The same study reported that 17.58% of educators' time was spent "being with children" (supervising, playing, and listening/responding to children) and 3.28% of participants' time was dedicated to emotional support. Indeed, this time is important as it includes playing with children, listening and responding to them, providing comfort, and encouraging inclusion. As stated by Rankin et al. (2022) the quality of emotional support is an "integral and potent component of early learning" (p. 1680).
- In addition, 25.73% of educators' time was taken up by routine care activities, 16.84% by classroom organisation and the remainder by multiple other demands.

Whilst Harrison and colleagues' study did not claim to be representative of all ECEC settings nationwide, let us assume that their findings may be extrapolated to infer the implications of **less than 20% of educators' time being spent on the** *education* **component of ECEC**: providing learning experiences that were *stimulating and engaging*, and *enhancing learning and development* (NQS QA1). However, we will also assume that just over 20% of their time (the time spent being with children and playing with children) contributed to an environment that was conducive to children's **emerging executive functions** by supporting children's autonomy, encouraging sustained shared thinking within the context of organized and consistent routines (Madanipour, Garvis, & Cohrssen, 2025) and thus also contributed to their learning. Executive functions (EFs) are broadly defined in the revised EYLF (AGDE, 2022, p. 66) and touched on within the context of perseverance and self-regulation (p. 44) and learning and thinking processes (p. 50). However, Madanipour and colleagues (2025) also report findings that educators' acquire understanding of executive functions-supportive pedagogy through teaching experience rather than through initial teacher education. This is understandable: since the revised EYLF has been implemented for the last two years, educators who completed their qualifications prior to 2023 would have studied courses aligned with a framework that made no mention of EFs.

The cultural and linguistic diversity of ECEC as a sector – both families and educators – reflects the cultural and linguistic diversity of Australia. Principles of inclusion underpin guiding documents (ACTA, 2023; Cohrssen et al., 2021; ECA, 2016) and our nation's rich cultural and linguistic diversity is a valuable asset. Calls have long been made for ECEC educators to be provided with **professional learning that equips them**

to assess and plan for children's language learning to enhance children's sense of identity and belonging, and at the same time, to support children developing peer relationships and experiencing positive transitions to school, where the language of instruction is typically English.

In 2024, national child-level data were examined from five, three-yearly rounds of the Australian Early Development Census (AEDC) (2009 to 2021), the same period for which quarterly National Quality Framework Snapshot documents reported improvements in ECEC quality standards:

In all five developmental domains assessed by the AEDC, scores of children attending any form of ECEC were higher on average over every round of data collection. However, these group average differences remained stable from 2009 to 2021. Improvements in aspects of quality underpinning the EYLF and national regulatory standards may not be sufficient to reduce levels of developmental vulnerability so as to alter the developmental trajectories assessed by the AEDC in a meaningful way in the population (Larsen & Cohrssen, 2025).

Larsen and Cohrssen are frank about the limitations of their analyses. These include the absence of data regarding children's participation beyond a binary did/did not attend ECEC, the absence of data regarding the quality of the ECEC settings attended by children (particularly since attendance at high-quality ECEC is needed to support gains in children's learning and development), and also the absence of educators' teaching qualifications (pp. 27-28). The absence of attendance data in their analysis is highlighted by Harrison et al.'s (2019) findings that many families with vulnerable and disadvantaged backgrounds did not fully access the annual attendance hours available to their children, and also that attendance patterns differed between children enrolled in preschool compared with long day care. Thus, it is likely that differences at a population level between children participating in ECEC and those who did not may reflect multiple confounding variables. This is significant since Tham et al. (2025) similarly confirm that the achievement gap in children's learning outcomes commences long before they enter school. As Australian governments are making important strides towards universal access to high-quality kindergarten, a critical question emerges:

How can improvements in NQS quality assessments be reconciled with the absence of improvements in child outcomes? Interestingly, research using validated measurements has found only "modest" positive associations between regulatory assessments of quality and research assessments of quality:

Despite this association, **quality levels of even exceeding services were at basic levels of quality on average**, as defined by the quality rating scales. This suggests that NQS may function as an important mechanism to draw attention to quality, and ensure a minimum threshold of quality across the sector, while the scales provide possible tools and direction for centres ready to further extend on this base level of quality (2019, p. 377).

