



Linguistics

Enhancement of Early Childhood Education (ECE) through Professional Development: Sri Lankan ECE Teachers' Perceptions

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A B S T R A C T

This study examined the influence of teacher Professional Development on the quality of learners' cognitive development, behavior management, and the overall effectiveness of Early Childhood Education. A questionnaire was administered among 285 Early Childhood Education (ECE) teachers serving at private educational institutions in Sri Lanka to gather data. The stratified sampling method was applied to select the respondents and the findings were analyzed using descriptive statistics, reliability analysis, correlation, and regression analysis. The study results demonstrate that teacher Professional Development has a positive and significant impact on the quality of the ECE classroom, young learners' cognitive development, behavior management, and the overall effectiveness of the ECE. The current study provides important insights into the role of teacher Professional Development in enhancing the quality of ECE in Sri Lanka. The study underscores the critical significance of Professional Development in reinforcing the quality of ECE in Sri Lanka. It advocates for continuous investment in teacher Professional Development initiatives, recognizing their potential to raise the standards of ECE classrooms, foster cognitive development among young learners, and facilitate positive behavior management techniques. Furthermore, the research emphasizes the necessity for future investigations to explore deeper into the correlation between teacher Professional Development and the efficacy of ECE. Such inquiries could uncover insights and explain strategies aimed at optimizing the effectiveness of ECE across diverse contexts.

I. INTRODUCTION

Education in the preschool years is often cited as the key to a child's future success. This phase of schooling is very significant for children in Sri Lanka as it facilitates their later intellectual, social, and emotional growth. Children who are exposed to learning opportunities at an early age are said to show more knowledge and engagement later in life (Bakken, Brown & Downing, 2017). Education for young children in Sri Lanka has unique characteristics that distinguish it from early childhood education in many other parts of the world. Preschool education in Sri Lanka often does not begin until a kid is three years old, and throughout their first few years of life, they are cared for by their parents. Consequently, they largely believe preschool is the entry point to the formal schooling system. Critically, teachers' role and responsibility become even more crucial as many children in Sri Lanka begin their ECE late. This emphasizes that teachers need the skills and expertise to aid students' growth in a short time frame.

Teachers with the necessary preparation are highly likely to foster an atmosphere conducive to learning for their students and instill lifelong learning in them. As indicated by previous investigations,

teacher preparation is one of the variables that affect the quality of ECE in Sri Lanka (Rathnayake & Jayasuriya, 2017). Teachers play a crucial role in shaping the cognitive, social, and emotional development of young children (Gallager, 2005), and providing them with the necessary knowledge and skills is essential for fostering optimal learning outcomes (Ahmed, Pasha & Malik, 2021). Additionally, supporting the professional growth and development of teachers demonstrates a commitment to the well-being and success of both educators and students alike (Abeywickrama, 2020, 2021ab). They have the skills to implement successful pedagogical practices that support children to engage in learning activities and foster their unique growth and development (Abeywickrama, 2022). If this is the case, the quality of preschool programs should be significantly improved by investing in teachers' professional development

As the World Bank (2020) claims, teachers' lack of training is a key issue in Sri Lanka's preschool education, in addition, due to the lack of coordination and well-thought-out policies, low-quality preschool programs have widespread in the country. Most of Sri Lanka's preschools are independently run and not regulated by any public or commercial bodies. As a result, preschool education has suffered, and teachers without adequate preparation may run programs. Given the critical role teachers play in moulding children's development in the early years, teachers' lack of preparation can be considered a serious question that needs attention. A setting like this might have a detrimental impact on children and their ability to grow and thrive. Therefore, the key aim of this study is to examine how improved teacher Professional Development impacts on the quality of preschool programs in Sri Lanka. The current study can explore whether improved results may be achieved for preschool children in Sri Lanka by investing in teacher Professional Development programs. If this is the case, the findings of the study can help advance the field of ECE in Sri Lanka by providing evidence to inform the development of effective policies and practices.

Literature Review

The literature review provides a comprehensive synthesis of existing research that showcases the relationship between teacher Professional Development and the effectiveness of ECE, with a specific focus on its relevance to the Sri Lankan context. By explaining the critical role of teacher Professional Development in advancing the quality of ECE and addressing related challenges, the review will inform the design and methodology of subsequent empirical investigations, thereby facilitating evidence-based policy formulation and program development in Sri Lanka's ECE landscape.

