

A commentary on the literature review *What does the evidence say about the relationships between ECEC structural quality and children's outcomes?*

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The 2025 MartinJenkins literature review *What does the evidence say about the relationships between ECEC structural quality and children's outcomes?* was commissioned by the Ministry of Education to inform policy analysis and advice. The review therefore has potential to significantly influence ECE policy in Aotearoa at a time when important decisions about regulations and funding are being made. This commentary supports a critical reading of the review by addressing:

1. The aims of the literature review, including the outcomes of ECE considered, and their coherence with outcomes of *Te Whāriki*;
2. The literature review methodology, including inclusion criteria, search strategy, assessment of quality of literature, and analysis and synthesis of findings;
3. Some key conclusions about teacher qualifications drawn from the review;
4. Relevance of some selected Aotearoa New Zealand research and evaluation studies.

We end with some thoughts on possibilities for a more expansive and robust consideration of relevant research and literature to inform policy.

The aims of the literature review

The aims of the literature review are set out in the Introduction.

This literature review was commissioned to examine how key structural quality factors (specifically educator qualifications, leadership, adult-to-child ratios, group size) relate to child outcomes. The aim is to identify which structural levers have the greatest impact on children's cognitive, social, and emotional development, and where diminishing returns may set in, to inform policy development in ECEC (for example, regulation and funding priorities) (Review, p. 1).

The aims pinpoint the so-called "iron-triangle" (Phillipsen et. al., 1997) of important structural features of early childhood education (ECE) (teacher qualifications, adult:child ratios and group size) that many research studies over decades have shown link to "process quality". Leadership (undefined) is added as a factor of interest. A direct link between the named structural levers and impacts on children's cognitive, social, and emotional development is assumed within the aims. Furthermore, they are couched in terms of questions that require capacity to quantify and measure impacts of discrete structural features. This framing of the review is problematic because structural features of quality ECE don't occur in isolation – they interact to support process quality in a specific context. The literature review itself makes this point in its finding in relation to qualifications noting "that effects are mediated through other dimensions of quality and other contextual variables such as curriculum, adult-to-child ratios, and home environment" (pp. 2-3). It points out that "qualitative research and evaluation case studies that account for contextual and other structural factors may offer more valuable insights for policy makers seeking to understand the role of qualifications" (p. 4). We agree, and in the last section of this paper, we discuss some relevant studies that offer helpful insights into why qualifications matter and how they are influential for child outcomes and quality provision.

The aims focus on cognitive, social, and emotional development outcomes for children. No justification is provided for why these discrete developmental trajectories are selected for the analysis of impact. This matters because outcomes of value in ECE in Aotearoa are couched in post-developmental terms. *Te Whāriki* takes a view of children as capable, competent, and born with mana; within the curriculum

framework learning outcomes specifically are described in two ways, as “knowledge, skills and attitudes which combine as dispositions and working theories” (MoE, 1997, p.22) and in relation to each strand of the framework as “broad statements that encompass valued knowledge, skills, attitudes, and dispositions...” (p.22). Learning dispositions in *Te Whāriki* map onto key competencies within the schools’ sector curriculum. In both sectors these important outcomes are viewed as capabilities - combinations of ability, inclination, and sensitivity to occasion, critical outcomes of curricula designed to support life-long learning (Hipkins, 2013). A different literature review on outcomes of ECE carried out for the Ministry of Education almost two decades ago (Mitchell, Wylie, et al., 2008), reviewed studies that included evidence about outcomes that were relevant in the context of *Te Whāriki*: learning dispositions including attitudes of perseverance, curiosity, confidence, and the ability to work with others. The focus on cognitive, social, and emotional development severely limits the applicability of the MartinJenkins review for the Aotearoa New Zealand context.

Methodology

The review restricts itself in the large part to meta-analyses and systematic reviews published from 2015 onwards. No studies from Aotearoa New Zealand are included. The review acknowledges this as a limitation and warns that meta-analyses are “known to under-represent context-specific, qualitative, or culturally grounded insights... [and that] applying international evidence to the New Zealand context presents challenges” (p.2) related to Te Tiriti o Waitangi and the applicability of findings to Māori and Pacific communities. It is puzzling why a broader approach that was more directly relevant to Aotearoa New Zealand was not taken.

