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APPLICATION OF DEEP LEARNING MODEL TOWARDS THE INSTILLATION OF MORAL VALUES IN EARLY CHILDHOOD

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Abstract

Background: *Moral value development is a fundamental aspect of early childhood education because it shapes children's character, responsibility, honesty, respect, and positive social behaviour. The implementation of the Deep Learning model, which emphasizes meaningful, mindful, and joyful learning, is expected to support children's moral development through active and contextual learning experiences.* ***Objective:*** *This study aimed to examine the relationship between the implementation of the Deep Learning model and the moral value instillation of children aged 5–6 years at TK Cemarah Liliba.* ***Method:*** *This quantitative study employed an ex post facto correlational design involving 21 children selected through total sampling. Data were collected using a structured questionnaire measuring the implementation of the Deep Learning model and children's moral values and were analyzed using descriptive statistics, the Shapiro–Wilk normality test, Pearson Product Moment correlation, simple linear regression, the coefficient of determination, and SPSS version 25.* ***Results:*** *The findings revealed a positive and statistically significant relationship between the implementation of the Deep Learning model and children's moral value instillation ($p < 0.05$), indicating that more effective implementation of the model was associated with better moral development.* ***Novelty:*** *This study provides empirical evidence regarding the application of the Deep Learning model within an authentic early childhood education setting to strengthen children's moral values.* ***Conclusion:*** *Integrating meaningful, mindful, and joyful learning into classroom practice can support the development of children's moral values and promote more holistic early childhood education.*

Keywords: *Deep Learning, Moral Values, Early Childhood,*

INTRODUCTION

Early childhood education serves as a crucial effort to foster foundational capabilities in children from birth to age six—a period often referred to as the "diamond age." This process is realized by providing educational stimulation alongside support for physical growth (nutrition and health) and by maximizing developmental potential through a holistic, integrative approach. This approach encompasses physical-motor, cognitive-creative, socio-emotional, linguistic, and religious-moral aspects, thereby ensuring children are prepared to enter further education across formal, informal, and non-formal pathways (Amseke et al., 2024). Furthermore, young children are individuals currently undergoing a developmental phase. Child development encompasses all changes occurring within the child, spanning every aspect of growth—including physical, motor, cognitive, linguistic, and socio-emotional development, as well as religious and moral development (Amseke, 2023).

Early childhood individuals are in a developmental phase. Child development encompasses all changes that occur in children across all aspects including physical, motor, cognitive, language, social, and religious-moral development (Amseke, 2023). Early childhood education is a fundamental phase in the formation of one's character and moral values. At the age of 5-6 years, children are in the golden age, a crucial period for instilling moral values such as honesty, responsibility, empathy, and respect for others. Proper moral value instillation during this period will form the foundation for the child's personality development in the future (Indah, 2021; Karima et al., 2022).

The development of information technology, including artificial intelligence and deep learning models, has begun to be utilized in various aspects of education, including early childhood education. Deep learning approaches can be utilized to support more meaningful, mindful, and joyful learning processes for children (Diputera & Zulpan, 2024; Eriani et al., 2025). Several recent studies also show that early childhood education teachers have begun to develop positive perceptions toward the implementation of deep learning in early childhood institutions, although its implementation still faces a number of technical challenges and resource readiness issues (Novitasari et al., 2025; Rahman & Cahyawati, 2025).

In this regard, to implement Deep Learning in early childhood education, particularly at TK Cemarah Liliba, research is needed to accommodate various learning styles and children's learning needs. The integration of three learning approaches, namely Meaningful Learning, Mindful Learning, and Joyful Learning, is therefore highly relevant. These three approaches complement each other in creating a learning environment that supports active engagement, full awareness, and happiness in the teaching and learning process (Indahri, Y. (2024)

Meaningful Learning emphasizes the connection between new knowledge and learners's prior experiences or existing knowledge (Nuriana and Hotimah 2023). According to Ausubel in (Fatmi et al. 2024), learning will be more effective when new information can be meaningfully integrated into existing cognitive structures. In the context of early childhood education, this approach can be

realized through contextual learning that connects subject matter with learners' daily lives, so they can understand the benefits and relevance of the knowledge they have acquired in everyday contexts.