Phillips and Fenech's (2023) investigation of educators' perceptions of the Australian quality assurance rating system may also shed light on Larsen and Cohrssen's findings. Participants questioned the accuracy of ratings given that visits are conducted over one or two days, are conducted too infrequently to be a reliable reflection of quality, and claimed that **some services were 'playing the game'** by bringing in more staff when quality assurance rating visits were expected and requiring staff to conduct themselves in a manner that was not typical practice. Certainly, anecdotal evidence from the field supports these assertions and suggest quality ratings may be influenced by structural quality more than process quality despite the heavy weight of empirical evidence that demonstrates the critical contribution of consistently high quality, educator-child interactions (Burchinal et al., 2008; Howes et al., 2008; Torii et al., 2017).

The Early Years Learning Framework Version 2.0

The introduction of Early Years Learning Framework for Australia (EYLF, DEEWR, 2009) as one element of the National Quality Framework, was groundbreaking as it was developed to guide early childhood educators across the country to develop quality early education and care programs and to enhance child outcomes (Productivity Agenda Working Group, 2008). Through a common, regulatory National Quality Standard, national benchmarks were set for ECEC services (Tayler et al., 2018). The EYLF is credited with contributing to the increase in services meeting the NQS.

More than one decade later and following a consultative process, the EYLF (DEEWR 2009) was updated by an Approved Learning Framework consortium. The revision process was transparent throughout. A Stage 1 report advised that input of stakeholders through surveys, focus groups and drawing/text data collected from children and young people had been elicited and was being analysed. Stage 2 presented a discussion paper informed by the findings of Stage 1, inviting feedback through further surveys, written submissions, and the gathering of perspectives from children (ALF Consortium, 2021b). Opportunities to strengthen the EYLF (DEEWR, 2009) were identified and included "providing more guidance and **examples of what the learning could look like** and **how educators could promote learning** for different age groups and diverse learners" and "strengthening the focus in Learning Outcome 4 on young people's thinking, development of conceptual thinking (e.g., **science and mathematics**) and reinforcing the use of the **language of learning**" (ALF Consortium, 2021a). The importance of very young children being afforded opportunities to engage with science had been stated several years earlier:

We need a reliable pipeline of specialist STEM skills; but we also need informed workers, users and consumers who have the curiosity and imagination to be part of the broader STEM economy. This must be underpinned by lifetime engagement for all Australians with STEM, beginning in childhood and constantly renewed as knowledge and technologies expand (Office of the Chief Scientist, 2014, p. 21).

The consortium published a discussion paper in which they acknowledged:

...in terms of the EYLF the critiques include the difficulty experienced by educators enacting the planning cycle due to the limited "learning trajectories" provided in the learning outcomes (Cohrssen, 2021). White and Fleer (2019) found that educators implementing the EYLF struggle with the planning and assessment aspects and would like more examples in the Framework (Barblett et al., 2021, p. 6).

A large body of work has demonstrated the strong contribution of learning trajectories to teaching practice in multiple disciplines (Clements & Sarama, 2009, 2014, 2021; Cunningham et al., 2018; Inchaustegui & Alsina, 2020) and this body of work continues to grow (Clements et al., 2021; Hodgkiss et al., 2021; Jackson et al., 2023; Morgan et al., 2016; National Academies of Sciences, 2024), to support accurate child observation (in whatever form that may take), responsive scaffolding, formative assessment, differentiated teaching and smooth transitions (Cohrssen, 2021; Kagan et al., 2006) without in any way impinging on the diverse manifestations of playbased learning (Zosh et al., 2017).

Further, research has reported that children in higher-quality preschools are **creative within the context of learning areas** and may spend more time learning in small groups and less time playing independently or in large groups. On the other hand, children in lower-quality settings were observed to spend more time unoccupied, playing independently or in large-group teacher-directed activities (Sylva et al., 2007). Clearly, supporting educators to provide high quality opportunities for learning and to encourage children's engagement and participation through warm, responsive engagement is crucial. So too is equipping educators to facilitate back-and-forth conversations that encourage creative thinking and problem solving, and both using/modelling and encouraging children's language skills is also of crucial importance. This learning occurs during initial teacher education courses – a point that is addressed below.

