



## Designing Language Learning Materials for Preschool Children in Taiwan Through the Integration of Indigenous Nature Conservation Stories

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**KEYWORDS:** culturally responsive teaching, early childhood education, language learning materials, young children

**ABSTRACT:** This paper aims to design language learning materials for preschool children in Taiwan through the integration of indigenous nature conservation stories. Specifically, it examines how Indigenous conservation narratives can be incorporated into language learning materials to support preschool children's language development, foster environmental awareness, and promote appreciation of Indigenous cultural knowledge. By connecting language learning with culturally meaningful and ecologically grounded stories, the study seeks to contribute to the development of culturally responsive and sustainability-oriented early childhood education in Taiwan.

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## 1. INTRODUCTION

In Taiwan's early childhood education sector, the "Early Childhood Education and Care Curriculum Framework" emphasizes the implementation of an integrated curriculum and identifies six major learning domains—physical movement and health, cognition, language, social development, emotion, and aesthetics—as the fundamental framework for children's learning and development. Among these domains, the language domain encompasses bodily expression, oral language, graphic symbols, and the functions of written language, aiming to cultivate young children's abilities to comprehend, express, and use language, thereby establishing a foundation for subsequent learning and social interaction. With regard to language education practices in Taiwanese preschools, a variety of instructional approaches are currently employed, including reading instruction, whole language instruction, story-based teaching, parent-child shared reading, and language immersion programs. Existing studies generally indicate that these approaches contribute positively to the development of children's language proficiency, communication skills, and emergent literacy. Among these approaches, whole language instruction emphasizes that language learning should occur within authentic and meaningful contexts, enabling children to construct linguistic competence through holistic language experiences. In contrast, language immersion instruction seeks to enhance children's comprehension and use of a target language through natural language

input and contextualized interactions. Notably, among the more systematic and structured approaches to language instruction currently implemented in preschool settings, Whole Language and Language Immersion represent the two most prevalent and influential models. Although both approaches emphasize children's language learning in naturalistic contexts, they differ in their theoretical foundations, curriculum design principles, and instructional practices. Therefore, examining the underlying philosophies, implementation strategies, and impacts of whole language and language immersion approaches on young children's language development can contribute not only to a deeper understanding of theories of early childhood language education but also to the development of curriculum planning and pedagogical practices in preschool education (Fan, Shih & Chang, 2024; Shih, 2020, 2024a, 2026; Shih et al, 2025).

Integrating Indigenous nature conservation stories into preschool children's language learning not only enhances their linguistic abilities but also carries significant value for cultural transmission and environmental education. Indigenous cultures embody rich ecological wisdom and ethical perspectives on nature, and their oral narratives often reflect a philosophy of harmonious coexistence between humans and the natural world. Through activities such as reading, discussing, and expressing ideas about these stories, young children can develop their listening, speaking, and reading skills while simultaneously cultivating respect for and concern about the natural environment through their understanding of the narratives (Battiste, 2002; Cajete, 2000; Hedges & Cullen, 2012; Juan & Shih, 2026; Shih, Wu & Chung, 2022). This paper aims to design language learning materials for preschool children in Taiwan through the integration of indigenous nature conservation stories. Specifically, it examines how Indigenous conservation narratives can be incorporated into language learning materials to support preschool children's language development, foster environmental awareness, and promote appreciation of Indigenous cultural knowledge. By connecting language learning with culturally meaningful and ecologically grounded stories, the study seeks to contribute to the development of culturally responsive and sustainability-oriented early childhood education in Taiwan.

**2. Developing Cultural Picture Books and Manipulative Learning Materials for Taiwan’s Sixteen Indigenous Peoples through Generative AI**

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**Learning Objectives**

## 1. Recognizing Common Visual Symbols in Everyday Life

Guide children to observe visual symbols, patterns, traditional motifs, clothing designs, and cultural artifacts found in Indigenous cultures, helping them become aware of the meanings and messages conveyed through these images. Develop children's ability to identify common visual symbols in their living environment and encourage them to share their observations and discoveries.

*(Aligned with Indicator: Lang-S-1-4-1 Recognize common visual symbols in the living environment.)*

## 2. Interpreting the Meanings of Cultural Symbols

Through Indigenous picture books, visual materials, and manipulative learning resources, guide children to use their life experiences to understand the meanings communicated through cultural images and symbols. Encourage children to infer and explain the cultural significance of different symbols based on story contexts and cultural clues.

*(Aligned with Indicator: Lang-L-1-4-1 Interpret the meanings of symbols using clues from the living environment.)*

## 3. Understanding the Cultural Characteristics of Indigenous Peoples

Through AI-generated and co-created picture book stories representing Taiwan's sixteen Indigenous peoples, introduce children to traditional clothing, ceremonial practices, myths and legends, lifestyles, and ecological knowledge of different Indigenous groups. Foster children's respect for and appreciation of cultural diversity while enhancing their understanding of different cultural traditions (Shih, 2024b).