The search strategy was limited: a GoogleScholar search¹ with a narrow selection of key words and criteria for determining quality noted as, “published in a peer-reviewed journal or is from other reputable source” (p. 19). Additional literature was provided by the MoE. It is unclear what proportion of the included literature was supplied, and which was produced via the GoogleScholar search. We would expect a more thorough search of library databases and criteria regarding inclusion and exclusion to be made explicit. An arbitrary cut-off date of 2015 was set but not rationalised. The review was written for the Ministry of Education and assumed “institutional knowledge” and “familiarity with foundational concepts and seminal works in the field” (p. 20) with no sense of what these are having been provided. These need to be referenced for a wider audience. The review will likely be used by the Ministerial Advisory Group currently considering proposed funding and regulatory changes; the group comprises members outside the Ministry and ECE. Other interested participants from ECE organisations and services may well benefit from understanding what was constituted as foundational concepts and seminal works, and why.

MartinJenkins acknowledge limitations of the review and omissions that could potentially be addressed by “a broader or more qualitative review of the literature, including studies outside our inclusion criteria” (p. 21). In our next section, we analyse key messages that we draw from the review in relation to qualifications. We follow this with a brief discussion of some literature that is directly relevant to generating understanding of how structural factors interact to provide conditions for the kind of teaching and learning that lead to quality outcomes of value for children in ECE in Aotearoa. We discuss research that offers useful explanation of why qualifications matter and two studies researching in Aotearoa New Zealand ECE settings.

Some key conclusions about teacher qualifications from the MartinJenkins review

¹ While a valuable tool for some functions, GoogleScholar as a literature search tool also has some issues that limit its reliability e.g., it doesn’t vet sources, it doesn’t account for predatory journals, search results are difficult to replicate, it doesn’t distinguish between different types of articles, it doesn’t share its sources, algorithms, or information about how it ranks search results (all expected types of academic practice).

We analysed the cited evidence for relationships between teacher qualifications and children's outcomes from the MartinJenkins review. Appendix 1 (attached) summarises this evidence and the conclusions that have been drawn. The following are some key points that we take from the review.

1. Relationships between qualifications and outcomes are correlational rather than causal.
2. The range of methods for defining and measuring qualifications restrict the ability to make comparisons and generalise.
3. Similarly, there are issues with the range of methods for defining and measuring different outcomes.
4. Levels of qualifications are related with quality of instruction and climate – process variables. Process quality does matter for child outcomes so the relationship is there but indirectly there.
5. The MartinJenkins review concludes (p.31) that higher teacher qualifications enhance process quality which indirectly results in better child development. The complexities associated with isolating the impact of teacher qualifications as a single variable make it difficult to claim any causal impact.

So, while messaging about 'it's complex and the evidence [of how educator qualifications impact child outcomes] is mixed' is true – the actual 8 studies MartinJenkins used as their primary sources either indicate positive correlations (albeit small) between higher teacher qualifications (degree level and above) and outcomes for children (mostly language, social, emotional) or at least 'unclear' associations, but not negative ones.

Some selected explanatory studies and Aotearoa New Zealand research

In 1988 an integrated three-year common core qualification for teachers in childcare centres and kindergartens was implemented in Aotearoa. It followed years of reasoned advocacy for a three-year qualification for kindergarten teachers comparable to that of schoolteachers and for equivalent qualifications for teachers in childcare centres. Subsequent policy advances and reversals are tracked in the prepublication chapter *How much longer? Four decades of shifting politics in teacher qualifications*. (Mitchell & Wells, 2025 - prepublication). The chapter argued for a vision for ECE to be understood as education in its broadest sense and for the employment of qualified teachers.

Qualified ECE teachers are essential because they understand how children learn and develop, understand pedagogy, understand the ECE curriculum and are skilled in its implementation, provide age-appropriate learning environments, and maintain the currency of their professional practice. They are critical thinkers and researchers, and responsive to their communities and accountable to meet and maintain professional standards.

Several international studies have reinforced similar explanations for why qualifications and ongoing professional development and learning matter.