Both versions of the EYLF address the age range from birth to five years, however children's interests and capabilities vary dramatically across this age range. The revised EYLF (AGDE, 2022) missed an opportunity to streamline the framework, provide more precise guidelines to support educators' understanding of emerging 'academic skills' from infancy, and to include (or elaborate) on science, technology, engineering and mathematics (STEM) and executive functions:

- The concept of executive functions was introduced without elaborating on what these are or how they should be facilitated.
- No mention is made of STEM, despite the current emphasis on STEM learning from early childhood and a growing interest in makerspaces and tinkering (Hatzigianni et al., 2021; Yang et al., 2025). Science is named once as a child indicator but not elaborated. Engineering thinking is implied but not named, relying on educators to recognize elements of engineering independently. Mathematics strands are named, but learning progressions are not elaborated.

There is strong demand from EC teachers for support with assessment and planning for learning. National initiatives are underway. Support workshops for the *Little Scientists* program which focuses on STEM in ECEC were highly sought after (MacDonald et al., 2019). In 2020, the Victorian Curriculum and Assessment Authority released the *Early Years Planning Cycle Resource*¹ which was widely taken up, and as

¹ <u>https://www.vcaa.vic.edu.au/Documents/earlyyears/EarlyYearsPlanningCycle.pdf</u>

a free download, it has been accessed across the country. The Australian Education Research Organisation (AERO) *Early Childhood Learning Trajectories*² materials are now being widely used by early childhood teachers in NSW and around the country. The Australian Council for Educational Research (ACER), in partnership with Goodstart Early Learning and Ninti One has developed the *Preschool Outcomes Measure*, due for release in early 2026 with a focus on executive functions and oral language and literacy. Ninti One is working alongside ACER to ensure Aboriginal and/or Torres Strait Islander perspectives are included throughout the development and validation process. This will address some of the gaps in the EYLF (AGDE, 2022), will be freely available, inclusive and work well for all children. In Victoria, The University of Melbourne has worked with the Department of Education to develop an assessment instrument called the *Early Years Assessment for Learning Tool (EYALT)*³. Funded Victorian kindergarten services that register and are approved to use the EYALT for the first time in 2025 have access to a package to support activities required to implement and embed use of the EYALT in the early years planning cycle, and access to a range of EYALT specific professional learning events and resources. However, since the EYALT is designed to be used twice a year (Department of Education, 2024), it does not appear to support the ongoing cycle of formative assessment and planning for learning.

Initial teacher education courses are designed to align with the EYLF (DEEWR, 2009; AGDE, 2022). Variability of ACECQA-accredited courses may in some part be attributed to the gaps described above (Guarrella et al., 2022; Madanipour, Garvis, Cohrssen, et al., 2025). Again, this draws attention to the importance of distributed responsibility for quality early learning (Cohrssen et al., 2023): **accrediting bodies, institutions of higher education, ACECQA, state/territory departments of education and regulators** all contribute to the broader ecosystem within which ECEC is situated. Recent research reports that teachers' understanding of executive functions is acquired through teaching experience (Madanipour, Garvis, Cohrssen, et al., 2025). This is unsurprising, given its absence from the EYLF (DEEWR, 2009; AGDE, 2022) but this finding is itself a concern, given workforce challenges leading to high staff turnover within the ECEC sector, and in NSW, particularly within regional and remote areas (Productivity Commission, 2024). As of 1 July 2025, ACECQA's new requirements for early childhood teacher preparation courses will come into effect⁴. Variability of ACECQA-accredited courses is also attributable to differing pedagogical philosophies underpinning initial teacher education courses provided by institutions of higher education that manifest in differing emphasis on, for example, child development and discipline areas such as science, technology, engineering and mathematics as well as the duration of ITE courses.

Recommendations

After highlighting multiple, intersecting concerns, we turn now to our recommendations. The first three recommendations relate to and/or align with substantial investigations and detailed reports that have already been published.

- 1. Address the recommendations set out in the Productivity Commission report (2024).
- 2. Address the recommended actions for early childhood education departments (State, Territory and Commonwealth) set out in the Australian Council of TESOL Assocations (ACTA) Principles for Early Childhood Education (2023).
- 3. Continue to develop curriculum materials, professional learning for educators and teachers, and formative assessment instruments on child learning and development that are freely available rather than behind a paywall and which build on the content of the Early Years Learning Framework (AGDE, 2022). Note that similar recommendations were made by the Royal Commission into ECEC (Royal Commission into Early Childhood Education and Care, 2023). It is imperative that such materials be in the public domain. ECEC quality and child outcomes should never be a commercial commodity. Such an assessment

² <u>https://www.google.com/search?client=safari&rls=en&q=AERO+Early+Childhood+Learning+Trajectories&ie=UTF-8&channel=32</u>

³ <u>https://www.vic.gov.au/early-years-assessment-and-learning-tool</u>

⁴ <u>https://www.acecqa.gov.au/sites/default/files/2024-</u>

^{11/}Requirements%20for%20early%20childhood%20teaching%20program%20assessments.pdf

instrument could be used to generated outcomes data at scale. This work has been progressed with much investment at a national level and by AERO and ACER.