Mindful Learning invites learners to be fully present in the learning process, with complete focus and attention on the material being studied (Diputera, 2024). According to Langer in (Piscayanti et al. 2022), Mindful Learning involves openness to new perspectives, awareness of context, and sensitivity to changes that occur. Using this learning method applied in primary schools, particularly Madrasah Ibtida'iyah, this approach can be implemented through reflective activities, group discussions, and simple thinking practices that help learners develop self-awareness and emotional regulation (Ho et al. 2024)

Joyful Learning aims to create a positive, enjoyable, and motivating learning atmosphere (Utami 2019). Enjoyable learning can increase learners' emotional engagement, which in turn positively impacts comprehension and material retention (Titin et al. 2023). The implementation of this approach can be realized through the use of educational games, songs, stories, and other creative activities appropriate to student characteristics.

Children's morality today is becoming increasingly concerning due to various external influences affecting the formation of their values. From exposure to inappropriate content on social media to lack of parental supervision in entertainment consumption, children may be vulnerable to blurred or distorted moral understanding (Cheng et al., 2021). To achieve educational goals in the school environment, cross-sectoral cooperation, particularly involving families and communities, becomes crucial. The active role of families and communities is a very important key to monitoring children's character development (Rohmah et al., 2023).

Moral development in children is individual and unique, with significant variation between one child and another (Gandana, G., et al. 2021). Some children show very positive moral progress, while others may experience obstacles in moral formation. The nature of moral development has fundamental characteristics, namely that it is progressive and irreversible. This process is a dynamic journey moving forward, where each stage forms the foundation for the next. The changes that occur are cumulative and have a clear developmental direction. Another perspective emphasizes that moral development is a complex transformation involving psychological and physical aspects of the individual (Solahudin, M. N., et al. 2023). External factors such as environment and learning experiences play a crucial role in shaping a child's moral structure. Ongoing interaction with social contexts and the process of value internalization become the main mechanisms in moral formation.

On the other hand, the instillation of religious and moral values in early childhood has continued to be a focus of research in recent years, whether through habituation methods, storytelling, or the use of audiovisual media (Juhriati & Rahmi, 2021; Syah & Anjani, 2022; Wulandari et al., 2022). Strengthening moral values from an early age is considered important given its crucial role in shaping

children's social attitudes and identity when entering the next level of education (Citra et al., 2023; Shaleh, 2023).

The moral development theories proposed by Jean Piaget and Lawrence Kohlberg make very important contributions to understanding how children's morality develops alongside their age growth and cognitive maturity. Piaget emphasized that children's moral development proceeds through two main stages: heteronomous morality and autonomous morality, which are strongly influenced by social interaction and children's experiences (Hanafiah, 2024).

Research conducted by Kamarudin Sholeh (2024) reveals that the parenting patterns received by children greatly influence their moral formation. Children raised with appropriate parenting generally show better moral development (Sholeh, 2024). These findings reinforce the view that parenting plays an important role in forming the moral foundation in children from an early age and can contribute significantly to advancing comprehensive and sustainable character education. The application of these theories in child education can help teachers and parents choose learning approaches appropriate to the child's moral developmental stage. Through appropriate strategies, such as moral discussions, providing concrete examples, and habituation of good values in the school environment, children can be guided not only to know what is right and wrong but also to understand the moral reasoning behind their actions (Styawan n.d)

TK Cemarah Liliba as one of the early childhood education institutions has been working to integrate technology-based approaches in the process of instilling moral values in its students. However, the extent to which the application of the deep learning model is related to the success of children's moral value instillation still requires further empirical study, given that most previous research has been descriptive-qualitative in nature and has not extensively measured the relationship between these two variables quantitatively.

Based on the above description, this study aims to analyze the relationship between the application of the deep learning model and the instillation of moral values in children aged 5-6 years at TK Cemarah Liliba. This research is expected to provide scientific contributions related to the utilization of artificial intelligence technology in early childhood character education.

