


The Multi-Dimensional Effectiveness of Early Childhood Education Programs: Impact on Holistic Learner Development in Tumauni South District in the School Year 2025–2026.

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early childhood education, holistic learner development, program effectiveness, learning materials adequacy, developmental domains, kindergarten education, Philippines

Abstract. Early Childhood Education (ECE) plays a critical role in shaping children’s cognitive, social, emotional, and physical development, serving as a foundation for lifelong learning and overall well-being. This study examined the multidimensional effectiveness of Early Childhood Education (ECE) programs and their impact on holistic learner development in the Tumauni South District during the School Year 2025–2026. A descriptive research design was employed, with data collected from forty-four (44) kindergarten teachers using a structured questionnaire. The study assessed program effectiveness in terms of objectives, quality dimensions, developmental domains, and the adequacy of learning materials using frequency, percentage, weighted mean, and standard deviation. The findings revealed that ECE programs are generally effective, with an overall mean of 4.22, indicating that the program objectives are realized and quality standards are maintained. Across developmental domains, the programs demonstrated high effectiveness (overall mean = 4.38), particularly in health, hygiene, and safety, as well as mathematics, science, and language and literacy. Personal and social development and creative arts were also positively rated, although slightly lower than other domains. In terms of learning materials, the results indicated a satisfactory level of adequacy (overall mean = 3.82), with strong availability of books and mathematics-related resources but limited provision of technology, science materials, and musical instruments. Overall, the study concludes that ECE programs significantly support holistic learner development; however, improvements in resource allocation and teacher training are necessary to enhance program effectiveness and ensure more equitable and comprehensive early learning experiences.

Introduction

Early Childhood Education (ECE) serves as a vital foundation for lifelong learning and holistic development, encompassing cognitive, emotional, social, and physical domains. It is globally recognized by organizations such as the World Bank and UNESCO as a critical stage in human development, particularly between the ages of three and six, when rapid brain growth occurs. Early interventions during this period significantly influence later academic and socioeconomic outcomes (Saunders et al., 2022). Contemporary research highlights a shift toward integrating both cognitive and non-cognitive learning strategies to support well-rounded development, emphasizing emotional intelligence, social competence, and physical well-being, alongside intellectual growth (Upreti et al., 2024). Consequently, modern education systems increasingly prioritize not only access to early education but also the quality and transformative impact of ECE programs, especially in socio-economically disadvantaged contexts, where holistic and community-based approaches contribute to sustainable development (Demissie & Pearse, 2024; Koen et al., 2021).

In the Philippine context, Early Childhood Education is institutionalized through the K–12 system and the Universal Kindergarten program, with the Department of Education implementing reforms such as the MATATAG Curriculum. This curriculum emphasizes foundational competencies while integrating socio-emotional learning to promote holistic development. Despite these policy advancements, persistent challenges remain, including unequal access to resources,

limited specialized training among teachers, and disparities in learning outcomes across regions. National reports continue to highlight concerns about learning poverty, particularly in early literacy and numeracy, underscoring the need to strengthen teacher qualifications and professional-development initiatives (Alicamen & Becamon, 2022).

At the local level, particularly in resource-constrained rural districts such as Tumauni South, the implementation of ECE programs reflects variations in teacher demographics, years of experience, access to instructional materials—including technology and science resources—and overall instructional quality. Although these programs aim to support holistic learner development across domains such as literacy, mathematics, science, creative arts, and socio-emotional learning, the outcomes often vary significantly. This variability highlights the importance of examining how these multiple dimensions interact to influence learner development and how contextual factors shape program effectiveness (Alicamen & Becamon, 2022).