The *Exemplary Early Childhood Educators at Work* study funded by the Australian Research Council had as one of its aims to identify the work, skills, and knowledge of exemplary EC educators in each of the three [Australian] mandated qualification levels (Certificate III, Diploma, and Degree) (Gibson et al., 2023). Preschool and childcare centres in NSW, QLD and WA that had exceeded all the standards and elements of the National Quality Standard from the Australian Children's Education and Care Quality Authority (ACECQA) were chosen for the study. The study found that the exemplary educators had a strong understanding of theory, curriculum, and policy. They were observed to draw on this extensive knowledge, especially knowledge of early childhood education, child development, theory and critical reflection. They were "encouraged and supported within their service to engage in professional development and learning, and more broadly experiences that would enrich their own (and their service's) growth" (Gibson et al., 2023, p. 19).

An earlier study by the NICHD ECCRN (The National Institute for Child Health and Human Development Early Child Care Research Network) (2002) using structural equation modelling, found a

mediated path from structural indicators of quality (teacher qualifications and staff: child ratios) through process quality to cognitive competence and caregiver ratings of children's social competence. These authors offered a useful explanation that "more caregiver training may lead to better interactions between children and adults, while lower ratios may lead to more interactions" (NICHD Early Child Care Network, 2002, p. 206). Many of the studies mentioned in the MartinJenkins review repeat these earlier findings.

One of us, Alex Gunn, analysed the 2024 Regulatory Review of Early Childhood Education report providing evidence and arguing that "neither structural nor process factors can really stand apart from the other – group sizes influence the quality of relationships, teacher-child ratios affect the amount of time teachers can spend with individual children, a qualification will influence pedagogical capabilities and curriculum implementation, and so forth. Teacher qualifications impact quality directly, along both structural and process dimensions" (Gunn, 2025, p. 3).

In Aotearoa New Zealand, two studies have researched relationships between teacher qualifications and the quality of ECE in teacher-led services. We discuss these below. The research for each was undertaken after 2002 when new requirements and incentives were made for qualified teachers to fill regulated staffing positions in teacher-led services. Both used the NZCER Quality Rating scale as an observation tool designed to assess quality interactions and environments in Aotearoa New Zealand contexts.

The locality-based longitudinal evaluation of the government policy *Pathways to the Future: Ngā Huarahi Arataki* provided a baseline picture of how things were in mid-2004 in eight localities in relation to the three goals of the strategic plan and before the major ECE strategic plan policy changes began (Mitchell, Royal Tangaere, et al., 2008). The study tracked changes that occurred in services and for parents between 2004 and 2006 as strategic actions got underway (Mitchell & Hodgen, 2008), and in 2009 after strategic plan actions had been in place for some time (Mitchell et al., 2011). Methods included a parent survey, management questionnaire, teacher/educator interview, service profile, and observations of process quality. Process quality was defined as "the environment, interactions, and relationships that occur in an early childhood education setting and shape children's learning opportunities and experiences in that setting" (Mitchell et al., 2011, p. 2). MOE national and locality datasets were used to provide a context for changes occurring at ECE service level. In respect to teacher qualifications, the evaluation found:

The strategic plan targets and qualification incentives led to a marked increase in the percentage of qualified teachers in teacher-led ECE services nationally and in the services in the study. A striking finding was the relationships with observed quality. One hundred percent of the staff in each of the teacher-led services that were rated 'very good' quality were registered teachers at the time the observations of quality were made. This was true in every evaluation year. Those rated 'poor' or 'fair' quality had lower levels of qualified teachers and did not take up the comprehensive opportunities for professional development or make full usage of the MOE professional resources (Mitchell, et al., 2011, p. 4).

Meade et al., (2012) analysed data from a collective 'case' of five centres with 100% of their regulated staff being qualified teachers, and a collective 'case' of five centres employing 50 to 79% qualified teachers. The centres studied were randomly selected from Ministry of Education early childhood services databases (stratified by location, levels of qualified teachers, and the enrolment of both toddlers and young children). In addition, two on-line surveys of education and care centres were undertaken. The 516 survey responses represented 21% of education and care centres throughout Aotearoa New Zealand in 2011.