Children's Cognitive Development and Teacher Professional Development

Cognitive development refers to the process of acquiring knowledge, skills, and abilities relating to perception, memory, problem-solving, and reasoning (World Bank, 2020). Cognitive development in early childhood is a crucial aspect of children's overall development and has long-term implications for their future success (Ansari, Azizi & Zare, 2019). Several theories have been developed to explain cognitive development in young children, including Piaget's Theory of Cognitive Development, Vygotsky's Sociocultural Theory, and Bruner's Constructivist Theory. Piaget's and Bruner's theories propose that children actively construct their understanding of the world through experiences and interactions with their environment whereas Vygotsky's Socio-cultural Theory emphasizes the role of social and cultural context in cognitive development, arguing that children learn through interaction with others and their cultural surroundings. These theories indicate that cognitive development is a critical aspect of ECE and plays a key role in shaping children's future success. As indicated in previous research, teacher Professional Development in ECE plays a crucial role in enhancing the quality of education and subsequently impacting children's cognitive development. For instance, as Ansari, Azizi & Zare (2019) argue, teachers who received training in child-centered teaching methods were more effective in promoting children's cognitive development than those who did not. The authors suggest that high-quality teacher Professional Development can help teachers create engaging and stimulating learning environments that support children's cognitive development. For example, teachers who receive training in child-centered teaching methods are more likely to create hands-on, experiential learning experiences that engage children's curiosity and encourage them to explore and discover (Rathnayake & Jayasuriya, 2017). In addition to enhancing the quality of ECE, teacher Professional Development also has a positive

impact on teachers themselves. Focused and effective Professional Development helps teachers enhance their skills and knowledge (Abeywickrama, 2021ab)), and can provide them with opportunities to network with other educators and share best practices (Ansari, Azizi & Zare, 2019; Abeywickrama, 2020). This can lead to increased job satisfaction and a sense of fulfillment, which can in turn contribute to better quality ECE (World Bank, 2020).

Overall, as indicated, investing in high-quality teacher Professional Development programs is essential to improve the effectiveness of ECE in Sri Lanka. The lack of opportunities for teacher Professional Development is a key challenge that ECEs encounter in Sri Lanka. Hence, further research is needed to examine the impact of teacher Professional Development on children's cognitive development in this context.

Academic Achievement and Classroom Quality

The quality of instruction is dependent on the preparation and training of educators, and the use of appropriate teaching methods that cater to the needs and learning styles of students (Ulla, 2018). The ability of an educator to stimulate students' curiosity about a subject is a two-way process, thus, both teacher and students need to improve in this area (Giovazolias, Christofides & Papagiannis, 2019). There is strong evidence in the literature to validate the importance of educator preparation (Oliviera, Sousa, & Silva, 2019; Supriatna, Schutze & Ulla, 2019; Ulla, 2015; Schutze, Supriatna & Ulla, 2017) in the twenty-first century.

The appropriate training of educators is crucial to the success of any educational endeavor, from creating an engaging classroom environment to assessing students' academic growth (Zulfiqar, 2016). Teachers with adequate training are in a better position to instruct students and help them implement the various techniques during teaching and learning (Saira, Ahmad & Ahmed 2021). Teachers who change their methods of instruction to meet the specific needs and experiences of their students are more likely to foster high levels of academic achievement and long-term student interest in the subject matter (Gort & Sembiante, 2015). The "teaching toolbox" or teaching techniques of a teacher encompasses a range of strategies for delivering lectures to students based on established learning goals (Buseri & Dorgu, 2011). According to previous studies, the primary purposes of education are to help students acquire, retain, and apply knowledge; adopt positive habits and perspectives; and deepen their understanding and grasp of a particular field (Omar, Ahmad & Ahmed, 2020). These goals can be achieved through the implementation of active learning techniques, such as student-driven inquiry, instructor demonstration, and student-led group discussions (Asmawati & Malkan, 2020).

Despite the abundance of research on various instructional methods for students in diverse educational settings, research examining the effects of teacher Professional Development on the outcomes of early childhood education, such as learning materials, student performance, and engagement, is limited. The primary goal of ECE is to develop children's capacity for introspection, creativity, and critical thinking (Darling-Hammond, 2016). Teachers play a crucial role in facilitating this process by offering guidance and direction (Obidike, 2017). Hence, this study aims to examine the impact of teacher Professional Development on the quality of ECE in the Sri Lankan context, focusing on its effect on the classroom environment and student outcomes.

Classroom and Behavioral Management

Classroom and behavioral management are crucial elements in ensuring the effectiveness of early childhood education. These concepts refer to the strategies and techniques used by teachers to establish a safe and supportive learning environment for young children and to encourage appropriate behavior and social skills (Saira, Ahmad, & Ahmed, 2021). The quality of classroom and behavioral management is dependent on the preparation and training of educators and can have a significant impact on children's learning outcomes and overall development (Giovazolias, Christofides & Papagiannis, 2019). Psychologists and educators have developed theories and models of classroom and behavioral management to assist teachers in understanding the principles of effective management and guiding their practices. Skinner's (1957) Behaviorism, for example, emphasizes the use of positive reinforcement to shape appropriate behavior in young children. Similarly, Glasser's (1998) Choice Theory, stresses the

importance of creating a positive learning environment that supports children's autonomy and helps them develop self-discipline. Kounin's (1970) Instructional Management Model, on the other hand, focuses on the strategies used by teachers to maintain a positive and productive learning environment, including effective lesson planning and classroom organization.

