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Proceedings Journal

ISSEC2025

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e-IPH
e-International
Publishing House Ltd.,
United Kingdom

International Social Sciences and Education Conference 2025
"Empowering Knowledge: Driving Change Through Social Science and Educational Research"
Virtual Conference
24-25 May 2025

Organised by: CLM PUBLISHING RESOURCES

Challenges and Demands in Indigenous Early Childhood Education:
A systematic literature review

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Abstract
Previous studies have extensively discussed the quality of early childhood education (ECE); however, research specifically focusing on Indigenous ECE remains limited. This gap highlights the need for systematic research. This review aims to identify the challenges and needs in the preschool education of Indigenous children. The review process involved five steps: the use of a review protocol, formulation of research questions, systematic searches in databases such as Scopus, ERIC, and Science Direct, followed by quality appraisal, data extraction, and analysis. Notably, the thematic analysis identified four main themes: culture and language, relationship and engagement, guideline documents, and resources.

Keywords: Challenges; Demands; Early Childhood Education; Indigenous

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1.0 Introduction
UNESCO highlights the importance of ECE programs in facilitating optimum brain development and enabling children to achieve their full potential. Consequently, it emphasized the necessity to enhance and broaden ECCE in accordance with the Education for All plan. This is especially applicable to marginalized and vulnerable populations, including Indigenous children. While it is widely acknowledged that quality ECE contributes to holistic child development, Elek et al. (2020) argued that the benefits of such programs are not equitably distributed. This disparity raises critical concerns that appear to contradict the Declaration on the Rights of Indigenous Peoples, which guarantees the right of Indigenous communities to receive education in their own culture and language without discrimination (United Nations, 2007). Notably, previous research on Indigenous education has largely focused on primary, secondary, and tertiary levels. It addresses challenges such as educational barriers, support systems, and policy disparities between Indigenous and non-Indigenous populations (Delprato, 2021; Sianturi et al., 2018). However, Elek et al. (2020) highlighted that research specifically targeting Indigenous ECE remains scarce and underscores the need for additional systematic investigation. Consequently, the limited exploration of the challenges and demands within Indigenous ECE has resulted in a fragmented understanding and an inability to fully grasp the

complexities involved. To address this gap, the objective of this SLR is to examine the challenges faced by Indigenous children in early education and to identify the key demands from the perspective of their communities. The study is guided by two central research questions: "What challenges do Indigenous children face in early education?" and "What are the demands in early childhood education for Indigenous communities?" This study aims to inform and guide future scholarly inquiry in the field through empirical synthesis and identification of research gaps.

Nomenclature
ECE   early childhood education
ECCE   Early Childhood Care and Education
MMAT   Mixed Methods Appraisal Tool
PRISMA Preferred Reporting Items for Systematic Reviews and Meta-Analyses
SLR   Systematic Literature Review
UNESCO United Nations Educational, Scientific and Cultural Organization

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2.0 Methodology

To ensure that the review is conducted transparently and comprehensively, this SLR follows the PRISMA 2020 review protocol Click or tap here to enter text. In an SLR, formulating research questions is critical to the review protocol. The two research questions in this study were developed based on previous research and guided by the PICo framework (Lockwood et al., 2015). They encompass the population (Indigenous children), interests (challenges and demands in ECE), and the context of ECE.

2.1 Systematic search strategy

This SLR study employs a systematic search strategy involving three phases: identification, screening, and eligibility, as outlined to identify relevant articles and synthesize the research comprehensively (Shaffril et al., 2018). Notably, the identification phase began with the use of three main keywords: Indigenous, challenge, and ECE. These keywords are also complemented by synonyms such as Indigenous People, First Nation, Native People, issue, preschool, childcare, and kindergarten. Accordingly, the literature search was conducted using three databases: Scopus, Science Direct, and ERIC. In particular, the focus on ECE among indigenous communities resulted in a total of 4,903 potentially relevant articles.