- 4. Increase the specificity of the ACECQA accreditation guidelines relating to child learning and development, and discipline-specific methods courses to deepen educators' and teachers' ability to recognize and plan for learning through play. Here, the minimum proportion of course content that should address child development and the development of emergent 'academic skills' should be specified. It is essential that institutions of higher education delivering initial teacher education courses first establish knowledge prior to critically examining knowledge and assumptions knowledge must be constructed prior to deconstructing it. Where accelerated courses are accredited, constructing knowledge must be the priority to equip graduates to facilitate *learning* through play. We support the need for an urgent "review of pre-service qualifications (university and VET-based) to ensure they explicitly focus on the strategies that produce effective teacher-child interactions and equip educators with the underpinning knowledge about child development need to effectively boost children's learning" (Torii et al., 2017, p. 6).
- 5. To strengthen the consistency of quality of graduates and to increase confidence of families and schools in ECEC, some universities are preparing to partner and trial a common Teacher Performance Assessment (TPA)-type assessment. This presents an opportunity to extend this work to ensure that all ECEC graduate teachers meet the Australian Institute for Teaching and School Leadership (AITSL) Graduate Teacher Standards.
- 6. There is a need for in-service educators to have access to research-informed, ongoing professional learning, particularly in light of accelerated initial teacher education courses and high turnover of ECEC staff. Access to modularized university subjects that address child development, language learning and the development of emergent 'academic skills', as well as strategies to collect and use formative assessment data, could be sponsored by the NSW Government. For example, the University of New England offers a module entited, "Plurlingual pedagogies and dialogic reading"⁵ that could be undertaken by in-service educators as professional learning.
- 7. Victoria and Queensland have framework/guidelines documents that align with the EYLF (AGDE, 2022)⁶. An opportunity exists for the development of a NSW early years learning framework/guidelines document that is explicitly aligned with the EYLF (AGDE, 2022) but is more concise, and encourages ECEC services to align their curricula with families and communities, allowing for greater autonomy in the delivery of authentic place-based learning. Here, the document should be couched in language that is accessible to a workforce that that is characterized by linguistic and qualification diversity.
- 8. In a NSW framework/guideline document, a clearer focus on planning for learning through playful pedagogies ought to be supported by the **inclusion of explicit progressions for science, technology, engineering, mathematics, executive functions, language and literacy, social and emotional learning, the arts and physical development.** The new document would thus support the **continuum of learning from infancy through prior-to-school learning environments** and **articulate into the Australian Curriculum F to 10** (ACARA, n.d.). Consultations between early childhood teachers and teachers in the early years of school in the development of such a framework would support both the **continuum of learning from birth** *and* **transitions to school**. Cross-sectoral teacher collaboration would also **encourage child-ready schools and child-centred pedagogies across both phases of learning**.

Sustainable, practical solutions to raise the quality of ECEC services and the educational and developmental outcomes for children attending ECEC services are of crucial importance. Whilst government priority is to deliver universal access rather than to take a targeted universalism approach that would systematically prioritise the needs of 'at risk' cohorts, it is essential that investments be targeted at interventions that will increase access to *high quality* ECEC in order to positively impact child outcomes.

⁶ Victoria: <u>https://www.vic.gov.au/victorian-early-years-learning-development-framework-veyldf</u> (currently in revision); Queensland: <u>https://www.qcaa.qld.edu.au/kindergarten/qklg</u>

⁵ <u>https://www.une.edu.au/study/units/2025/plurilingual-pedagogies-and-dialogic-reading-edec308</u>