Previous research has explored the relationship between teacher Professional Development and effective classroom and behavioral management. These studies have shown that high-quality teacher Professional Development can have a positive impact on teachers' ability to effectively manage their classrooms and promote appropriate behavior in young children (Ulla, 2018). By providing teachers with the knowledge and skills necessary to create a supportive and engaging learning environment, teacher Professional Development can contribute to the overall quality of ECE and support children's optimal development (Zulfqar, 2016). In addition to the theories mentioned above, research has also demonstrated the importance of teachers' emotional intelligence in effective classroom and behavioral management. Emotional intelligence refers to the ability to recognize and manage one's own emotions and those of others (Salovey & Mayer, 1990). Teachers with high levels of emotional intelligence can create positive relationships with their students, communicate effectively, and manage challenging behaviors (Mayer et al., 2003). Studies have shown that teacher Professional development programs that focus on emotional intelligence can lead to improved classroom management and a more positive learning environment for young children (Obidike, 2017).

Moreover, previous research also indicates the importance of cultural competence in classroom and behavioral management. Cultural competence refers to the ability of teachers to effectively work with and understand students from diverse cultural backgrounds (Cross et al., 1989). Teachers with culturally competent can create an inclusive and respectful learning environment, address the unique needs and experiences of their students, and promote positive behaviors (Gay, 2010). In the Sri Lankan context, where cultural diversity is prevalent, teacher Professional Development programs that focus on cultural competence can have a significant impact on the effectiveness of classroom and behavioral management (Hafeez, Nazir & Rehman, 2020).

In general, effective classroom and behavioral management are not only beneficial for young children but also for teachers themselves. Teachers who can effectively manage their classrooms report higher levels of job satisfaction and a reduced level of stress (Abeywickrama, 2021a). In addition, effective classroom and behavioral management can also support the overall effectiveness of ECE programs by reducing disruptive behaviors, increasing student engagement, and promoting a positive learning environment (Supriatna, Schutze & Ulla, 2018).

Classroom Quality and the Effectiveness of ECE

The relationship between the quality of ECE classrooms and effectiveness has been the focus of numerous studies and research. For Ansari, Azizi & Zare (2019), the quality of the ECE environment and the effectiveness of the education provided play a crucial role in promoting optimal child development and learning outcomes. High-quality ECE classrooms are characterized by a positive, supportive, and engaging learning environment that promotes children's well-being and academic success.

As Ulla (2018) argues, various factors contribute to the quality of ECE classrooms and the effectiveness of early childhood education, including the qualifications and training of teachers, the curriculum and teaching materials used, and the physical environment of the classrooms. Research has also highlighted the importance of providing high-quality teacher Professional Development programs to support the development of effective ECE classrooms (Obidike, 2017).

Overall, the quality of ECE classrooms and the effectiveness of ECE are crucial to promoting optimal child development and learning outcomes. To ensure the success of ECE programs, it is essential to invest in high-quality teacher Professional Development programs that focus on areas such as child development, instructional strategies, emotional intelligence, and cultural competence.

II. METHODOLOGY

This study adopted a quantitative research design, specifically a time series design, to examine

the impact of teacher Professional Development on the effectiveness of ECE in the Sri Lankan context. According to Creswell (2013), a quantitative research design is appropriate for studies that aim to test hypotheses, establish cause-and-effect relationships, and generalize findings to a larger population. The time series design was selected for this study as it involves collecting data at multiple points in time to examine changes in the variables of interest. The quantitative research method is characterized by its use of structured data collection methods, such as surveys and standardized tests, to collect data systematically and objectively. The data collected through these methods was analyzed using statistical techniques, such as regression analysis and correlation analysis, to examine the relationship between teacher Professional Development and the effectiveness of early childhood education.

Population and Sampling

The target population for this study was ECE teachers at private educational institutions in Sri Lanka. This was the main context in which the impact of teacher Professional Development on the effectiveness of ECE was examined. A stratified random sampling technique was used to select the sample for this study. This sampling technique involves dividing the target population into strata, or subgroups, based on specific characteristics, such as the type of setting and geographic location. A random sample was then selected from each stratum to ensure that the sample was representative of the target population as a whole. The sample size for this study was determined based on the availability of resources. A sample of 300 teachers was selected for this study from three strata as specified here: a) Type of ownership: single ownership- 100, b) Type of ownership: chain ownership-100, and c) Geographic location: urban- 100.

Data Collection

The primary data collection method used in this study was a self-administered questionnaire. This method was chosen as it allowed for the collection of a large amount of data from a large number of participants cost-effectively and efficiently. The questionnaire was developed specifically for this study and its content was based on a review of the literature on teacher Professional Development and its impact on the effectiveness of ECE in the Sri Lankan context.

The questionnaire was divided into three sections, each addressing a different aspect of the research questions. The first section gathered information on the demographic characteristics of the participants, such as their age, gender, level of education, and years of experience as a teacher. The second section focused on the quality of teacher Professional Development programs, including their content, duration, and delivery methods. The final section addressed the impact of teacher Professional Development on the quality of early childhood education, including the participants' perceptions of the effectiveness of their training and its impact on their teaching practices and the learning outcomes of the children they teach.