The screening phase involves the selecting or excluding of articles based on specific inclusion criteria, either through database filtering tools or manual review. Referring to the concept of "research field maturity" by Kraus et al. (2020), this review is limited to articles published between 2019 and 2023. Note that only empirical studies using primary data, published in English, and related to ECE in the field of social sciences were considered. As a result, 4,687 articles were excluded since they did not meet the inclusion criteria, in addition to eight duplicate articles and nine inaccessible articles. This leaves a total of 199 articles for the third phase.

In the eligibility phase, 199 articles were manually reviewed to ensure compliance with the established criteria. This process involves evaluating the relevance of each article through reading the title, abstract, or full text. In this phase, 103 articles were excluded based on the title, 45 based on the abstract, and 24 more after a full-text review. Overall, 172 articles were excluded since they did not discuss indigenous ECE, challenges, or related needs. Only 27 articles were selected for further quality assessment. Refer to Fig.1 below.

2.2 Quality appraisal

In the SLR study, emphasis is placed on the quality of articles over quantity since the reliability of the findings depends on the quality of the selected literature. Thus, to ensure this, the articles that passed through three phases of systematic searching were evaluated for quality by two experts. For this purpose, the MMAT assessment tool by Hong et al. (2018) was used to evaluate the evaluation of qualitative studies, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed-method studies. At this stage, two co-authors assist in evaluating the methodological and analytical rigour of each article. The evaluation is conducted based on five criteria with three response options: "yes," "no," and "unsure." Only articles that meet at least three criteria are included. Subsequently, decisions are made by mutual agreement, and any disagreements are resolved through discussion. All authors agree that the selected articles meet the minimum quality standards. Overall, 24 articles meet all the criteria, while three articles meet at least four criteria.

2.3 Data extraction and analyses

This process involved reviewing each study and organizing the data into a table. The qualitative method is applied through an inductive thematic analysis involving repeated reading, initial coding, and theme formation based on the research questions (Kiger & Varpio, 2020). Throughout this process, four main themes and 11 subthemes were identified and subsequently presented to two experts in qualitative synthesis and ECE for validation. Both experts agreed that the themes and subthemes developed were appropriate and relevant to the research questions.
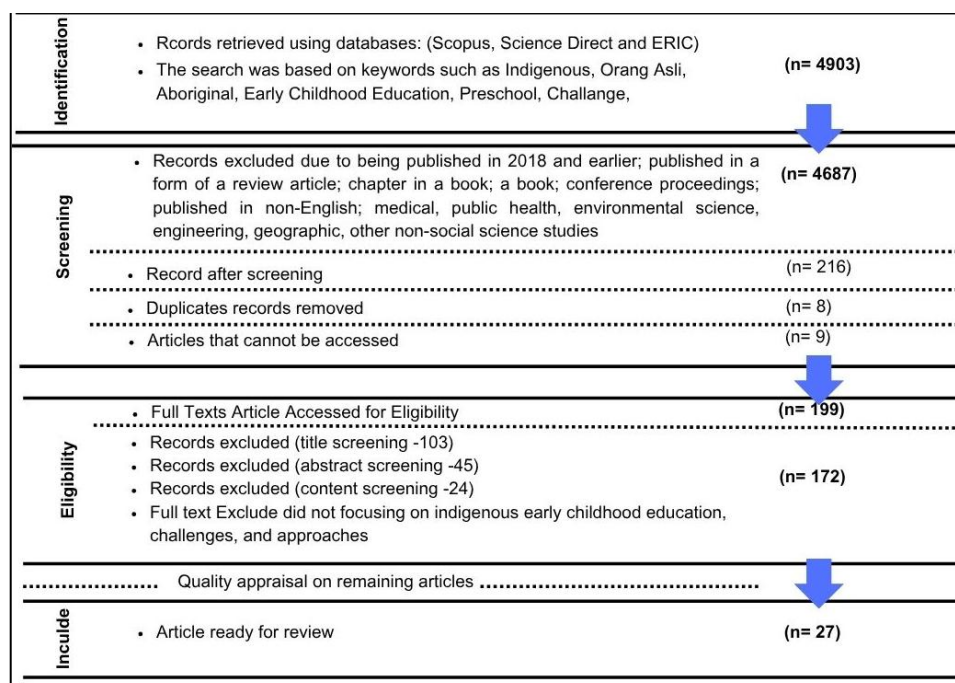
Fig.1. Flow diagram of the search process