## 4. Expressing Cultural Understanding through Images and Language

Encourage children to express their understanding and reflections on Indigenous cultural stories through drawing, oral storytelling, role-playing, and manipulative learning activities. Promote the development of language expression, symbolic understanding, and intercultural communication skills.

**Integrated Curriculum Objective**

Through the co-creation of picture book stories and manipulative teaching materials representing Taiwan's sixteen Indigenous peoples with the support of Generative Artificial Intelligence (Generative AI), children will be guided to recognize Indigenous cultural symbols and characteristics, learn to interpret symbolic meanings through everyday experiences, and develop language abilities through diverse expressive activities. The curriculum aims to cultivate children's symbolic literacy, language development, cultural understanding, social interaction skills, and respect for cultural diversity in an integrated and holistic manner.

**Instructional Materials**

## 1. AI-Co-Created Picture Book Stories and Manipulative Teaching Materials for Taiwan's Sixteen Indigenous Peoples

A collection of picture book stories co-created with Generative Artificial Intelligence (AI), highlighting the cultural traditions, myths, ecological wisdom, and everyday experiences of Taiwan's sixteen Indigenous peoples. Manipulative teaching materials developed for the Language and Social Development learning domains, supporting children's exploration of Indigenous cultural symbols, narratives, and cultural diversity through interactive and experiential learning activities (Wu, 2022, 2023).

## 2. Language Domain Lesson Plans

Curriculum and instructional designs aligned with the learning indicators of the *Early Childhood Education and Care Curriculum Framework*. Learning activities incorporating picture book reading, storytelling, role-playing, visual symbol interpretation, and discussion to foster children's language development, communication competence, narrative abilities, and multicultural understanding (2024).

**Description**

Place identity, develops based on the transactional—on people's side: perceptual and cognitive—processes between people and their environment and describes the phenomenon when places important to a person become related to their self-identity (Berzel & Dúll, 2024; Lin & Shih, 2026).

**Lmuhuw** is an Atayal word meaning “**chanting, storytelling, and cultural transmission.**” It symbolizes the way this six-sided educational manipulative conveys and preserves Indigenous stories through interactive learning experiences. Named the “**Lmuhuw Time Treasure Box,**” this multifunctional learning cube is designed around the core concept of integrating cultural heritage with language learning and sensory development. The teaching material incorporates diverse cultural symbols from Taiwan’s sixteen Indigenous peoples and features interactive board games and multiple play-based learning activities. Through immersive exploration and hands-on engagement, children are invited to experience the ancestral chants, stories, and traditions passed down through generations. First, the design emphasizes **mobility and narrative engagement.** The interactive connection between the first, fifth, and sixth sides allows the architectural models and storytelling wheels to function not merely as static displays but as detachable and rotatable theatrical stages in children’s hands. These components are integrated with story boxes that present Indigenous experiences related to food, clothing, housing, transportation, education, and recreation. Through these storytelling activities, children are encouraged to express their ideas verbally while simultaneously developing spatial reasoning and sequencing skills through dynamic manipulation and interaction. Second, the teaching material is carefully designed to support the development of **fine motor skills.** Activities progress gradually from handwriting practice on the second side, to bottle-cap twisting exercises on the third side, and finally to the more advanced weaving activities on the fourth side. This sequence systematically strengthens hand muscles, coordination, and motor stability. In particular, the “**Little Weaver**” activity transforms traditional Indigenous weaving techniques into learning experiences involving color and pattern matching, enabling children to develop cognitive skills while appreciating Indigenous artistic traditions and aesthetics. Finally, the manipulative integrates the mathematical concept of **connecting numbers and shapes** through culturally meaningful contexts. By combining picture-book stories and board games based on Indigenous community life, abstract numerical concepts are transformed into concrete card-matching and classification activities. Through these experiences, children are guided to develop cultural awareness and identity while enhancing their cognitive abilities, language skills, and fine motor development. The **Lmuhuw Time Treasure Box** therefore offers an interactive journey that integrates cognition, language learning, social-cultural understanding, and artistic appreciation, creating a holistic and culturally responsive learning experience for young children.