Overall, the data collection methods used in this study were designed to ensure the validity and reliability of the results. A pilot study was conducted to test the research instrument and data collection procedures, ensuring that the sample and data collected were appropriate for the study. The ethical treatment of the participants was ensured throughout the data collection process

Data Analysis

Data analysis is a crucial step in evaluating the relationship between teacher Professional Development and the effectiveness of early childhood education. To achieve this, a range of statistical techniques were employed to examine the data collected from the sample. The data analysis techniques included regression analysis, correlation analysis, and t-tests.

Regression analysis was used to determine the strength and direction of the relationship between teacher Professional Development and the effectiveness of early childhood education. This analysis facilitated the understanding of how teacher Professional Development affects various aspects of early childhood education, such as classroom quality, cognitive development of young learners, and behavior management (Howe & Eisenhart, 1990). Correlation analysis supported to decide the relationship between teacher Professional Development and the effectiveness of early childhood education. This analysis could demonstrate how teacher Professional Development influences ECE's effectiveness in private institutions in Sri Lanka. The data analysis was conducted using the Statistical Package for Social Sciences (SPSS),

to ensure accuracy and rigor. The software was used to perform descriptive statistics, hypothesis testing, and regression analysis, among other techniques. The data analysis process also underwent a thorough review and validation process to ensure its accuracy and reliability.

III. RESULTS AND DISCUSSION

This section provides a critical evaluation of the data and the relationship between teacher Professional Development and the effectiveness of ECE in the Sri Lankan context. The results were discussed in light of the research objectives, hypotheses, and previous literature, highlighting the implications and contributions of the study to the field of early childhood education. Of the 300 participants, 285 responded to the survey, resulting in a response rate of 95%. This demonstrated the willingness of the participants to engage in the study and provide valuable information.

Demographic Information of Participants

Out of the participants (285), 67.4% were female and 32.6% were males. This information is important as it provides a basic understanding of the gender distribution among the participants. The gender of the participants may impact on the effectiveness of teacher Professional Development and early childhood education. Hence, this finding can help further analysis and interpretation of the results (see Table 1).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	93	32.6	32.6	32.6
	Female	192	67.4	67.4	100.0
	Total	285	100.0	100.0	

Table 1: Gender Distribution

The age group distribution of the participants in the study indicated that the majority of the participants were relatively young and in their initial years of teaching (see Table 2). The participation of 193 teachers representing the years 25-34 and 35-44 highlights the significance of this study since these years cover a critical period in a teacher's career. Furthermore, the participation of a considerable number of teachers in the 45 years and above group suggests that even experienced teachers can benefit from teacher Professional Development programs. The distribution of the age groups among the participants demonstrates a broad representation of the teaching community in the Sri Lankan context.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24 years	59	20.7	20.7	20.7
	25-34 years	97	34.0	34.0	54.7
	35-44 years	96	33.7	33.7	88.4
	45 years and above	33	11.6	11.6	100.0
	Total	285	100.0	100.0	

Table 2: Age Distribution

As illustrated by Table 3, the majority of participants, 239 (83.9%), have completed a diploma or a certificate, while 46 (16.1%) have a Bachelor's Degree. This information provides insight into the educational background of the participants and their professional training. The level of professional training and qualifications could potentially affect their teaching practices and contribute to the effectiveness of early childhood education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma or Certificate	239	83.9	83.9	83.9
	Bachelor's Degree	46	16.1	16.1	100.0
	Total	285	100.0	100.0	

Table 3: Education Level

As indicated by Table 4, 50.9% of respondents have 2-5 years of experience in ECE (see Table 4). The results indicate that the majority of the respondents have a moderate level of education and experience in the field. Therefore, they could provide a diverse range of perspectives on teacher Professional Development and its impact on early childhood education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 2 years	101	35.4	35.4	35.4
	2-5 years	145	50.9	50.9	86.3
	6-10 years	18	6.3	6.3	92.6
	More than 10 years	21	7.4	7.4	100.0

Table 4: Professional Experience

Reliability and Validity Analysis

In this study, the reliability and validity of the four variables; a) Quality of ECE Classroom, b) Young Learners' Cognitive Development, c) Behavior Management of the Young Learner, d) and Effectiveness of ECE were measured using Cronbach's Alpha and the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity.

Variable	Reliability	Validity		
Quality of ECE Classroom	Reliability Statistics		KMO and Bartlett's Test	
	<u>Cronbach's Alpha</u>	N of Items	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.926
	.986	5	Bartlett's Test of Sphericity	Approx. Chi-Square
			df	2868.290
		Sig.	.000	
Young Learners Cognitive Development	Reliability Statistics		KMO and Bartlett's Test	
	<u>Cronbach's Alpha</u>	N of Items	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.913
	.955	5	Bartlett's Test of Sphericity	Approx. Chi-Square
			df	2585.449
		Sig.	.000	
Behavior Management of the Young Learner	Reliability Statistics		KMO and Bartlett's Test	
	<u>Cronbach's Alpha</u>	N of Items	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.869
	.923	5	Bartlett's Test of Sphericity	Approx. Chi-Square
			df	2081.253
		Sig.	.000	
Effectiveness of Early Childhood Education	Reliability Statistics		KMO and Bartlett's Test	
	<u>Cronbach's Alpha</u>	N of Items	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.842
	.987	5	Bartlett's Test of Sphericity	Approx. Chi-Square
			df	3242.672
		Sig.	.000	

Table 5: Reliability and Validity of Variables

Reliability and Validity Analysis of Quality of ECE Classroom

The reliability of the variable: quality of the ECE classroom, was assessed using Cronbach's Alpha,

which was found to be .986. This suggests that the variable has a high level of internal consistency and reliability. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .926, which indicates good sampling adequacy. Bartlett's Test of Sphericity showed that the variables were related to each other, with an approximate chi-square of 2868.290, a degree of freedom of 10, and a significance level of .000. This demonstrates that the variables are related and can be used to form a valid and reliable measure of the Quality of ECE Classroom.