3.0 Finding & Discussion

Out of the 27 articles reviewed, six focused on Australia, five on Chile, and four on New Zealand. Two articles focused on Canada and the United States, while one article each examined Finland, India, Mexico, Norway, Taiwan, and Russia. One study involved both New Zealand and Canada. Notably, 25 studies employed qualitative analysis, while one used quantitative analysis and another adopted a mixed methods approach. In terms of publication year, seven articles were published in 2019 and 2021, two articles in 2020 and 2022, and nine articles in 2023. Through thematic analysis of 27 articles, four main themes and 11 sub-themes have been identified, covering culture and language, relationships and engagement, guideline documents, and resources. Refer to Table 1 below.

3.1 Culture & Language

One of the main challenges in Indigenous ECE is the recognition of Indigenous culture, language, and knowledge (Becerra-Lubies & Moya, 2023; Peterson et al., 2019; Ravna, 2021). Henward et al. (2019a) and Locke (2022) emphasize that Indigenous ECE has often failed to integrate culture, language, and knowledge as core components. Moreover, the dominant culture in a country is frequently prioritized in educational contexts, consequently neglecting the cultural needs of minority groups, including Indigenous communities(Chen, 2023). This leads to negative perceptions and misinterpretations of Indigenous children's backgrounds and behaviours (Becerra-Lubies et al., 2023; Becerra-Lubies & Moya, 2023; Chen, 2023). Additionally, limited cultural knowledge contributes to anxiety that hinders effective learning processes among Indigenous children(Rameka & Stagg Peterson, 2021). This lack of understanding often stems from differing interpretations of concepts such as homeland, family, and history (Locke, 2022).

Three subthemes, culture, knowledge, and language, have been identified as essential in addressing the cultural and linguistic challenges in Indigenous ECE. The cultural element in Indigenous ECE plays a critical role in building children's self-identity and confidence. It also supports their socio-emotional development through the integration of Indigenous cultural practices into the learning process (Chen, 2023; Henward et al., 2019b; Rameka & Stagg Peterson, 2021; Tamati et al., 2021). In addition to culture, Indigenous knowledge, which includes values, traditions, and heritage, is collectively emphasized in Indigenous ECE. Hence, incorporating Indigenous knowledge into ECE supports identity formation, sustains traditions, and helps counter the negative influences of mainstream ECE systems that are not culturally appropriate (Henward et al., 2019b; Ravna, 2021; Scrine et al., 2020; Tamati et al., 2021). Furthermore, language plays a vital role in shaping children's understanding of their culture(Harju-Luukkainen et al., 2021; Henward et al., 2019b; Tamati et al., 2021). As such, learning through the mother tongue enhances fluency, builds self-confidence, and fosters a sense of being respected and trusted(Chen, 2023; Henward et al., 2019b; Joshi, 2021; Rameka & Stagg Peterson, 2021). Therefore, initiatives to revive and preserve Indigenous languages should be prioritized in Indigenous ECE to ensure that their languages are respected and continuously safeguarded (Henward et al., 2019b; Rameka & Stagg Peterson, 2021; Tapia, 2020).

Thus, to effectively implement Indigenous ECE programs, it is crucial to prioritize Indigenous culture, knowledge, and language. In summary, the researcher believes that recognizing these elements in ECE is essential for addressing current challenges and issues. Accordingly, this recognition has the potential to strengthen Indigenous children's identity, build their self-confidence, and deepen their understanding of culture and tradition prior to entering formal education.