The case studies included

- NZCER ECE Quality Rating Scale;
- Observations of 10 sample children (target children) in each centre interacting with teaching staff;
- Assessments of learning of the target children aged 4 years;

- Observations of teachers at work;
- Centre documentation (e.g., philosophy of practice statements); and
- Interviews with manager/staff at each centre, and with parents of target children.

The authors concluded:

Centres with 100% qualified teachers had far more positive scores on the majority of the research measures than centres with 50–79% qualified teachers. The most obvious differences were in the ratings of quality using the NZCER ECE Quality Rating Scale, where most centres with 100% qualified teachers were rated above the mid-point on the large majority of variables, whereas the majority of centres with fewer qualified staff were rated on the mid-point or below for most variables. The adult–child interaction ratings were corroborated when triangulated with adult–child observational data. (Meade et al., 2012, p. 14).

Children in the centres with 100% qualified teachers had:

- more interactions with qualified teachers;
 - more conversations with these teachers;
 - more episodes of sustained shared thinking;
 - more teacher mediation of their concept development; and
 - slightly higher scores on indicators to do with independence and concentration.
- For the under 2s, the centres with 100% qualified teachers provided higher quality care and education than the 50–70% centres. (Meade et al., 2011, p. 14)

These pedagogical interactions are found in the research literature to relate to positive cognitive outcomes for children and for later school achievement (e.g., Sylva et al., 2010). The authors used the findings to argue the beneficial effects of having a target of 100% regulated staff holding a teaching qualification in education and care centres.

Possibilities for research to inform ECE policy

The MartinJenkins report (pp. 26-27) acknowledges limitations and omissions in their review. It highlights “the value of complementary qualitative and mixed methods research to deepen understanding of how structural conditions affect practice and ultimately child outcomes”. Our discussion of explanatory studies and Aotearoa New Zealand research is intended as a snapshot in support of the acknowledgement in the MartinJenkins review, to indicate the value and relevance of such research.

In summary, the commissioned literature review by the MartinJenkins group has significant potential to inform ECE policy review and funding decisions in Aotearoa yet its capacity to address the very aims it set out to explore is hampered by several issues. The outcomes of focus that the international research explored are of limited direct value to the practice and outcomes of value to ECE in Aotearoa guided by *Te Whāriki*, the impossibility of being able to draw a straight line between discrete structural quality factors and specified measures should be noted, and a lack of contextual evidence that can illustrate connections between teacher qualifications, quality provision, and child outcomes of value in Aotearoa should be addressed.

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Appendix 1: Notes on evidence in MJ Report addressing relationships between teacher quals. and child outcomes.

Falenchuck et al (2017)					
Location	Scope	Outcomes of interest	Key quals. related findings	Limitations	Conclusions in MJ report
US based studies	39 studies	Vocabulary mathematic	Associations between staff education and childhood outcomes non-existent to borderline positive - +ve for vocab not maths.	Dissimilar studies hamper ability to generalise Def. of qualifications variable Participant studies characterised by non-random sampling	Falenchuck et al (2017) positive impact in some areas (vocab, letter recognition) Falenchuck et al (2017) non-existent to borderline positive effects
Hoq et al (2025)					
Mostly Aus data but some OECD country data also	26 studies	Academic skills at school Reading, sci, language, maths, cognitive, socio-emotional	Aus data show relationship between teacher qual. level and child academic performance at school Yr3 but OECD review no clear relationship. Better interactions with pre-service quals and in-service training	None specifically noted.	As per 'findings'
Kreig, Curtis, Hall & Westenberg (2015)					
Sth Aus.	One study of 'integrated children centres', two waves of data collection involving (n=163 4yr olds & n=108 5yr olds/ 99 in both waves) 8 settings – children moved to 30 schools.	Cognitive devt. (letters and numbers)	Children from higher quality progs. greater gain in cognitive devt. than those attending lower quality progs. Socially disadvantaged children benefitted most.	Accounted for both selection and attrition biases but think any influences would have led to underestimation of influence of quality exposure.	Kreig and Curtis (2015) significant relationships between educator quals and quality of learning experiences.