Reliability and Validity Analysis of Young Learners' Cognitive Development

The reliability of the variable: young learners' cognitive development, was evaluated using Cronbach's Alpha, which was found to be .955. This suggests that the variable has a high level of internal consistency and reliability. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .913, which indicates good sampling adequacy. Bartlett's Test of Sphericity showed that the variables were related to each other, with an approximate chi-square of 2585.449, a degree of freedom of 10, and a significance level of .000. This indicates that the variables are related and can be used to form a valid and reliable measure of young learners' cognitive development.

Reliability and Validity Analysis of Behavior Management of the Young Learner

The reliability of the variable: behavior management of the young learner, was assessed using Cronbach's Alpha, which was found to be .923. This suggests that the variable has a high level of internal consistency and reliability. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .869, which indicates good sampling adequacy. Bartlett's Test of Sphericity showed that the variables were related to each other, with an approximate chi-square of 2081.253, a degree of freedom of 10, and a significance level of .000. This indicates that the variables are related and can be used to form a valid and reliable measure of behavior management of the young learner.

Reliability and Validity Analysis of Effectiveness of Early Childhood Education

The reliability of the variable: effectiveness of the ECE, was assessed using Cronbach's Alpha, which was found to be .987. This suggests that the variable has a high level of internal consistency and reliability. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .842, which indicates good sampling adequacy. Bartlett's Test of Sphericity showed that the variables were related to each other, with an approximate chi-square of 3242.672, a degree of freedom of 10, and a significance level of .000. This indicates that the variables are related and can be used to form a valid and reliable measure of the effectiveness of ECE.

Descriptive Statistics Analysis

		Quality of ECE Classroom	Young Learners Cognitive Development	Behavior Management of the Young Learner	Effectiveness of Early Childhood Education
N	Valid	285	285	285	285
	Missing	0	0	0	0
Mean		3.74	3.72	3.77	3.79
Median		3.83	3.80	3.80	4.00
Mode		4	3	5	4
Std. Deviation		.949	.967	.912	.942
Skewness		-.859	-.803	-.686	-.966
Std. Error of Skewness		.144	.144	.144	.144
Kurtosis		1.251	1.215	1.100	1.491
Std. Error of Kurtosis		.288	.288	.288	.288
Minimum		1	1	1	1
Maximum		5	5	5	5

Table 6: Descriptive Statistics of Variables

Descriptive Statistics of Quality of ECE Classroom

The data collected on the quality of ECE classrooms exposed a mean score of 3.74, with a median of 3.83 and a mode of 4. The standard of .949 demonstrates a relatively low level of variability in the scores. The skewness of the data was -.859, which suggests a slightly negatively skewed distribution. The kurtosis of 1.251 is considered slightly above average, indicating that there are some outliers in the data. The minimum score was 1 and the maximum score was 5, with a total sum of 1065.

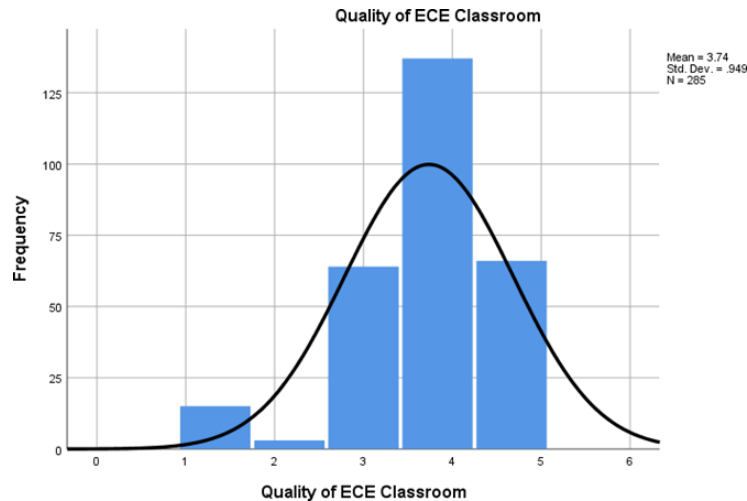


Figure 1: Quality of ECE Classroom

Descriptive Statistics of Young Learners' Cognitive Development

The data collected on young learners' cognitive development had a mean score of 3.72, with a median of 3.80 and a mode of 3. The standard deviation of .967 indicates a relatively low level of variability in the scores. The skewness of the data was -.803, which suggests a slightly negatively skewed distribution. The kurtosis of 1.215 is considered slightly above average, indicating that