Table 1. Findings

Study	Country	Culture & Language			Relationship & Engagement				Guideline Document		Resources	
		IC	IK	IL	R	P&F	Com	T	P	Cu	LR	F
Tamati et al. (2021)	New Zealand	/	/	/			/					
Derby (2023)	New Zealand	/	/				/					
Becerra-Lubies et al. (2023)	Chile			/			/		/	/		/
Rameka & Stagg Peterson (2021)	New Zealand and Canada	/	/	/			/					
Riquelme Mella et al. (2023)	Chile	/	/				/	/				
Ravna (2021)	Russia	/	/	/			/					
Becerra-Lubies et al. (2019)	Chile	/		/		/	/		/			
Henward et al. (2019b)	USA	/	/	/	/	/	/	/	/	/	/	
Scrine et al. (2020)	Australia	/	/	/	/	/	/	/	/		/	/
Peterson et al. (2019)	Canada	/	/	/				/	/	/		
Harju-Luukkainen et al. (2021)	Norway	/		/			/	/				
Caro (2019)	Colombia	/		/				/				/
Joshi (2021)	India	/		/			/			/	/	
Page et al. (2022)	Australia	/				/					/	
Becerra-Lubies & Moya (2023)	Chile	/	/	/	/		/	/	/			/
Chen (2023)	Taiwan	/	/	/	/	/	/	/		/	/	
Kess & Puroila (2023)	Finland		/					/				
Becerra-Lubies (2021)	Chile		/				/	/	/	/		
Webb & Williams (2019)	Australia	/		/								
Gerlach & Gignac (2019)	Canada	/		/	/	/		/				
Townley et al. (2023)	Australia		/	/	/			/			/	
Tapia (2020)	Mexico	/					/	/	/			
(Henward et al. (2019a)	USA			/	/			/	/	/		
Tualaulelei & Taylor-Leech (2021)	Australia	/		/	/	/	/	/				/
Locke (2022)	Australia		/					/				
Williams et al. (2023)	New Zealand	/						/	/			
Probine et al. (2023)	New Zealand		/	/	/			/			/	/

Culture & Language	Relationship and Engagement	Guideline Documents	Resources
IC: Indigenous Culture IK: Indigenous Knowledge IL: Indigenous Language	R: Relationship P&F: Parent and Family Com: Community T: Teacher	Po: Policy Cu: Curriculum	LR: Learning Resources F: Financial

3.2 Relationship & Engagement

Another pressing issue in Indigenous ECE concerns the effort to foster relationships and engagement among teachers, children, parents, families, and Indigenous communities (Tapia, 2020; Townley et al., 2023). Community reluctance, limited awareness of the value of engagement, and minimal participation hinder relationship-building and contribute to a lack of trust in ECE services (Becerra-Lubies & Moya, 2023; Scrine et al., 2020; Tapia, 2020). Although existing programs have integrated Indigenous knowledge, collaborative relationships and community engagement are not emphasized within the learning context (Townley et al., 2023). This indirectly contributes to tensions between teachers and Indigenous communities (Becerra-Lubies & Moya, 2023). In addition, teacher involvement in Indigenous education remains limited (Becerra-Lubies et al., 2023; Harju-Luukkainen et al., 2021). Existing teachers face linguistic and cultural challenges, leading to anxiety and uncertainty among non-Indigenous educators (Kess & Puroila, 2023; Townley et al., 2023). Furthermore, current teacher training programs do not offer Indigenous education as a core component of ECE curricula (Lamb, 2021).