**3. REFLECTIONS**

Education is a fundamental pillar of sustainable development, providing individuals with knowledge, skills, and opportunities for personal growth and socioeconomic advancement. Curriculum reform has long been a central issue in the field of education worldwide. With the rapid transformation of social environments, economic structures, and technological developments, the core competencies and knowledge structures required of students have also undergone continuous change. In response to these challenges, countries around the world have actively promoted curriculum reform to enhance student learning outcomes and ensure that educational systems remain responsive to the demands of an increasingly globalized world. Indeed, the essence of curriculum reform extends beyond merely revising subject content; it also involves a comprehensive examination and reconstruction of educational philosophies, pedagogical strategies, and learning approaches. As a society situated at the intersection of Eastern and Western cultures, Taiwan has long sought to balance local needs, national development goals, and

international trends in the formulation of its educational policies. Consequently, curriculum reform in Taiwan has reflected ongoing efforts to reconcile cultural traditions with contemporary educational demands while responding to the challenges and opportunities brought about by globalization (Lin & Shih, 2025; Khoury, 2023; Wang et al, 2006).

Taiwan's Early Childhood Education and Care Curriculum Framework (2017) identifies six essential learning domains: language, physical movement and health, cognition, social development, emotional growth, and aesthetic appreciation. While the framework provides policy guidance for curriculum implementation, researchers in early childhood education have continued to investigate the developmental processes, educational challenges, and effective pedagogical practices that support young children's language learning and development (Shih et al., 2025). The core objective of the language domain is the development of young children's communication competence. Communication cannot be separated from individuals' authentic life contexts and experiences. Therefore, teachers can foster children's language development by integrating it into their everyday experiences and daily activities, thereby enhancing their abilities to understand and express ideas. In practice, teachers can first create language-rich environments based on children's daily activities and encourage them to use spoken language, body movements, and visual symbols to describe their own life experiences. For example, children may be invited to recount their weekend experiences through a combination of oral narration and visual representations, while also responding to the experiences shared by their peers. This approach reflects the principle of "learning by doing," as children gradually develop their expressive abilities through active participation in communicative activities. Furthermore, teachers can connect language learning with children's everyday activities by creating opportunities for them to use visual and linguistic symbols in meaningful contexts. Through activities such as drawing, labeling, storytelling, and recording observations, children learn to represent their ideas, experiences, and understandings using a variety of symbolic forms. These experiences not only strengthen their emerging literacy skills but also support the development of their communicative competence by enabling them to convey meaning effectively in authentic social situations (Pan, 2014).

From the perspective of early childhood language education, stories serve as an important medium for young children's language learning. Research has indicated that story reading can promote children's vocabulary development, language comprehension, and narrative skills, while also supporting the development of early literacy abilities (Dickinson & Tabors, 2001; Justice & Kaderavek, 2002). Indigenous stories of nature conservation are often characterized by vivid plots, rich cultural meanings, and connections to everyday life, making them highly effective in capturing children's attention and enhancing their motivation to learn and participate. Through engagement with these stories, children not only acquire linguistic knowledge and expressive skills but also gain an understanding of the ecological wisdom and views of nature embedded within Indigenous cultures.

Furthermore, teachers can employ a variety of instructional strategies, such as picture book reading, role-playing, story retelling, dramatic performances, and visual art creation, to encourage children's language interaction and creative expression. These activities not only facilitate children's comprehension and retention of story content but also enhance their oral language skills, narrative competence, and communication abilities (Isbell et al., 2004; Yilmaz et al, 2002). For example, in story-retelling activities, children reconstruct story events using their own language, thereby strengthening their vocabulary use and understanding of narrative structures. Likewise, through role-playing and dramatic performances, children develop language expression and social interaction skills through dialogue and situational enactment. Therefore, integrating Indigenous nature conservation stories into early childhood language education not only contributes to the development of children's language abilities but also fosters cultural understanding and environmental awareness throughout the learning process. In doing so, it promotes the integration of language education, cultural education, and environmental education within a holistic educational framework.