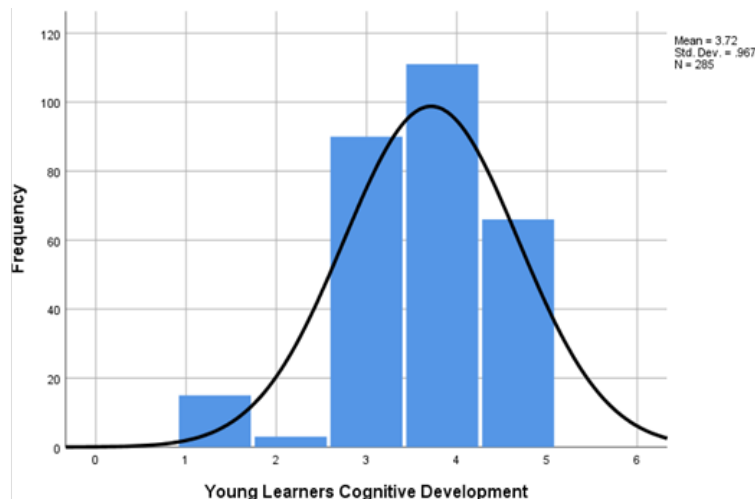


Figure 2: Young Learners' Cognitive Development

there are some outliers in the data. The minimum score was 1 and the maximum score was 5, with a total sum of 1059.

Descriptive Statistics of Behavior Management of the Young Learner

The data collected on the behavior management of young learners had a mean score of 3.77, with a median of 3.80 and a mode of 5. The standard deviation was .912, which is a relatively low level of variability in the scores. The skewness of the data was -.686, which suggests a slightly negatively skewed distribution. The kurtosis of 1.100 is considered average, indicating that there are some outliers in the

data. The minimum score was 1 and the maximum score was 5, with a total sum of 1075.

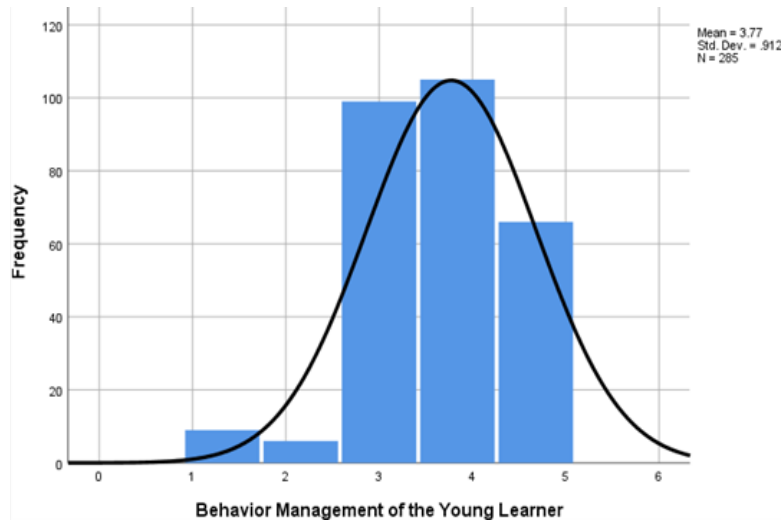


Figure 3: Behavior Management of the Young Learner

Descriptive Statistics of Effectiveness of Early Childhood Education

The data collected on the effectiveness of ECE has a mean score of 3.79, with a median of 4.00 and a mode of 4. The standard deviation was .942, which demonstrates a relatively low level of variability in the scores. The skewness of the data was -.966, which indicates a strongly negatively skewed distribution. The kurtosis of 1.491 is considered high, indicating that there are many outliers in the data. The minimum score was 1 and the maximum score was 5, with a total sum of 1080.