Despite the expanding body of literature on Early Childhood Education, most research predominantly focuses on urban settings, single domains like literacy or numeracy, or generalized national data. There is still a lack of localized studies that examine the multi-dimensional effectiveness of ECE programs, particularly those that link teacher profiles with learner outcomes while incorporating broader developmental domains such as creative arts and health, hygiene, and safety. Additionally, there is limited updated evidence aligned with the MATATAG Curriculum and the current educational context of the 2025–2026 school year. Specifically, in the Tumauni South District, there is a scarcity of empirical data assessing the effectiveness of ECE programs across multiple developmental areas, identifying domain-specific gaps, and determining the influence of teacher characteristics on learner outcomes. In response to these gaps, this study aims to provide a localized and comprehensive evaluation of the multi-dimensional effectiveness of Early Childhood Education programs and their impact on holistic learner development in the Tumauni South District.

Research Questions

This study aimed to determine the effectiveness of Early Childhood Education (ECE) programs on holistic learner development in Tumauni South District for the School Year 2025–2026. Specifically, it sought to answer the following questions.

1. What is the profile of the respondents in terms of: Age , Gender , Civil status , Present position , Highest educational attainment , Level of trainings attended in Early Childhood Education , Years in service and Performance rating of kindergarten pupils
2. What is the degree of effectiveness of the observable dimensions of quality in Early Childhood Education programs?
3. What is the degree of effectiveness of Early Childhood Education programs in terms of: Personal and social development , Language and literacy , Basic mathematical concepts , General science , Health, hygiene, and safety and Creative arts
4. What is the degree of adequacy of learning materials used in Early Childhood Education programs?

Integrated Conceptual and Theoretical Mapping

The integrated conceptual and theoretical mapping of this study presents a clear connection between learning theories and the framework used to evaluate the effectiveness of Early Childhood Education (ECE) programs. This study is grounded in Tuckman's Developmental Theory and Holistic Development Theory. Tuckman's model explains how learners develop through stages of interaction and adjustment, while the Holistic Development Theory emphasizes that children grow across multiple domains, including cognitive, social, emotional, physical, and creative aspects. Together, these theories support the idea that effective early education must address the child as a whole. These theoretical perspectives are applied through the input-process-output (IPO) model, which serves as the study's conceptual framework. The input includes teacher characteristics, such as qualifications and experience, as well as key program dimensions, such as literacy, mathematics, science, health, and creative arts. This process refers to how these inputs are implemented through teaching strategies, curriculum delivery, and the learning environment. The output focuses on holistic learner development, reflecting improvements in different developmental areas. The framework also includes a feedback component that highlights the importance of continuous assessment and program improvement. By evaluating outcomes, educators can identify strengths and areas that need enhancement, ensuring that the program remains responsive and effective. Overall, the mapping demonstrates how teacher factors and program components interact to influence the development of learners. It provides a structured way to understand and evaluate the multidimensional effectiveness of ECE programs in supporting holistic growth.

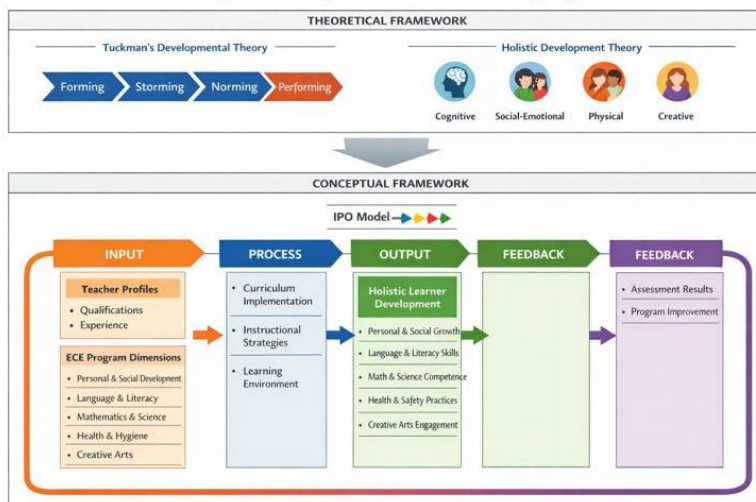


Figure 1 Integrated Conceptual and Theoretical Framework of the Study

Methodology

Research Design

This study employed a descriptive research design to examine the multidimensional effectiveness of Early Childhood Education (ECE) programs and their impact on holistic learner development in the Tumauni South District during the School Year 2025–2026. Descriptive research was deemed appropriate because it allows for the systematic collection and analysis of data without manipulating the study environment, thereby providing an accurate portrayal of existing conditions. The design enabled the researcher to quantify teachers' perceptions of various domains of ECE effectiveness, including personal and social development, language and literacy, basic mathematical concepts, general science, health, hygiene and safety, and creative arts. Through this approach, the study generated measurable insights into how current ECE programs function in real-world classroom settings.