METHODS

This study uses a quantitative ex-post facto approach aimed at determining the presence or absence of a relationship between the deep learning model application variable (X) and the moral value instillation variable in children aged 5-6 years (Y) at TK Cemarah Liliba.

The population in this study consists of all respondents involved in the learning process at TK Cemarah Liliba, with a sample of 21 respondents selected using the saturated sampling technique (total sampling).

The data collection instrument is a questionnaire with 10 statement items using a Likert scale. A total of 5 items were used to measure the deep learning model application variable (X), and 5 items were used to measure the children's moral value instillation variable (Y).

The data analysis techniques used include: (1) descriptive statistical analysis to describe data characteristics; (2) Shapiro-Wilk normality test to determine data distribution; (3) Pearson Product Moment correlation test to determine the strength and direction of the relationship between variables; (4) coefficient of determination (R^2) to determine the magnitude of variable X's contribution to Y; (5) significance test (t-test) to test the significance of the correlation coefficient; and (6) linear regression reliability test to determine internal consistency of the instrument. The data analysis technique is simple linear regression analysis with descriptive analysis method. Data were processed using the SPSS 25.0 statistical program.

RESULTS AND DISCUSSION

The descriptive statistical results of the deep learning model application data and early childhood moral instillation can be described as follows

Table 1. Results of children's moral value instillation categories

Category	Interval	Frequency	Percentage
High	40-35	7	33,33%
Low	34-30	7	33,33%
Medium	27-23	7	33,33%
Total		21	100%

Based on the results in Table 1 above, it can be seen that children's moral values fall into the high category with 7 respondents (33.33%), the medium category with 7 respondents (33.33%), and the low category with 7 respondents (33.33%). Thus, it can be noted that children's morality falls in the medium category with the highest percentage of 33.33%. According to the theory of children's morality by (Gandana, G., et al. 2021), moral development in children is individual and unique, with significant variation between one child and another.

Table 2. Results of deep learning research categories

Category	Interval	Frequency	Percentage
High	35-32	6	28,57%
Low	29	13	61,90%
Medium	31-30	2	9,52%
Total		21	100%

Based on the results in Table 2 above, it can be seen that deep learning development in children

aged 5-6 years falling in the high category totals 6 respondents (28.57%), the medium category totals 2 respondents (9.52%), and the low category totals 13 respondents (61.90%). Thus, it can be noted that deep learning development in children aged 5-6 years falls in the low category with the highest percentage of 61.90%. The deep learning model has begun to be utilized in various aspects of education, including early childhood education. The deep learning approach can be utilized to support more meaningful (meaningful), mindful (mindful), and joyful (joyful) learning processes for children (Diputera & Zulpan, 2024; Eriani et al., 2025).

Table 3. Summary of Simple Linear Regression Analysis Results - Simultaneous F Test

R Square Change	P	F	Sig
0.003	0,000	38,888	0.000

Table 4. Summary of Coefficient of Determination (R Square) Values

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	051a	553	424	68544

Tables 3 and 4 show a summary of the simultaneous hypothesis test results (F) indicating that there is a significant positive effect between deep learning application and moral value instillation with P= 1 and F= 38,888 with R Square= 553.

The effective contribution of the religious moral instillation variable to the application of discovery learning is 55,3%, and the remaining 44,7% is explained by other variables not examined in this study.

Table 5. Summary of Regression Analysis Results - Partial Test (t-test)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	std. Error	Beta		
Religious Moral	2,903	0.477		6.085	0,000
Deep learning Model	0,042	0,135	0,451	0.315	0,00

Based on the results in Table 5, the summary of partial hypothesis test results (t) shows that there is a significant positive relationship in children's religious moral development, with a value of B= 2.903 and t= 6.085. Thus, children's religious morality makes a positive contribution to deep learning

development in early childhood.