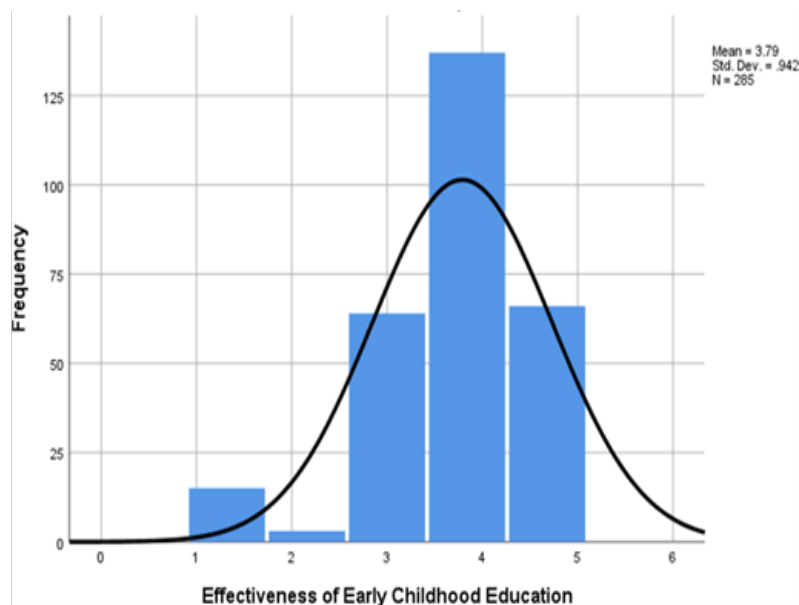


Figure 4: Effectiveness of Early Childhood Education

Correlations between Variables

The correlation analysis demonstrates a strong relationship between the variables of ECE: quality of ECE classroom, young learners' cognitive development, and behavior management. The Pearson correlation coefficients for all four variables are above .977, indicating a strong positive linear relationship between them. The significance level of these correlations is also found to be at the 0.01 level (2-tailed), suggesting that the relationship between the variables is statistically significant. The results point to the need for improving the quality of ECE classrooms and the behavior management of young learners that could have a positive impact on their cognitive development and the overall effectiveness of early

childhood education.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.983 ^a	.966	.965	.175	.966	2646.652	3	281	.000

a. Predictors: (Constant), Behavior Management of the Young Learner, Quality of ECE Classroom, Young Learners Cognitive Development

Table 7: Correlation Analysis

Regression Analysis

The model summary illustrates the results of the regression analysis performed in this study. The R-value of .983 indicates a strong positive correlation between the predictor variables: behavior management of the young learner, quality of ECE Classroom, and young learners’ cognitive development, and the dependent variable: effectiveness of ECE. The R Square value of .966 suggests that 96.6% of the variability in the Effectiveness of ECE can be explained by the predictor variables. The adjusted R Square value of .965 accounts for the number of predictor variables in the model and provides a more accurate representation of the model. The standard error of the estimate, .175, measures the average deviation of the observed values from the predicted values. The results of the change statistics show that the model is significant, with an F change of 2646.652, a Sig. F change of .000, and a df1 and df2 of 3 and 281, respectively.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	243.240	3	81.080	2646.652	.000 ^b
	Residual	8.608	281	.031		
	Total	251.848	284			

a. Dependent Variable: Effectiveness of Early Childhood Education

b. Predictors: (Constant), Behavior Management of the Young Learner, Quality of ECE Classroom, Young Learners Cognitive Development

Table 8: Model Summary

The ANOVA model illustrates that the sum of squares for the regression is 243.240 with 3 degrees of freedom. The mean square for the regression is 81.080, which resulted in a significant F value of 2646.652 with a significance level of .000. This indicates that the combination of the predictors of behavior management of the young learner, quality of ECE Classroom, and young learners’ cognitive development has a significant impact on the dependent variable, effectiveness of ECE.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.094	.045		2.082	.038
	Quality of ECE Classroom	.301	.095	.303	3.166	.002
	Young Learners Cognitive Development	.248	.105	.255	2.366	.019
	Behavior Management of the Young Learner	.433	.061	.430	7.142	.000

a. Dependent Variable: Effectiveness of Early Childhood Education

Table 9: ANOVA Table

The ANOVA model illustrates that the sum of squares for the regression is 243.240 with 3 degrees of freedom. The mean square for the regression is 81.080, which resulted in a significant F value of

2646.652 with a significance level of .000. This indicates that the combination of the predictors of behavior management of the young learner, quality of ECE Classroom, and young learners' cognitive development has a significant impact on the dependent variable, effectiveness of ECE.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.094	.045		2.082	.038
	Quality of ECE Classroom	.301	.095	.303	3.166	.002
	Young Learners Cognitive Development	.248	.105	.255	2.366	.019
	Behavior Management of the Young Learner	.433	.061	.430	7.142	.000

a. Dependent Variable: Effectiveness of Early Childhood Education

Table 10: Coefficients

The constant in the model is .094, which represents the average effectiveness of ECE when all independent variables are equal to zero. The coefficient for the Quality of the ECE Classroom is .301, which indicates that the increase in a one-unit in the quality of the ECE classroom leads to a .301 increase in the effectiveness of early childhood education. The coefficient for Young Learners' Cognitive Development is .248, which means that the increase in a one-unit in the cognitive development of young learners results in a .248 increase in the effectiveness of early childhood education. Finally, the coefficient for Behavior Management of the Young Learner is .433, which suggests that the increase in a one-unit in behavior management of young learners leads to a .433 increase in the effectiveness of early childhood education (see Table 10).

IV. CONCLUSIONS AND RECOMMENDATIONS

The study aimed to investigate the impact of teacher Professional Development on the effectiveness of ECE in the Sri Lankan context. The data was collected through questionnaires administered among 285 teachers and analyzed using various statistical methods, including regression analysis, correlation analysis, and t-tests.