Locale of the Study

The study was conducted in the Tumauni South District, a public school district in the province of Isabela, Philippines. The district comprises several public elementary schools that implement Early Childhood Education programs aligned with the Department of Education's MATATAG curriculum. This locale was selected because it represents a rural educational setting where resource availability, teacher profiles, and program implementation may differ from urban contexts. Examining this district provided a localized perspective on how ECE programmes operate within decentralized educational environments.

Respondents of the Study

The study respondents consisted of forty-four (44) kindergarten teachers from selected public elementary schools within the Tumauni South District. These participants were directly involved in the implementation of Early Childhood Education programs, making them suitable sources of data on program effectiveness and learner development. The respondents were selected using purposive sampling, ensuring that only teachers handling kindergarten classes during the specified school year were included in the study. Their professional experiences, educational backgrounds, and training exposures provided valuable insights into the multidimensional aspects of ECE implementation.

Data Gathering Instruments

The primary instrument used in this study was a structured questionnaire developed based on an extensive review of the related literature and studies. The questionnaire was divided into several parts, including the respondents' profile and multiple domains measuring the effectiveness of ECE programs, such as the realization of objectives, adequacy of learning materials, and developmental outcomes across key learning areas. The instrument utilized a Likert-type scale to quantify perceptions, thereby allowing for a systematic analysis of responses. Additionally, unstructured interviews were conducted to supplement the quantitative data, providing deeper insights and clarifying responses where necessary. The instrument was validated through expert review and pilot testing to ensure clarity, relevance, and reliability.

Data Gathering Procedure

Prior to data collection, the researcher secured permission from the Schools Division Superintendent and coordinated with the school principals within the district. Upon approval, the questionnaires were distributed to the selected teacher respondents with clear instructions regarding their completion. The researcher ensured that ethical considerations were observed, including voluntary participation and confidentiality of responses. Follow-ups were conducted to ensure a high questionnaire retrieval rate. In addition, informal interviews were conducted to validate and enrich the quantitative findings. All collected data were systematically organized for subsequent analysis.

Statistical Treatment of Data

The collected data were analyzed using appropriate statistical tools to ensure accurate interpretation. Frequency and percentage distributions were used to describe the respondents' demographic profiles, including age, gender, civil status, educational attainment, and years of service. The weighted mean was employed to determine the degree of effectiveness of the ECE program across various dimensions, allowing for a clear interpretation of respondents' perceptions based on a Likert scale. Ranking was used to compare the relative strengths of the different program components, while the standard deviation was applied to measure the variability of responses. These statistical techniques enabled the researcher to derive meaningful conclusions regarding the multi-dimensional effectiveness of Early Childhood Education programs.

Results and Discussion

The Profile of the Respondents

Profile Variable	Category	Frequency	Percentage
Gender	Male	4	9.09%
	Female	40	90.91%
Age	20-25	6	13.64%
	26-30	12	27.27%
	31-35	9	20.45%
	36-40	7	15.91%
	41-45	5	11.36%
	46 and above	5	11.36%
Civil Status	Single	18	40.91%
	Married	26	59.09%
	Widowed	0	0.00%
Present Position	Teacher I	20	45.45%
	Teacher II	10	22.73%
	Teacher III	8	18.18%
	Master Teacher I	4	9.09%
	Master Teacher II	2	4.55%
	Educational Attainment	Bachelor's Degree	12
	With Master's Units	20	45.45%
	Master's Degree	8	18.18%
	With Doctoral Units	3	6.82%
	Doctorate Degree	1	2.27%
Years in Service	0-5 years	14	31.82%
	6-12 years	12	27.27%
	13-20 years	8	18.18%
	21-25 years	6	13.64%
	30 years and above	4	9.09%
Trainings Attended	School/Local	44	100.00%
	District	44	100.00%
	Regional	21	47.73%
	National	6	13.64%
	International	1	2.27%