Findings from the SLR identify four critical subthemes to address in meeting the needs of Indigenous ECE: fostering positive relationships, engaging families, involving communities, and strengthening the role of teachers. Thus, building positive relationships across the Indigenous community in ECE is essential for strengthening the cultural identity of Indigenous children(Becerra-Lubies et al., 2023; Becerra-Lubies & Moya, 2023; Gerlach & Gignac, 2019; Kess & Puroila, 2023; Scrine et al., 2020; Townley et al., 2023; Tualaulelei & Taylor-Leech, 2021). Webb and Williams (2019) stated that such learning community relationships can support language and literacy development in Indigenous children. However, they require time and cannot be developed hastily (Gerlach & Gignac, 2019). This type of engagement promotes holistic child development while addressing challenges in home-based learning support (Derby, 2023; Gerlach & Gignac, 2019; J. Page et al., 2022; Scrine et al., 2020). When actively involved, Indigenous communities can offer dynamic cultural support and sensitivity within the ECE context (Becerra-Lubies, 2021; Becerra-Lubies et al., 2019; Chen, 2023; Henward et al., 2019b; Henward et al., 2019a; Joshi, 2021; Tamati et al., 2021). Additionally, community engagement can be fostered through collaboration in curriculum development and the implementation of community-oriented pedagogies (Becerra-Lubies et al., 2019; Chen, 2023; Henward et al., 2019b; Henward et al., 2019a).

The role of teachers also warrants attention, as the success of Indigenous ECE programs depends on their wisdom and preparedness (Tapia, 2020). This emphasis requires teachers to adapt their activities and curricula to align with Indigenous cultural needs (Chen, 2023; Harju-Luukkainen et al., 2021; Henward et al., 2019b; Riquelme Mella et al., 2023). Moreover, this highlights the need for continuous professional development for non-Indigenous teachers to enhance their competence through training, mentoring, and monitoring (Becerra-Lubies, 2021; Becerra-Lubies et al., 2023; Chen, 2023; Locke, 2022; Williams et al., 2023). In essence,

adequate preparation and knowledge among educators not only help attract Indigenous children to ECE programs but also build trust within the community (Chen, 2023; Henward et al., 2019b; Riquelme Mella et al., 2023).

The need for strong relationships and active Indigenous community involvement reflects an interdependent ecosystem among all stakeholders. Therefore, to bridge the gap between policy and practice, it is essential to understand the complex social mechanisms at play, as emphasized by ecological systems theory. In conclusion, the involvement of all stakeholders in early education is vital for the development and well-being of Indigenous children.

3.3 Guideline Document

The lack of recognition of Indigenous culture presents significant challenges to key documents such as policies and curricula in ECE for Indigenous communities (Tapia, 2020). This situation is further exacerbated by the limited awareness of appropriate policies and programs in ECE, as well as a failure to understand the differences in lifestyle between Indigenous and non-Indigenous communities(Scrine et al., 2020). As a result, policies are often misaligned with the actual needs and developmental contexts of Indigenous children, and the Indigenous ECE curriculum does not adequately reflect their lived realities (Chen, 2023; Henward et al., 2019b; Scrine et al., 2020). Henward et al. (2019) argued that inadequate and culturally irrelevant curriculum content has negative impacts and is even perceived as a waste of time by some.

Two subthemes identified through the SLR are Indigenous policy and curriculum. Notably, there is a pressing need to develop policy frameworks that emphasize intercultural education and the integration of Indigenous culture and language (Becerra-Lubies et al., 2019, 2023; Becerra-Lubies & Moya, 2023; Caro, 2019; Probine et al., 2023; Williams et al., 2023). Gobena (2020) further stressed that such policies must have clear, specific, and measurable goals. In designing effective Indigenous ECE policies, the involvement of multiple stakeholders, including teacher training institutions and Indigenous communities, should be prioritized to ensure accountability and effective implementation (Becerra-Lubies et al., 2023; Becerra-Lubies & Moya, 2023; Williams et al., 2023).