References

- ALF Consortium. (2021a). *Discussion paper*. Macquarie University. Retrieved 24 April from <u>https://www.mq.edu.au/faculty-of-arts/schools/macquarie-school-of-education/our-research/research-groups/approved-learning-frameworks-update/stage-2</u>
- ALF Consortium. (2021b). Discussion paper: 2021 National Quality Framework Approved Learning Frameworks Update. <u>https://www.mq.edu.au/faculty-of-arts/schools/macquarie-school-of-</u> education/our-research/research-groups/approved-learning-frameworks-update/stage-2
- Australian Children's Education & Care Quality Authority (ACECQA). (2017). *National Quality Standards*. <u>https://www.acecqa.gov.au/nqf/national-quality-standard</u>
- Australian Council of TESOL Assocations. (2023). ACTA principles for early childhood education. https://tesol.org.au/wp-content/uploads/2022/09/ACTA-ECE-Principles.pdf
- Australian Government. (2024). *Early Years Strategy 2024-2034*. Commonwealth of Australia (Department of Social Services) <u>https://www.dss.gov.au/system/files/resources/early-years-strategy-2024-2034.pdf</u>
- Barblett, L., Cartmel, J., Hadley, F., Harrison, L., Irvine, S., Bobongie-Harris, F., & Lavina, L. (2021). National Quality Framework Approved Learning Frameworks Update: Literature Review. A. C. s. E.
 a. C. Q. Authority. <u>https://www.mq.edu.au/__data/assets/pdf_file/0005/1189427/2021NQF-ALF-UpdateLiteratureReview.PDF.pdf</u>
- Burchinal, M., Howes, C., Pianta, R., Bryant, D., Early, D., Clifford, R., & Barbarin, O. (2008). Predicting Child Outcomes at the End of Kindergarten from the Quality of Pre-Kindergarten Teacher–Child Interactions and Instruction. *Applied Developmental Science*, 12(3), 140-153. https://doi.org/10.1080/10888690802199418
- Clements, D., & Sarama, J. (2009). *Learning and teaching early math: The math trajectories approach*. Routledge.
- Clements, D., & Sarama, J. (2014). *Learning and teaching early math: The Learning Trajectories Approach*. Routledge.
- Clements, D., & Sarama, J. (2021). *Learning and Teaching Early Math: The Learning Trajectories Approach* (3 ed.). Routledge.
- Clements, D., Vinh, M., Lim, C.-I., & Sarama, J. (2021). STEM for inclusive excellence and equity. *Early Education and Development*, 32(1), 148-171. <u>https://doi.org/10.1080/10409289.2020.1755776</u>
- Cohrssen, C. (2021). Considering form and function: A commentary on the review of the Early Years Learning Framework for Australia. *Australasian Journal of Early Childhood*, 43(3), 216-223. https://doi.org/10.1177/18369391211018518
- Cohrssen, C., de Rosnay, M., Neilsen-Hewett, C., & Garvis, S. (2023). Assessing the quality of early childhood education and care in Australia: Challenges and opportunities. *Frontiers in Education*, 8. https://doi.org/10.3389/feduc.2023.1147669
- Cohrssen, C., Slaughter, Y., & Nicolas, E. (2021). Leveraging languages for learning: Incorporating plurilingual pedagogies in early childhood education and care. *TESOL in Context*, *30*(1), 11-31.
- Cunningham, C. M., Lachapelle, C. P., & Davis, M. E. (2018). Engineering concepts, practices and trajectories for early childhood education. In L. English & T. Moore (Eds.), *Early Engineering Learning* (pp. 155-174). Springer.
- Department of Education. (2024). Early Years Assessment and Learning Tool fact sheet. In V. G. D. o. Education (Ed.).
- Department of Education Employment and Workplace Relations (DEEWR). (2009). *Belonging, Being and Becoming: The Early Years Learning Framework for Australia*. Council of Australian Governments.
- Early Childhood Australia. (2016). *Statement on the inclusion of every child in early childhood education and care* <u>https://www.earlychildhoodaustralia.org.au/wp-content/uploads/2014/01/Statement-of-</u> <u>Inclusion-2016.pdf</u>
- Guarrella, C., van Driel, J., & Cohrssen, C. (2022). Science education in early childhood education—are we approaching a cure for the state of chronic illness? *Research in Science Education*. https://doi.org/10.1007/s11165-022-10087-1
- Harrison, L., Wong, S., Press, F., Gibson, M., & Ryan, S. (2019). Understanding the work of Australian early childhood educators using time-use diary methodology. *Journal of Research in Childhood Education*, 33(4), 521-537. https://doi.org/10.1080/02568543.2019.1644404