Table 1 Profile of the Respondents

Table 1 shows the background of the people in the study. Most of them are women (90.91%), and only a few are men (9.09%). This means that Early Childhood Education (ECE) in the area is mostly a female job. Most of the people are between

26 and 30 years old (27.27%), followed by those aged 31–35 (20.45%). This suggests that the teachers are mostly young and active. More of them are married (59.09%) than single (40.91%), showing they are stable and experienced. Most are Teacher I (45.45%), meaning they are early in their careers. Fewer are in higher positions like Master Teachers. Many have studied further, with 45.45% having some master’s degree units and 18.18% already having a master’s degree. This shows they are keen on learning and growing professionally. Many have 0–5 years of experience (31.82%), indicating many new teachers, while others have more experience. All have attended school and district training (100%), but fewer have gone to regional (47.73%), national (13.64%), and international (2.27%) training. This means basic training is common, but broader training is less so. Overall, the ECE workforce in the Tumuini South District is mostly female, young, and developing professionally, with different levels of experience and training. These traits are important for how ECE programs work in the district.

The Degree of Effectiveness of Early Childhood Education Programs in Terms of Objectives and Quality Dimensions

Indicator	Mean	SD	Interpretation
Realization of ECE Objectives	4.13	0.29	Realized
Dimensions of Quality (Observable ECE)	4.30	0.34	Effective
Overall Mean	4.22	0.32	Effective

Table 2 Degree of Effectiveness of Early Childhood Education Programs in Terms of Objectives and Quality Dimensions

Table 2 shows that Early Childhood Education (ECE) programs are generally effective in terms of objective realization and quality dimensions. The “Realization of ECE Objectives” obtained a mean of 4.13 (SD = 0.29), interpreted as “Realized,” indicating that the programs met their intended learning goals. Likewise, the “Dimensions of Quality” recorded a mean of 4.30 (SD = 0.34), interpreted as “Effective,” suggesting that key aspects such as curriculum delivery, learning environment, and teacher–child interaction are well-implemented. The overall mean of 4.22 (SD = 0.32) further confirmed the effectiveness of these programs. These findings are supported by previous studies showing that quality ECE programs improve children’s school readiness and long-term outcomes (Wolf et al., 2025; Morency et al., 2024). In addition, effective implementation is influenced by teachers’ ability to adapt instructional practices to learners’ needs (Guerrero and Camargo-Abello, 2023). Similarly, Anselmo et al. (2025) found that using lesson exemplars helps improve instructional delivery and supports effective curriculum implementation.

Respondents’ Perception on the Degree of Adequacy of Learning Materials of Early Childhood Education Programs

Particulars	Mean	SD	Interpretation
Art Supplies	4.15	0.40	Realized
Books	4.42	0.35	Realized
Mathematics – Counting Objects	4.58	0.28	Very Adequate
Musical Instruments	3.20	0.60	Moderately Realized
Science Materials	3.45	0.55	Moderately Realized
Technology	3.12	0.65	Moderately Realized
Overall Mean	3.82	0.53	Realized (R)

Table 3 Respondents’ Perception on the Degree of Adequacy of Learning Materials of Early Childhood Education Programs