The findings showed a strong correlation between teacher Professional Development and the effectiveness of ECE as well as between the independent variables: quality of ECE classroom, young learners' cognitive development, and behavior management. Additionally, the results revealed that the quality of the ECE classroom and the young learners' cognitive development had the highest impact on the effectiveness of early childhood education, followed by behavior management. The study found that the quality of ECE classrooms was highly correlated with the effectiveness of early childhood education. A strong positive relationship was also observed between young learners' cognitive development and the effectiveness of ECE. Moreover, the study found that behavior management of young learners was positively related to the effectiveness of ECE. These findings were statistically significant, with p-values less than 0.01, indicating that these relationships were highly reliable. The study also used regression analysis to examine the relationships between the independent and dependent variables. The results exposed that all independent variables: the quality of ECE classrooms, young learners' cognitive development, and behavior management, significantly demonstrated the effectiveness of ECE. The model explained 96.6% of the variance in the effectiveness of ECE, with a high R-squared value of 0.966. The ANOVA results uncover that the regression model was significant, with a p-value of 0.000.

The findings of this study contribute to the existing literature on teacher Professional Development and ECE in the Sri Lankan context by providing empirical evidence of the relationships between teacher Professional Development and the effectiveness of ECE. These findings demonstrate the importance of investing in teacher Professional Development programs that address the quality of ECE classrooms, young learners' cognitive development, and behavior management. The results of this study can inform policy decisions, curriculum development, and professional development initiatives aimed at improving the quality of ECE in Sri Lanka.

Based on the results of the study, several recommendations can be made for improving teacher Professional Development, and thereby enriching the effectiveness of ECE in Sri Lanka. Firstly, policymakers and educational authorities should prioritize the implementation of comprehensive teacher Professional Development programs, which emphasize the development of pedagogical skills, classroom management techniques, and knowledge of child development. These training programs should also be regularly updated to reflect the latest research and best practices in the field. Educators and teacher trainers should also be encouraged to collaborate and share their experiences and knowledge. This can be achieved through the establishment of professional networks, communities of practice, and regular workshops and seminars. By working together, educators can improve their skills, build relationships, and gain new insights into the challenges and opportunities of ECE. In addition, the study highlights the importance of providing adequate resources and support for ECE. This includes providing classrooms with the necessary materials and equipment, such as educational toys, games, and learning materials, as well as ensuring that teachers have access to ongoing professional development opportunities.

Theoretical and Empirical Implications

The findings of this study have several theoretical implications for the field of teacher Professional Development and early childhood education. With the use of regression analysis and correlation analysis, this study has confirmed the strong relationship between teacher Professional Development and the effectiveness of early childhood education. This finding is in line with previous research on the subject, which has suggested that high-quality teacher Professional Development is crucial for promoting positive outcomes in ECE (Darling-Hammond, 2006). Most importantly, this study has added new insights to the existing literature. For instance, the study found that the quality of the classroom, young learners' cognitive development, and behavior management also play a significant role in determining the effectiveness of early childhood education. The results of this study suggest that a multi-faceted approach that addresses teacher training, classroom quality, cognitive development, and behavior management may be more effective in promoting positive outcomes in early childhood education. This perspective could inform future research and theory development in this field, by encouraging researchers to consider multiple variables and to adopt a more holistic approach when investigating the impact of teacher training.

The study has several practical implications for the ECE sector in Sri Lanka. The findings suggest that teacher Professional Development programs should focus on improving classroom quality, promoting cognitive development, and effective behavior management. The study highlights the importance of creating a learning environment that is supportive, engaging, and stimulating for young learners. The study findings can inform policy decisions, curriculum development, and professional development initiatives in the Sri Lankan sector. Policymakers can use the results of the study to develop policies and programs that promote teacher Professional Development and ECE in Sri Lanka. The results can also be used to inform the development of ECE curricula, ensuring that they are relevant, effective, and aligned with the needs of young learners. In addition, the results of the study can be used to guide Professional Development initiatives for early childhood educators in Sri Lanka. These initiatives could include training programs, workshops, and online courses that focus on improving teaching practices, enhancing classroom quality, and promoting cognitive development and behavior management. By investing in the Professional Development of early childhood educators, policymakers and stakeholders can help ensure that young learners receive the best possible start to their educational journeys.

Limitations and Future Research

The study has limitations that need to be acknowledged. One of the key limitations was the potential for biases, as the data was collected through self-reported surveys. Additionally, the study was limited by time constraints and other challenges that may have affected the research outcomes. To address these limitations, future research could investigate additional variables and explore alternative research designs. For example, exploring different contexts within Sri Lanka or beyond, and incorporating different methodologies such as qualitative interviews or case studies, could provide a more comprehensive understanding of the relationship between teacher Professional Development and ECE. These future studies could also investigate the impact of different policies and initiatives on teacher Professional

Development and ECE outcomes, as well as the barriers and challenges faced by educators and policymakers. By continuing to build knowledge and understanding in this area, policymakers, educators, and other stakeholders can work together to improve teacher Professional Development and enhance the quality of ECE in Sri Lanka.

Despite these limitations, the results emphasize the importance of ongoing efforts to improve ECE in Sri Lanka and beyond through meaningful teacher Professional Development opportunities. Overall, this study provides new insights into the relationship between teacher Professional Development and the effectiveness of early childhood education and has important implications for both theoretical and practical perspectives. The findings of this study have the potential to inform future research, policy decisions, and initiatives aimed at improving teacher Professional Development and the quality of ECE in the Sri Lankan context and beyond.

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