- Harrison, L. J., Bull, R., Wong, S., Elwick, S., & Davis, B. (2019). NSW Preschool Assessment Study: Review of Formative Assessment Practices in Early Childhood Settings.
- Hatzigianni, M., Stevenson, M., Falloon, G., Bower, M., & Forbes, A. (2021). Young chldren's design thinking skills in makerspaces. *International Journal of Child-Computer Interaction*, 27, Article 100216. <u>https://doi.org/10.1016/j.ijcci.2020.100216</u>
- Hildenbrand, C., Niklas, F., Cohrssen, C., & Tayler, C. (2015). Children's mathematical and verbal competence in different education and care programmes in Australia. *Journal of Early Childhood Research*, 144-157. <u>https://doi.org/10.1177/1476718X15582096</u>
- Hodgkiss, A., Gilligan-Lee, K. A., Thomas, M. S. C., Tolmie, A. K., & Farran, E. (2021). The developmental trajectories of spatial skills in middle childhood. *British Journal of Educational Psychology*, 39(4), 566-583. <u>https://doi.org/10.1111/bjdp.12380</u>
- Howes, C., Burchinal, M., Pianta, R., Bryant, D., Early, D., Clifford, R., & Barbarin, O. (2008). Ready to learn? Children's pre-academic achievement in pre-Kindergarten programs. *Early Childhood Research Quarterly*, 23(1), 27-50. <u>https://doi.org/DOI</u>: 10.1016/j.ecresq.2007.05.002
- Inchaustegui, Y. A., & Alsina, Á. (2020). Learning patterns at three years old: Contributions of a learning trajectory and teaching itinerary. *Australasian Journal of Early Childhood*, 45(1), 14-29.
- Jackson, J., Kovacs, O., Razak, A., Willenberg, I., Johnston, K., & De Gioia, K. (2023). *Early childhood learning trajectories: The evidence base*. Australian Education Research Organisation. <u>https://www.edresearch.edu.au/early-childhood-learning-trajectories</u>
- Kagan, S. L., Carroll, J., Comer, J. P., & Scott-Little, C. (2006). Alignment: A missing link in early childhood transitions? *YC Young Children*, *61*(5), 26-30.
- Larsen, S., & Cohrssen, C. (2025). The Early Years Learning Framework for Australia and existing measures of child outcomes: Is there a relationship. *The Australian Educational Researcher*, e1-33. https://doi.org/10.1007/s13384-025-00827-3
- MacDonald, A., Danaia, L., Sikder, S., & Huser, C. (2019). *Little Scientists evaluation: Final report*. <u>https://stemeducationresearchgroup.csu.domains/wp-content/uploads/2020/12/Little-Scientists-Evaluation-Final-Report-2019.pdf</u>
- Madanipour, P., Garvis, S., & Cohrssen, C. (2025). Teaching strategies to enhance executive functions in early childhood education: A systematic review. *Journal of Early Childhood Education Research*, 1, 73-104. <u>https://doi.org/10.58955/jecer.146811</u>
- Madanipour, P., Garvis, S., Cohrssen, C., & Pendergast, D. (2025). Early childhood teachers' understanding of executive functions and strategies employed to facilitate them. *Frontiers in Education*, *9*, Article e1488410. <u>https://doi.org/10.3389/feduc.2024.1488410</u>
- Morgan, P. L., Farkas, G., Hillemeier, M. M., & Maczuga, S. (2016). Science achievement gaps begin very early, persist, and are largely explained by modifiable factors. *Educational Researcher*, 45(1), 18-35. https://doi.org/ 10.3102/0013189X16633182
- National Academies of Sciences, E., and Medicine, (2024). A New Vision for High-Quality Preschool Curriculum (2024).
- OECD. (2025). Unlocking high-quality teaching. OECD Publishing. https://doi.org/10.1787/f5b82176-en.
- Office of the Chief Scientist. (2014). *Science, Technology, Engineering and Mathematics: Australia's Future.* Australian Government.

https://www.chiefscientist.gov.au/sites/default/files/STEM_AustraliasFuture_Sept2014_Web.pdf