Beyond policy, the ECE curriculum must also be adapted to reflect Indigenous culture, language, and knowledge (Becerra-Lubies, 2021; Becerra-Lubies et al., 2023; Chen, 2023; Henward et al., 2019b; Henward et al., 2019a; Joshi, 2021; Peterson et al., 2019; Probine et al., 2023; Tualaulelei & Taylor-Leech, 2021).In addition, the curriculum framework should consider the uniqueness of Indigenous culture and ecological contexts (Joshi, 2021). In other words, by embracing this uniqueness, the curriculum can better support meaningful learning activities and strengthen Indigenous children's cultural identity (Probine et al., 2023).

3.4 Resources

Limited resources to support Indigenous ECE pose significant challenges that affect the quality of education and intercultural educational development (Becerra-Lubies et al., 2023; Tualaulelei & Taylor-Leech, 2021). Townley et al. (2023) revealed that it is challenging to obtain learning resources based on Indigenous culture since existing learning materials are not relevant to the backgrounds of Indigenous children (Gobena, 2020). The economic stability of a country also influences this challenge (Becerra-Lubies et al., 2023). Additionally, the lack of financial resources and funding is a major issue in efforts to improve the quality of Indigenous ECE, as these programs require substantial financial support (Tualaulelei & Taylor-Leech, 2021; Williams et al., 2023). Moreover, this gap is related to the lack of recognition of Indigenous cultures and the economic stability of a country.

Through the two themes that have emerged, namely learning materials and financial funding in this challenge, there is a gap that needs to be filled. To address this issue, it is essential to integrate materials and resources from indigenous communities into ECE (Joshi, 2021). Nonetheless, natural materials are easily available in their environment and are more contextual, giving meaning to Indigenous children while nurturing their creativity, imagination, and cultural competence (Chen, 2023; Page et al., 2022). Although the primary focus should be on Indigenous-based learning resources, external materials can also be utilized to enrich the learning process. The subsequent factor to consider is sufficient funding for Indigenous ECE programs (Becerra-Lubies et al., 2023; Becerra-Lubies & Moya, 2023; Probine et al., 2023; Williams et al., 2023). The specific allocation of financial resources for intercultural education within Indigenous ECE programs has become a demand, and it is also the important role of the responsible parties to ensure that the provided funds cover explicit and contextual learning within Indigenous communities and support the capacity of teachers to perform their duties. This is especially true with regard to Indigenous ECE programs (Becerra-Lubies et al., 2023; Probine et al., 2023; Williams et al., 2023). In summary, culturally-based learning materials and sufficient, relevant financial resources should be prioritized to ensure the effectiveness of Indigenous ECE programs that are contextual, inclusive, and support the holistic development of Indigenous children.

4.0 Recommendation & Conclusion

Through this SLR, several suggestions for further research can be explored, including examining the impact of early education on Indigenous children that meets all four main demands. Correspondingly, research needs to examine the impact of integrating Indigenous culture into early education by focusing on local culture from the children's perspective. Future research can also consider exploring the relationship between the Indigenous community and ECE teachers, including aspects of trust and cooperation. Furthermore, the cultural appropriateness between educators and preschool children can be investigated to understand its impact on communication and the development of Indigenous children. Finally, the research needs to consider appropriate learning approaches for Indigenous children from the perspectives of both Indigenous and non-Indigenous teachers. In conclusion, this study emphasizes the need to address challenges in Indigenous ECE by integrating Indigenous culture into the educational framework. These findings call for a collaborative approach among stakeholders to enhance the quality of education by respecting Indigenous perspectives. Although this study has limitations in terms of using only three databases and relying on expert-based quality assessment, it still provides an important foundation

for future research. It is hoped that future studies will employ various evaluation tools and involve the Indigenous community more comprehensively in order to develop more inclusive and effective educational strategies that meet their unique educational needs within a more holistic and meaningful learning environment.

Acknowledgements

Paper Contribution to Related Field of Study

This study contributes to the field of ECE by emphasizing the importance of cultural integration and community involvement to strengthen contextual and inclusive learning approaches.

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