Table 6. Descriptive Analysis Results of Children's Religious Morality

Model		Sum of squaress	df	Mean Square	f	sing
					.999	.754[b]
1	Regression	.047	1	.047		
	Residual	17.853	38	.470		
	Total	17.900	39			

Table 6 from the descriptive analysis results of religious morality shows the value of regression of 0.047, the residual aspect of 0.470, the significance value of 0.754.

This study proves that the alternative hypothesis (Ha) is accepted: religious morality has a positive and significant effect on deep learning development in early childhood aged 5-6 years at TK Cemarah Liliba, Kupang City. This is supported by research with the F statistical test (significance test) with a calculated F value of 38 at a significance level of 0.009 ($p<0.05$). Therefore, religious morality has a significant influence on early childhood deep learning development with an R square value of 003 or 3%. Thus, religious morality is influenced by early childhood deep learning development by 3%, and the remaining 96.9% is influenced by other factors not examined in this study. In this research, it can be stated that the better children's morality, the more it can enhance deep learning development in children aged 5-6 years at TK Cemarah Liliba, Kupang

Statistical analysis results show a strong and significant positive relationship between the application of the deep learning model (X) and children's moral value instillation (Y), with a correlation coefficient r =051 and a coefficient of determination of 003%. These findings are consistent with the theoretical framework underlying the research, namely that the application of deep learning-based learning approaches emphasizing meaningful, mindful, and joyful learning can support the optimization of moral value instillation in early childhood (Diputera & Zulpan, 2024; Eriani et al., 2025).

The normalization test results showing normal data distribution on both variables ($p< 0.05$) provide a strong basis for using the Pearson Product Moment correlation test, so that the correlation coefficients obtained can be interpreted as valid. Furthermore, all instrument items on both variables were declared valid (r= 051) and the overall instrument was declared reliable (Cronbach's Alpha > 0.80), indicating that the instrument used has good psychometric quality for measuring the constructs of deep learning model application and children's moral value instillation.

The coefficient of determination of 3% indicates that more than half of the variation in children's moral value instillation can be explained by the application of the deep learning model,

while the remainder (69.9%) is influenced by other factors outside this research model, such as the role of parenting patterns (Indah, 2021), the role of teachers as moral role models and guides (Syah & Anjani, 2022), and children's daily social environment (Karima et al., 2022). These findings indicate that deep learning-based educational technology application can be one effective strategy in supporting early childhood moral value instillation, but is not the only determining factor.

The results of this study are consistent with several previous studies showing positive perceptions of early childhood education teachers toward the implementation of deep learning in early childhood institutions (Novitasari et al., 2025), as well as optimism about the potential of this approach in supporting more meaningful learning for early childhood (Rahman & Cahyawati, 2025). Nevertheless, several studies also point to technical challenges and resource readiness in the field implementation of this approach, so its application needs to be supported by adequate teacher preparedness, facilities, and curriculum.

CONCLUSION

Main Findings: This study found that the implementation of the Deep Learning model was positively associated with the moral value instillation of children aged 5–6 years at TK Cemarah Liliba. The statistical analysis indicated a significant positive relationship between the Deep Learning model and children's moral development, suggesting that meaningful, mindful, and joyful learning experiences contribute to strengthening honesty, responsibility, respect, discipline, and caring attitudes among young children. **Research Contribution:** This study provides empirical evidence regarding the application of the Deep Learning model within an authentic early childhood education setting, extending previous studies that have primarily discussed the approach conceptually rather than quantitatively. **Theoretical and Practical Implications:** The findings support constructivist learning theory by demonstrating that meaningful learning experiences facilitate children's moral development through active participation, reflection, and contextual learning. Practically, the results encourage early childhood teachers to integrate Deep Learning principles into daily classroom activities to strengthen children's moral values. **Research Limitations:** This study involved only 21 children from a single kindergarten using an ex post facto quantitative design, limiting the generalizability of the findings and preventing causal inference. **Future Research Directions:** Future studies should employ larger and more diverse samples, quasi-experimental or experimental designs, and examine additional variables such as parenting style, teacher competence, classroom climate, and family socioeconomic background to obtain a more comprehensive understanding of factors influencing children's moral development.

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