Manning et al (2019)					
unclear	49 studies to explore: relationship between lead teacher qual and the quality of the ec environ. As measured by ERS	Quality of learning enviro.nts.	Higher teacher quals associated with higher quality environments.	Can't say if discrete quals. levels are associated with higher or lower quality.	Teachers with higher level quals (bachelors degree or above) significantly higher quality ecec environments as measured by ERS. More educated teachers, better process quality.
Nocita et al (2020)					
Unclear but Engl. Language and centre based, preschool aged.	16 studies	What's the association between ec specialisation and outcomes?	Very few significant associations between qual. and outcomes but weak positive associations between ece specialisation and child lang. and soci. Skills (not maths).	Notes diversity of definitions and measurements of qualified	Nocita et al (2020)* – consistency in direction of effects (often positive) across many studies gives some weight to the qualification-quality link
Purtell & Ansari (2018)					
US – Headstart progs	Representative sample 3-4yr olds (n=2829)	Quality and teacher quals impact on academic skills	In other studies 4-yr olds do less well in mixed aged but this study suggests higher quals may mitigate this and higher quals (associate degree and bachelors degree) may provide teachers with skills and strategies to construct a classroom environment		highly qualified educators able to manage poorer quality mixed aged (3-4yr olds) settings better to moderate negative impact of mixed aged on 4yr olds.

			that is approp. for mixed age. Positive effect in literacy rather than maths.		
Slot et al (2015)					
Netherlands	375 teachers in 182 settings, 295 classrooms (part of Dutch 'pre-COOL' study)	Impact of continuous PD and an education programme on process quality.	Teacher quals = small positive impact on process quality (emotional), improved with PD at setting. Suggest that improving teacher quals. expensive, may be better to focus on PD and an education prog. for existing teachers.	Longer term or short term effects? Netherlands = specific context – replicable?	Degree level quals. positively associated w. wmotional support and quality of tchg.
Yang, Rahman & Sun (2025)					
Aus, Malaysia, US, Germany, Holland, China, Denmark.	PRISMA study, 12 articles.	Lit review about impact of teacher quals. on devt. outcomes.	Some studies show positive associations between higher quals. and cognitive, social emotional, academic outcomes. Others no significant relationship. Challenges a direct linear relationship between quals. and outcomes.	Identified issues with varying defs. of teacher quals, different measurement approaches to devt.outcomes, and varied ways of measuring interactions quality.	some positive impacts / some studies = no significant differences

Notes:

Relationships between quals and outcomes are correlational rather than causal.

Issues with range of methods for defining and measuring quals. – 'qualified' means different things in diff. jurisdictions, self-report etc.

Issues with range of methods for defining and measuring different outcomes – e.g., 'socioemotional', academic skills – what exactly?

Levels of quals. clearly related to quality of instruction and climate – process variables. Process quality does matter for child outcomes so the relationship is there but indirectly there.

MJ report concludes (p.31) higher teacher quals. enhance process quality which indirectly results in better child development. The complexities associated with isolating the impact of teacher quals. as a single variable make it difficult to claim any causal impact.

So, while we are being told e.g., “it’s complex and the evidence is mixed” and this is true – the actual 8 studies used as primary sources on the question of teacher quals and child outcomes either indicate positive correlations (albeit small) between higher teacher qualifications (degree level and above) and outcomes for children (mostly language, social, emotional) or at least ‘unclear’ associations but not negative.

Higher levels of formal teacher quals modestly associated with improved process quality which in turn drive devt. outcomes. (p.29-30)

1. +ve	Unclear (but not negative)
Manning et al (2019) Slot et al (2015) degree quals. positively associated w. Emotional support and quality of tchg. Nocita et al (2020)* – consistency in direction of effects (often positive) across many studies gives some weight to the qualifications-quality link Hoq et al (2025) Aussie data – positive relationship Kreig abd Curtis (2015) significant relationships Purell & Ansari)(2018) highly qualified educators able to manage poorer quality settings better to moderate impact. Yang et al. (2025) – some positive impacts Falenchuck et al (2017) positive impact in some areas (vocab, letter recognition)	Nocita et al* (2020) Hoq et al* – review of OECD countries – no clear relationships Yang et al* (2025) Falenchuck et al* (2017) non- existant to borderline positive

* studies also report positive associations between levels of formal teacher quals, better process quality and indirectly, +ve. impact on child outcomes.