- Phillips, A., & Fenech, M. (2023). Educators' perceptions of Australia's early childhood education and care quality assurance rating system. *European early Childhood Education Research Jpurnal*, 31(6), 988-1000. <u>https://doi.org/10.1080/1350293X.2023.2211758</u>
- Productivity Agenda Working Group. (2008). A national quality framework for early childhood education and care: A discussion paper. Early Childhood Development Sub-group of the Productivity Agenda Working Group. <u>https://www.acecqa.gov.au/sites/default/files/2020-</u>12/ANationalQualityFrameworkForEarlyChildhoodEducation.pdf
- Productivity Commission. (2024). A path to universal early childhood educationa and care, Inquiry report. https://www.pc.gov.au/inquiries/completed/childhood/report
- Raikes, A., Rao, N., Yoshikawa, H., Cohrssen, C., Behrman, J., Cappa, C., Devercelli, A., Lopez Boo, F., McCoy, D., & Richter, L. (2023). Global tracking of access and quality in early childhood care and education. *International Journal of Child Care and Education Policy*, 17(14). https://doi.org/10.1186/s40723-023-00116-5

- Rankin, P. S., Staton, S., Potia, A. H., Houen, S., & Thorpe, K. (2022). Emotional quality of early education programs improves language learning: A within-child across context design. *Child Development*, 93, 1680-1697. <u>https://doi.org/10.1111/cdev.13811</u>
- Royal Commission into Early Childhood Education and Care. (2023). *Royal Commission into Early Childhood Education and Care: REPORT.* G. o. S. Australia. <u>https://www.royalcommissionecec.sa.gov.au/__data/assets/pdf_file/0009/937332/RCECEC-Final-Report.pdf</u>
- Siraj, I., Howard, S. J., Kingston, D., Neilsen-Hewett, C., Melhuish, E., & de Rosnay, M. (2019). Comparing regulatory and non-regulatory indices of early childhood education and care (ECEC) quality in the Australian early childhood sector. *The Australian Educational Researcher*, 46, 365-383. <u>https://doi.org/10.1007/s13384-019-00325-3</u>
- Sylva, K., Taggart, B., Siraj-Blatchford, I., Totsika, V., Ereky-Stevens, K., Gilden, R., & Bell, D. (2007). Curricular quality and day-to-day learning activities in pre-school. *International Journal of Early Years Education*, 15(1), 49-65. <u>https://doi.org/10.1080/09669760601106968</u>
- Tayler, C. (2016). The E4Kids study: Assessing the effectiveness of Australian early childhood education and care programs. Overview of findings at 2016. Final report to the Partner Organisations of the Effective Early Educational Experiences (E4Kids) study. Melbourne Graduate School of Education, The University of Melbourne.

https://education.unimelb.edu.au/__data/assets/pdf_file/0006/2929452/E4Kids-Report-3.0_WEB.pdf

- Tayler, C., Cloney, D., Adams, R., Ishimine, K., Thorpe, K., & Nguyen, C. (2016). Assessing the effectiveness of Australian early childhood education and care experiences: Study protocol. *BMC Public Health*, 16(352), 1-12. <u>https://doi.org/10.1186/s12889-016-2985-1</u>
- Tayler, C., Ishimine, K., Cleveland, G., Cloney, D., & Thorpe, K. (2013). The quality of early childhood education and care services in Australia. *Australasian Journal of Early Childhood*, 38(2), 13-21.
- Tayler, C., Peachey, T., & Healey, B. (2018). Maintaining the reform momentum in Australia. In S. L. Kagan & M. Tucker (Eds.), *Early Childhood Systems That Lead by Example: A Comparative Focus on International Early Childhood Education*. Teachers College Press.
- Tham, M., Leung, C., Hurley, P., Pilcher, S., & Prokfieva, M. (2025). *Unequal from the start: The achievement gap and the early years*. Mitchell Institute, Victoria University. <u>https://content.vu.edu.au/sites/default/files/documents/2025-04/unequal-from-the-start-report-march-2025.pdf</u>
- Torii, K., Fox, S., & Cloney, D. (2017). *Quality in key in Early Chlidhood Education in Australia* [Policy Paper](01/2017). <u>www.mitchellinstitute.org.au</u>
- Victorian Curriculum and Assessment Authority, & Department of Education and Training. (2016). *Victorian Early Years Learning and Development Framework*. Department of Education and Training.
- Yang, W., Liang, L., Xiang, S., & Yeter, I. H. (2025). Making a Makerspace in early childhood education: Effects on children's STEM thinking skills and emotional development. *Thinking Skills and Creativity*, 56, Article 101754. https://doi.org/10.1016/j.tsc.2025.101754
- Zosh, J. M., Hopkins, E. J., Jensen, H., Liu, C., Neale, D., Hirsh-Pasek, K., Solis, S. L., & Whitebread, D. (2017). *Learning through play: A review of the evidence*. https://www.legofoundation.com/media/1063/learning-through-play_web.pdf