## REFERENCES

1. Battiste, M. (2002). Indigenous knowledge and pedagogy in First Nations education. Ottawa, Canada: National Working Group on Education.
2. Berzel, Z., & Dúll, A. (2024). Place identity in a personality psychological context: place identity orientation its validating associations with nature connectedness pro-environmental behavior. *Front. Psychol.* 15:1424381. doi: 10.3389/fpsyg.2024.1424381
3. Cajete, G. (2000). *Native science: Natural laws of interdependence*. Clear Light Publishers.
4. Cummins, J. (2000). *Language, power and pedagogy: Bilingual children in the crossfire*. Multilingual Matters.
5. Dickinson, D. K., & Tabors, P. O. (2001). *Beginning literacy with language*. Paul H. Brookes.
6. Fan, Y. M., Shih, S. M., & Chang, N. P. (2024). Exploring the integration of whole language and immersion language approaches in kindergarten teaching. *Taiwan Journal of Educational Research*, 5(4), 301–318.
7. Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice* (3rd ed.). Teachers College Press.
8. Goodman, K. S. (1986). *What's whole in whole language?* Heinemann.
9. Hedges, H., & Cullen, J. (2012). Participatory learning theories: a framework for early childhood pedagogy. *Early Child Development and Care*, 182(7), 921–940. <https://doi.org/10.1080/03004430.2011.597504>
10. Isbell, R., Sobol, J., Lindauer, L. et al. The Effects of Storytelling and Story Reading on the Oral Language Complexity and Story Comprehension of Young Children. *Early Childhood Education Journal* 32, 157–163 (2004). <https://doi.org/10.1023/B:ECEJ.0000048967.94189.a3>
11. Juan, C. Y., & Shih, Y. H. (2026). Principles of science curriculum design for Taiwanese preschools: Three dimensions of integrating IEP into science learning for young children. *RA Journal of Applied Research*, 12(02), 99–105. <https://doi.org/10.47191/rajar/v12i2.01>
12. Justice, L. M., & Kaderavek, J. N. (2002). Using shared storybook reading to promote emergent literacy. *Teaching Exceptional Children*, 34(4), 8–13.
13. Lin, C., & Shih, Y. H. (2025). An analysis of Hong Kong's primary education curriculum guide (2024). *Journal of Taiwan Education Studies*, 2025, 6(6), 267-276
14. Lin, C. F., & Shih, Y. H. (2026). Place identity among Vietnamese women in Taiwan: Educational challenges and opportunities for integration. *Frontiers in Psychology*.16:1703995. doi: 10.3389/fpsyg.2025.1703995
15. Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal*, 32(3), 465–491.
16. Ministry of Education (2017). *The early childhood education and care curriculum framework*. Taipei: Ministry of Education.
17. Pan, T. T. (2014). The practice of language arts in the new guidelines for the preschool curriculum. *Child Care and Education*, 4, 29-54.
18. Shih, Y. H. (2020). Investigating the aesthetic domain of the “Early Childhood Education and Care Curriculum Framework” for young students in Taiwan. *International Journal of Education and Practice*, 8(1), 37-44.
19. Shih, Y. H. (2024a). Learning for children in an educational enrichment: A perspective derived from Taiwan’s Early Childhood Education & Care Curriculum Framework. *Frontiers in Education*. 9:1412972. doi: 10.3389/educ.2024.1412972
20. Shih, Y. H. (2024b). Culturally responsive curriculum: A systematic overview. *Edelweiss Applied Science and Technology*, 8(6), 6917–6925. <https://doi.org/10.55214/25768484.v8i6.3493>
21. Shih, Y. H. (2026). Fostering learning motivation among young children in Taiwan: A curriculum design perspective. *Social Science and Human Research Bulletin*, 3(3), 228-236.
22. Shih, Y. H., Kao, S. C., Juan, C. Y., Bendraou, R., & Nguyen, M. T. (2025). The language domain in Taiwan’s Early Childhood Education and Care Curriculum Framework: An analysis of goals and content. *RA Journal of Applied Research*, 11(11), 1003–1008. <https://doi.org/10.47191/rajar/v11i11.06>
23. Shih, Y. H., Wu, C. C., & Chung, C. F. (2022). Implementing intergenerational learning in a preschool: a case study from Taiwan. *Educational Gerontology*, 48(12), 565–585. <https://doi.org/10.1080/03601277.2022.2053035>
24. Wang, R. J, Hsueh, C. M., Chiang, W. W., Shih, Y. H., Lin, J. C., & Pang, P. (2026) University Social Responsibility (USR) programs and the transformation of Taiwan's higher education: pathways to sustainability and local engagement. *Front. Educ.* 11:1756071. doi: 10.3389/educ.2026.1756071
25. Wu, C. C. (2022). Constructing Counting and Arithmetic Learning Trajectories for Kindergarteners: A Preliminary Investigation in Taiwan. *Children*, 9(12), 1994. <https://doi.org/10.3390/children9121994>
26. Wu, C. C. (2023). Effects of achievement goals on learning interests and mathematics performances for kindergarteners. *Front. Psychol.* 14:1156098. doi: 10.3389/fpsyg.2023.1156098

28. Wu, C. C. (2024). The effects of Hakka bilingual programs on learning interests for kindergarteners. *International Journal of Bilingual Education and Bilingualism*, 27(8), 1142–1152. <https://doi.org/10.1080/13670050.2024.2345709>
29. Yilmaz, R.M., Topu, F.B. & Takkaç Tulgar, A. (2002). An examination of vocabulary learning and retention levels of pre-school children using augmented reality technology in English language learning. *Educ Inf Technol* 27, 6989–7017. <https://doi.org/10.1007/s10639-022-10916-w>