The table 3 show the respondents generally perceive the adequacy of learning materials in Early Childhood Education (ECE) programs as satisfactory, with an overall mean of 3.82, interpreted as “Realized.” High adequacy ratings for books (4.42) and mathematics – Counting Objects (4.58) indicate strong support for literacy and numeracy development, which are essential foundations for young learners’ cognitive growth. Art supplies also received a favorable rating (4.15), highlighting the importance of promoting creativity in early education contexts (Yildirim & Yilmaz, 2023). In contrast, Musical Instruments (3.20), Science Materials (3.45), and Technology (3.12) were only rated as “Moderately Realized,” suggesting the need for improvement in these areas. These findings are consistent with studies noting the challenges of integrating technology and science instruction due to limited resources and insufficient teacher preparation, despite the potential of mobile and interactive learning tools (Chen et al., 2023; Xu et al., 2025). In addition, Anselmo et al. (2025) emphasized that while emerging technologies such as artificial intelligence can enhance critical thinking and learning outcomes, their effective integration remains constrained by issues related to teacher training, accessibility, and instructional readiness. Furthermore, teachers’ ability to adapt available materials to learners’ needs plays a crucial role in maximizing effectiveness (Guerrero & Camargo-Abello, 2023). Overall, these findings highlight the strengths of traditional learning resources while pointing to ongoing challenges in providing diverse and technology-enhanced materials necessary for holistic development.

Degree of Effectiveness of Early Childhood Education Programs Across Developmental Domains

Developmental Domain	Mean	SD	Interpretation
Personal and Social Development	4.40	0.21	Agree
Language and Literacy	4.30	0.25	Strongly Agree
Basic Mathematical Concepts	4.45	0.30	Strongly Agree
General Science	4.41	0.23	Strongly Agree
Health, Hygiene, and Safety	4.54	0.18	Strongly Agree
Creative Arts	4.19	0.41	Agree
Overall Mean	4.38	0.26	Strongly Agree

Table 4 Degree of Effectiveness of Early Childhood Education Programs Across Developmental Domains

The data in Table 4 demonstrate that Early Childhood Education (ECE) programs are highly effective across multiple developmental domains, with strong overall agreement on their positive impact (overall mean = 4.38). Domains such as Health, Hygiene, and Safety (mean = 4.54), Basic Mathematical Concepts (4.45), General Science (4.41), and Language and Literacy (4.30) received particularly strong endorsements, reflecting comprehensive program success in these domains. This aligns with research underscoring the critical role of health education in shaping holistic child development and promoting long-term well-being, as health literacy in ECE contributes to reducing future health disparities (Ramos-Pla & Fornons Casol, 2025). Similarly, early literacy and numeracy skills are foundational predictors of later academic achievement, as corroborated by neuroscience-informed practices that enhance educator capacity and child developmental outcomes (Huang et al., 2024; Walsh et al., 2024). Social and personal development scores reflect effective social-emotional learning, which is vital for children's regulation and interaction skills (Zarra-Nezhad et al., 2023). Although Creative Arts scored slightly lower (4.19), it remained positively regarded, consistent with evidence that art education fosters creativity and cognitive growth (Hayes et al., 2021). Overall, the findings support sustained investment in high-quality, interdisciplinary ECE curricula and professional development to consolidate these benefits for children.

Conclusion and Recommendations

This study examined the multidimensional effectiveness of Early Childhood Education (ECE) programs and their impact on holistic learner development in the Tumauni South District. The findings indicate that ECE programs are generally effective in achieving their objectives and maintaining quality standards, as reflected by positive mean ratings across key indicators. The programs demonstrate strong effectiveness in developmental domains such as health, hygiene, and safety, as well as in mathematics, science, language, and literacy, confirming their significant contribution to holistic learner development. However, while the adequacy of learning materials was generally satisfactory, notable gaps were revealed in areas such as technology, science resources, and musical instruments, indicating uneven access to instructional materials. These findings imply that while current ECE practices are effective and should be sustained, targeted improvements in resource provision are necessary to ensure balanced and comprehensive development across all domains. Furthermore, strengthening teacher training and expanding access to diverse instructional materials can enhance program quality and responsiveness to learners' needs. Overall, this study underscores the importance of continuous program evaluation, strategic resource allocation, and professional development in improving the effectiveness and equity of Early Childhood Education programs.

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Competing Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study; all data used were obtained from previously published sources as cited in the reference list.

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Appendices

No appendices are attached to this study.